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Children's Discourse

Person, Space and Time
across Languages

MAYA HICKMANN

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CHILDREN'S DISCOURSE

PERSON, SPACE AND TIME ACROSS LANGUAGES

This original comparative study explores two central questions in the study of first language acquisition. What is the relative impact of structural and functional determinants? What is universal versus language-specific during development? Maya Hickmann addresses these questions in three domains of child language: reference to entities, the representation of space, and uses of temporal-aspectual markings. She provides a thorough review of different theoretical approaches to language acquisition and a wide range of developmental research, as well as examining all three domains in English, French, German and Chinese narratives. Hickmann's findings concern the rhythm of acquisition, the interplay among different factors (syntactic, semantic, pragmatic) determining children's uses, and universal versus variable aspects of acquisition. Her conclusions stress the importance of relating sentence and discourse determinants of acquisition in a cross-linguistic perspective. *Children's Discourse* will be welcomed by those working in psychology and language-related disciplines interested in first language acquisition.

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Children's Discourse

CHILDREN'S DISCOURSE

PERSON, SPACE AND TIME
ACROSS LANGUAGES

MAYA HICKMANN

*Centre National de la Recherche Scientifique,
Université René Descartes, Paris*



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Preface

The aim of this book is to explore two questions in the study of first language acquisition: the role of structural and functional determinants during acquisition, and the extent to which the developmental process is invariant vs. variable across languages. In order to address these questions, I examine within a functional and cross-linguistic perspective the acquisition of a variety of linguistic devices relevant to three domains of child language: the denotation of entities, the expression of motion and location, and the marking of temporal-aspectual distinctions. In relation to the first question, my aim is to determine the relative impact of two types of factors during language acquisition: syntactic and semantic factors that operate at the sentence level; and discourse pragmatic factors that operate beyond the sentence, particularly those that regulate the flow of information across utterances as a function of presupposition and focus in discourse. Furthermore, the book is framed within a comparative perspective, in which evidence from different languages is repeatedly brought to bear on the second question, in light of various claims concerning universal vs. language-specific determinants of acquisition.

After an introduction presenting the general aims of the book, subsequent chapters are divided into two parts. The first part provides a general theoretical background and overview of the relevant developmental literature. After a discussion of the methodological issues arising from this literature, several chapters in the second part then present the results of a study comparing narrative productions of children and adults in four languages (French, English, German and Mandarin Chinese). The last chapter argues that models that focus exclusively on the sentence or discourse levels of linguistic organisation and/or ignore cross-linguistic evidence are misleading. My conclusion stresses the crucial role of multifunctionality during language acquisition and the necessary inclusion of this fundamental property of human language for an adequate account of the developmental process in a cross-linguistic perspective.

Some specific questions are addressed to specialists, but my intention is also to provide a wider audience with an updated introduction to cross-linguistic functional approaches to language acquisition. Although developmental psycholinguistics has considerably expanded during the twentieth century, resulting in a striking proliferation of theories, of methodologies, and of results, this field is now in serious

Preface

need of fresh attempts to relate sentence and discourse determinants of acquisition across languages. Given this ambition, some deliberate choices were obviously necessary. Although the book is centrally concerned with the relation among forms and functions in language acquisition, not all facets of this relation are discussed. Some aspects of linguistic structure are only touched upon, even though they clearly have an impact on a number of linguistic phenomena investigated here. In addition, I purposefully focus on only one set of functional determinants, namely pragmatic principles governing information flow within cohesive discourse. I give reasons throughout to justify these choices, pointing out areas that deserve more research.

The empirical contribution of this book stems from a large project I began as a member of the Max-Planck Institute for Psycholinguistics in Nijmegen (1981–92). The collaboration of Jürgen Weissenborn (University of Potsdam) allowed the constitution of the German corpus. The Chinese corpus resulted from an exchange programme between Nijmegen and Peking, set up through the friendly and efficient labour of James Liang (University of Leiden) and the generous collaboration of Professors Xu and Ye (University of Peking). Subsequent financial support was provided by the Deutsche Forschungsgemeinschaft (Schwerpunkt ‘Spracherwerb’ 1988–94), by the Max-Planck Institute for Psycholinguistics (1994–5), and by an exchange programme (1995–97) jointly financed by the Max-Planck Gesellschaft in Germany and the Centre National de la Recherche Scientifique in France. This support allowed the project to expand considerably into several domains and theoretical directions, as well as to develop a rigorous coding method suited to large cross-linguistic databases, which is now used by many colleagues in several countries.

I have had three main collaborators throughout: James Liang, to whom I owe many insights about Chinese; Françoise Roland, who made invaluable contributions to the analyses; and Henriëtte Hendriks, who co-ordinated all phases of the research with me. Several assistants joined us for shorter periods of time, contributing to the lively and endless work of coding: Justine Cassell, Maghiel van Crevel, Xu Ding, Lydia Humblot, Birgit Kaiser, Li Ping, Brigitte Löbach, Ester Messing, and Caroline Rek. I am also indebted to Madeleine Léveillé for her patient and devoted technical help with programming and formatting. Much of my inspiration came from stimulating discussions with members of the Max-Planck Institute throughout the years: Melissa Bowerman, Werner Deutsch, Wolfgang Klein, Clive Perdue, and Jürgen Weissenborn. I am indebted to Ruth Berman and Dan Slobin for constant encouragement and readiness to listen. Especially warm thanks go to Wolfgang Klein for his continuous support throughout.

Maya Hickmann

Abbreviations and conventions

Whenever necessary, literal and free translations of examples are provided. Free translations are somewhat arbitrary with respect to categories not encoded in a given language (e.g. tense in Chinese). Whenever relevant, the following conventions are used in examples in addition to those explicitly glossed in the text (except in examples that are quoted from another source): (1) for number, gender, and case; (2) for word order; (3) for temporal-aspectual morphology; (4) additional conventions specific to Chinese.

- (1) SG singular
PL plural
FEM feminine
MASC masculine
NEU neuter
NOM nominative
ACC accusative
DAT dative
GEN genitive
- (2) SOV Subject-Object-Verb
SVO Subject-Verb-Object
SSVO left-dislocated subject with coreferential pronoun
- (3) **English**
PR present
PRPG present progressive
PRT preterite (past non-progressive)
PAPG past progressive
PRPERF present perfect
PAPF past perfective (pluperfect)
PG untensed progressive
French
PR *présent*
IMP *imparfait*

List of abbreviations and conventions

PC *passé composé*

PS *passé simple*

PQP *plus-que-parfait*

German

PR *Präsens*

PTT *Präteritum*

PFK *Perfekt*

PQP *Plusquamperfektum*

(4) **Chinese**

1 to 4 tones

3p third person pronoun

CL classifier, distinguished when necessary as SCL (specific classifier)
vs. GCL (general classifier)

IMP imperfective marker

POS possessive marker

PCL particles

Some Chinese particles are not translated (e.g. *le*, *ba3*, and *gei3* are simply indicated as LE, BA, and GEI).

1 *Introduction*

Two questions are central to the psycholinguistic study of first language acquisition. What structural and functional factors determine the acquisition process? What are universal and language-specific aspects of this process? This introductory chapter first presents the general theoretical thrust adopted in this book to address these two questions (Section 1.1). Particular attention is placed on the distinction between the forms and functions of language, the need to relate the sentence and discourse levels of linguistic organisation, and the importance of cross-linguistic comparisons for the study of language acquisition. I then indicate more specific developmental questions that arise in three domains of language to be examined thoroughly in this book: reference to entities, the expression of motion and location, and temporal organisation in discourse (Section 1.2). Finally, this chapter closes with an overview of the contents to be found in subsequent chapters (Section 1.3).

1.1 Acquiring language

First language acquisition is a complex process involving two facets: all children acquire the type of semiotic system that is characteristic of our species (human language), while acquiring the particular language that surrounds them (their native language). Providing an adequate account of both facets is perhaps the most difficult puzzle to be solved by theories of language acquisition. The central developmental argument put forth in this book is twofold and can be summarised as follows. First, regardless of their particular native language, children's main task is to relate the forms and functions of language (Section 1.1.1). Second, some aspects of this universal process are nonetheless variable across languages, because the properties of the particular systems with which children are confronted can influence the course of development (Section 1.1.2). I briefly introduce below each part of the argument, contrasting the functional view adopted here with other views that make very different assumptions.

1.1.1 *Acquiring the forms and functions of language*

A central claim of the functional approach adopted here is that children's main task during language acquisition is to map onto each other sets of linguistic units that have particular formal structural properties and the multiple functions that can be served by these units in communication. As a result, children acquire an intricate system of forms and functions, which implies multiple relations at different levels of linguistic organisation. At this point, it may be of some use to illustrate different views of language in order to highlight what underlying questions arise when we attempt to relate forms and functions. As will be shown, some approaches focus mostly on formal aspects of language, whereas others focus mostly on functional aspects, and little is yet known about how to relate these two aspects of language development. These different foci have resulted in a theoretical gap concerning the determinants of language acquisition and have raised methodological questions concerning adequate units of analysis. In particular, I illustrate in this chapter aspects of language that cannot be analysed exclusively on the basis of formal properties of the sentence level, requiring recourse to functional properties at the discourse level. Subsequent chapters will also discuss some formal correlates of functional principles of linguistic organisation and show how an adequate functional account requires a consideration of general and variable aspects of language structure.

1.1.1.1 *Forms vs. functions*

Throughout the book, I use the term *linguistic form* as a non-technical shorthand for different types of formal units in language. These units include the smallest building blocks of linguistic stuff at the phonological level (with which we will not be centrally concerned in this book), the unit of the clause (roughly encoding a proposition), the unit of the sentence (which may contain several clauses), different types of intermediary units constitutive of clauses and of sentences (e.g. verbal or nominal morphology, prepositions, particles, noun phrases, verb phrases, and so on), and larger discourse units that go beyond isolated sentences and involve a relation between utterances and their contexts. Depending on one's theoretical viewpoint, such units might be defined in different ways, each of which has consequences for our understanding of language and its development. In some theories, they might be defined strictly in formal structural terms, considered to be the essence of human language and to be available to children at birth. In other theories, the semantic and pragmatic properties of linguistic units are central, and they are viewed as providing a powerful mechanism for developmental change.

Consider some aspects of the acquisition of verbal morphology. As will be shown later on (Chapters 5 and 6), particular developmental patterns can be observed as

children gradually acquire various morphological markings, such as the English markings for third person (-s), past tense (-ed), or progressive aspect (-ing). Such patterns might include the presence or absence of particular markings and/or of different types of errors at particular points, which might lead to various conclusions concerning the acquisition process. The interpretation of the results might differ a great deal depending on one's approach to language. For example, one might view the emergence of these forms as exclusively reflecting grammatical knowledge, for example as showing children's discovery of finiteness, which provides evidence for subject-verb agreement and therefore for their reliance on the formal category Subject. Such a view leads to further predictions concerning co-occurrences between finiteness and other aspects of child language, for example the presence or absence of null elements within and across languages (see further discussions in Chapters 2 and 3). According to other views, however, the emergence of these forms reflects children's reliance on semantic and/or pragmatic categories, which must be related to other aspects of development: their developing ability to use linguistic devices to explicitly differentiate participants from non-participants in the speech situation, to mark the ongoing nature of events or their results, or to temporally relate denoted events to speech time or to other events that are denoted in discourse.

More generally, theories diverge with respect to what aspect of language is most fundamental. For example, Chomsky's (1981) theory of Universal Grammar views language as a structure defined by general and particular formal properties, regardless of whatever (system-external) functions it might serve. This structure is innate and as such it is therefore not 'acquired': developmental change is seen as resulting either from sheer maturation or from a number of factors, including the alleviation of constraints due to an immature cognitive system ('processing' or 'performance' constraints) and 'discovery procedures', whereby children determine the properties of the particular system that surrounds them. In contrast, functional theories view first language acquisition as a process whereby children learn linguistic devices as 'tools' to help reach particular communicative goals. That is, linguistic forms are not acquired 'for their own sake', so to speak, but because they serve crucial functions when we communicate with others. Such functions include the encoding of propositional content in our messages, such as the expression of semantic relations within sentences (who did what to whom, when and where). They also include relating our messages to the immediate linguistic and non-linguistic context of utterance, which allows propositional content to be constructed in cohesive discourse (e.g. as a function of what is mutually known, most presupposed, in focus) and social relations to be secured in the discourse situation (e.g. what is socially appropriate in relation to role relations among the interlocutors). All of these functions of language constitute a major driving force in development, providing a dynamic mechanism for why and how children acquire language. A number of recent models, including

the one to be proposed in this book, now attempt to provide explanations in which development is centrally determined by functional factors, while making room for complex innate predispositions and endogenous processes. Such views acknowledge the role of structural factors in determining some patterns of development that are characteristic of human language acquisition, as well as some patterns that are specific to the particular language to be learned.

1.1.1.2 *Sentences vs. discourse*

Related to the distinction between form and function is the existence of two levels of organisation in language: the sentence level and the discourse level. Theories diverge fundamentally with respect to which level they take to be most central. Correspondingly, some consider that the most fundamental basic unit of analysis is (maximally) the sentence, while others consider that the basic unit is discourse, requiring that we necessarily go beyond the sentence to include (minimally) an intrinsic relation between utterances and their context of use.¹ Implicit in this choice is a focus on different aspects of language, such as the syntactico-semantic properties of linguistic devices within the sentence or their pragmatic properties in discourse. Examples (1.1) to (1.8) illustrate these different theoretical foci. Within a first type of approach, the sentence is a necessary and sufficient unit of analysis to determine a number of crucial properties of language, such as role relations among noun phrases (hereafter NPs) and uses of reflexive pronouns. In the absence of context, it is possible to determine in (1.1) and (1.2) which NPs are subject (*John, he*) vs. object (*Peter, him*). It is also possible to specify possible and impossible coreference relations within sentences: the pronoun *him* in (1.3) and in (1.4), as well as the pronoun *he* in (1.7) cannot refer to John; the pronoun *himself* can only refer to John in (1.5) to (1.7) (and it is obligatory in these cases); the pronouns *he* and *himself* in (1.8) must denote the same referent, either John or some referent not identified in the sentence (see further details in Chapter 3).

- (1.1) John washed Peter.
- (1.2) He washed him.
- (1.3) John washed him.
- (1.4) Peter said that John washed him.
- (1.5) John washed himself.
- (1.6) Peter said that John washed himself.
- (1.7) He said that John washed himself.
- (1.8) John said that he washed himself.

This first type of approach, then, provides powerful principles accounting for various types of sentence-internal relations. However, it cannot account for many

other aspects, particularly those that depend on a relation between the sentence and context. Thus, it cannot account for why non-reflexive pronouns rather than nominal forms are used in (1.2) (*he, him*), in (1.3) (*him*), in (1.4) (*him*, when it does not refer to Peter), in (1.7) (*he*), and in (1.8) (*he*, when it does not refer to John). Furthermore, determining which particular entity is picked out depends on relations that are established within discourse between the pronouns and some previous form introducing the referents or on mutual knowledge established in other ways (e.g. because the referents are present in the immediate non-linguistic context or are otherwise familiar). More generally, with most of the sentences we produce, and regardless of whether they contain proper names (*Peter*), definite expressions (*the boy*), or pronouns (*he*), the sentence level of analysis cannot account for how the interlocutor is to retrieve the identity of the denoted referents in the context of utterance. As will be shown, these problems are pervasive in language, applying to other domains of language, such as the expression of time and space.

Such problems are at the heart of functional pragmatic approaches, which consider that the basic unit of analysis must go beyond the sentence and postulate that context-dependence is a fundamental inherent property of language. In this respect, context contributes to mutual knowledge, a complex notion that has been characterised in terms of a number of dimensions affecting the ‘accessibility’ of referents in the universe of discourse (whether their existence and identity are mutually known, whether they are attended to, salient or otherwise familiar from previously established background knowledge, etc.). Consider examples (1.9) to (1.13), in which sentences containing third person reflexive and non-reflexive pronouns are preceded by a context sentence. Although the context sentence is superfluous to specify why the reflexive *himself* is used in (1.9), it contributes in accounting for the uses vs. non-uses and interpretations of the non-reflexive pronouns *he, her, and him* in all examples (for further details, see Chapter 3). All other things being equal and in the absence of competing referents in the context, the clauses *he told him/her* would typically be interpreted as involving a subject pronoun *he* that refers to Peter and object pronouns *him* or *her* that refer to John or Mary, respectively. Several factors converge towards such a preferred interpretation: the fact that the two NPs *Peter* and *he* are both in subject role across successive clauses, making a coreference relation most likely to be established between them; gender markings, which exclude some coreference relations; the semantics of the main predicates, that is, the nature and relatedness of the verbs *reassure* and *say*; and the fact that *Peter* constitutes the topic of discourse. However, other interpretations are possible, particularly in relation to the context of this two-sentence universe in which the existence and identity of other referents are assumed. All the non-reflexive pronouns could also denote external referents and, indeed, some such referents must be involved in examples (1.12) (the referent of *her*) and (1.13) (the referent of *him*).

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- (1.9) Peter reassured John. He told him that he had washed himself.
- (1.10) Peter reassured Mary. He told her that he loved her.
- (1.11) Peter reassured John. He told him that he would not fire him.
- (1.12) Peter reassured John. He told him that he loved her.
- (1.13) Peter reassured Mary. He told her that he had not fired him.

In subsequent chapters I argue that both levels of linguistic organisation, the sentence and discourse, are necessary in understanding such phenomena and, more generally, in understanding the nature of language and the process of language acquisition. Our linguistic competence simultaneously requires knowledge of the syntactic and semantic properties of well-formed sentences and knowledge of the pragmatic properties of well-formed discourse. I furthermore argue that these two types of knowledge partially interact, casting some doubts on (formal or functional) theories that view them as entirely unrelated and/or that view one or the other aspect as exclusively criterial for an adequate account of our linguistic competence.

1.1.2 *Acquiring a particular language*

The second part of the argument to be put forth in this book concerns invariant vs. variable aspects of languages. Language acquisition is characterised by two types of processes: some that seem to be universal and others that vary from language to language (or across language families). Depending on the foci of particular theories, different types of universals have been postulated and different reasons invoked to explain the existence of such invariants across languages. At the same time, the existence of wide cross-linguistic variation suggests that language-specific factors may have an impact on language development (its rhythm, its course) and perhaps even on cognitive development itself. Indeed, such variation has recently been at the centre of some controversy concerning the relation between language and cognition, reviving a recurrent debate in the history of language-related disciplines, best known as stemming from Whorf's (1956) *hypothesis of linguistic relativity*.

1.1.2.1 *Universals*

The vast literature devoted to language universals (among others, see discussions in Comrie 1981; Croft 1990; Greenberg 1963) suggests the existence of different types of universals, which will recur in the discussions of subsequent chapters. In order to highlight theoretical contrasts, I briefly present universals as falling into two groups, *formal* and *functional* universals, despite the fact that this division could be somewhat misleading for two reasons: each group includes a variety of universals that have different theoretical implications, and the inter-relations among them raise some deeper controversial questions (see Chapters 2 and 3 for further discussion).

Formal universals correspond to invariant properties characterising the forms of necessary and possible rules of the grammar. Chomsky (1957, 1965, 1968) originally contrasted these universals to *substantive* universals that define the categories that are necessary and possible in human languages (e.g. nouns, noun phrases, subjects, etc.). Roughly, Chomsky's (1981) later version of his theory of Universal Grammar is built around the central idea that all linguistic systems share common formal properties, which are criterial in defining human language. These properties are organised in a structure that is both modular and innate. Children are endowed at birth with a pre-programmed system of rules and relations specific to language and therefore entirely distinct from other types of knowledge relevant to other domains of human behaviour. For example, the rules that are necessary to allow or prevent coreference relations between reflexive pronouns and other NPs, illustrated in examples (1.2) to (1.8) above, are assumed in this framework to be part of our knowledge of grammar, which is universal, innate, and independent of whatever knowledge might be necessary to account for form use as a function of presupposition and for the identification of denoted referents in relation to context.

Functional universals include at least three types of related but distinct universals: cognitive, semantic, and pragmatic universals. Despite wide differences in their nature and theoretical implications (see Chapter 2), they all directly reflect and/or are constrained by more general properties of human cognition and communication. Cognitive universals have been typically invoked to account not only for language development, but also for other aspects of child development. Thus, Piagetian theory postulates that children's cognitive development follows a universal sequence of stages, stemming from endogenous processes, leading them to continuously construct and reconstruct gradually more abstract representations during the course of their interaction with the world. According to this approach, the same cognitive mechanisms underlie all of child development, including children's reasoning capacities in problem-solving situations across domains, as well as their developing ability to use language in interpersonal interaction. For example, as will be shown in more detail (Chapters 5 and 6), Piagetian theory typically assumes that the acquisition of linguistic devices such as referring expressions, spatial prepositions, or temporal-aspectual morphology follows universal and language-independent cognitive stages, determining a variety of children's concepts (classes of entities, spatial relations, the temporal structure of situations), which underlie particular sequences in their uses and interpretations of these linguistic devices.

Such general cognitive universals must be distinguished from semantic universals, which have also been postulated to account specifically for language development. The distinction between cognitive and semantic universals is a delicate one, which has not always been properly made in developmental psychology, perhaps because its importance is most evident within a cross-linguistic perspective that goes

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beyond the facts of any one particular language. It was only during the second half of the twentieth century that such a perspective gradually imposed itself in the study of child language, becoming necessary in order to generalise or to invalidate claims about the universals of language acquisition. Within such a perspective, the distinction between cognitive and semantic universals becomes necessary if one's aim is to consider not all of children's conceptual capacities, but rather those that define the organisation of particular linguistic categories in one or another domain across languages. More generally, although language is frequently said to 'encode' the reality we perceive, it organises the flux of our perception into discrete and inter-related categories that form a system, thereby 'regimenting' this reality according to its own semiotic principles. Some general semantic properties may characterise language as a sign-system, perhaps reflecting universal aspects of human cognition. However, careful cross-linguistic comparison shows that seemingly identical categories may actually differ a great deal across languages and/or may overlap differently with other categories, resulting at best in a partial correspondence, rather than in a relation of one-to-one correspondence.

Earlier claims about the existence of some conceptual universals have been based on the study of only one language, with the illusion (or a priori assumption) that such universals were basic to all languages. As will be shown (Chapters 5 and 6), such claims have been recently questioned in several domains on the basis of cross-linguistic evidence. For example, although the organisation of the categories and structures that define the universe of spatial semantics (e.g. as reflected in the use of spatial prepositions or verbs of motion) might seem 'natural' in one language, they may not correspond to the prototype that is natural in another language. Similarly, although some aspects of the temporal structure of situations are encoded in all languages, some may be more or less important or salient depending on the particulars of a given language system, such as its morphological richness. Furthermore, the fact that some aspects of child language may be found in all languages need not reflect underlying language-independent universals of human cognition, but could rather entail a much more complex relation between universals of human cognition and of semantic systems across languages. As will be shown, an extreme version of this view is that the systemic organisation of language (and of particular languages) has an impact on how the cognitive system organises itself during child development. This view is compatible with a variety of developmental and/or linguistic theories. For example, the theory sketched by Vygotsky (1962) in developmental psychology views language as partially structuring human cognition, and the linguistic tradition represented by Whorf's (1956) hypothesis of linguistic relativity further postulates that each particular language shapes the world view of its speakers (see Chapter 2).

Finally, pragmatic universals concern properties of language as a tool for communication in interpersonal situations. This heterogeneous class of universals includes a wide range of diverse phenomena, such as the marking of subjectivity, of socio-cultural roles, or of information structure in discourse. These language properties all have in common that they are best suited for interpersonal interaction, both reflecting and being partly constitutive of our social communicative behaviour. In this respect, some basic common properties to be found across languages concern the ways in which linguistic structure itself encodes the different personal, temporal, and spatial components of the speech situation. Thus, all languages allow speakers to mark the roles of participants (first/second persons) vs. non-participants (third persons), to locate denoted events in time and space, to mark the temporal structure of these events, and to regulate information across utterances in cohesive discourse as a function of mutual knowledge and of communicative focus. This aspect of language structure is universal, despite the fact that very diverse means are available for these purposes across languages. Among such universals, those that are related to information structure in discourse are at the heart of this book and will be further illustrated throughout subsequent chapters.

1.1.2.2 Particulars

The existence of wide variations across languages has led to different accounts of how children come to acquire their particular native language. For example, as previously mentioned, Chomsky's (1981) theory of Universal Grammar postulates the existence of an innate universal structure, which either matures as children develop or is gradually uncovered by children through various discovery procedures. This theory further postulates the existence of innate *parameters* with different *settings*, along which languages differ, providing the main locus of children's learning during language acquisition. Being simultaneously equipped with a universal structure and with parameters at birth, children's task is to discover the particular settings that characterise the language that surrounds them. For example, languages provide different settings on the *null subject parameter*: some allow (and require in some contexts) null subjects in independent finite clauses, whereas others require overt subjects in the same contexts. In Spanish (1.14) and (1.15) the subject NP can only be formally identified on the basis of verbal morphology, but the English equivalent of (1.14) requires an overt subject (the pronoun *I* denoting the speaker or the pronouns *he/she* denoting a singular third person) and the English equivalent of (1.15) requires the use of a special non-referential (*expletive*) subject pronoun *it*. Much developmental evidence concerning children's uses of null elements has indeed been taken to support the theory of parameters, despite controversial issues

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concerning the precise nature of children's initial states and subsequent discovery procedures (see further discussions in Chapters 3 and 5).

- (1.14) Estóy comiendo una manzana. / Está comiendo una manzana.
(‘[I] am [1st p.] eating an apple.’ / ‘[S/he] is [3rd p.] eating an apple.’)
- (1.15) Está lloviendo.
(‘[It] is raining.’)

In contrast, the relativist view first put forth by Whorf (1956) postulates that fundamental differences across languages have an impact on how speakers conceptualise their surrounding reality. Over decades, this hypothesis of *linguistic relativity* has been largely rejected on the basis of various arguments, most of which have recently been shown to be based on misunderstandings and/or reductionistic interpretations of Whorf's original claim (e.g. Lucy 1992a, 1992b, 1996). Furthermore, recent research has extended this thesis to a variety of domains in the study of adult or child language (Berman and Slobin 1994; Bowerman and Levinson 2001; Gumperz and Levinson 1996; Nuyts and Pederson 1997). Depending on the particular version of the Whorfian view that is adopted, the thrust of this research need not be to show that speakers of different languages may or may not at all display certain types of concepts or reasoning. Rather, in some cases the evidence suggests that the different ways in which linguistic systems are organised lead speakers to ‘habitually’ attend to different aspects of the world that surrounds them, making some aspects more or less ‘salient’ in comparison to others and therefore more or less ‘accessible’ in their everyday behaviour. This impact of linguistic organisation on our cognitive system is most evident when we use language to engage in communicative and/or reflexive verbal action, but it may also have a broader impact on non-verbal behaviour and on our underlying cognitive organisation more generally (Gumperz and Levinson 1996; Lucy 1992a, 1992b).

Further extensions of this claim have begun to explore not only semantic and grammatical categories such as those discussed by Whorf, but also pragmatic ones that are at the centre of functional theories (Gumperz and Levinson 1996). Roughly, the aim here is to examine how variations in form–function mappings across languages might have an impact on how speakers engage in various activities involving discourse. In line with other studies (e.g. Berman and Slobin 1994), the research presented later in this book (in Chapters 8 to 10) illustrates some aspects of this view, focusing on the impact of cross-linguistic variation on narrative organisation. At the centre of this research is the idea that the particular devices available to speakers for the construction of cohesive discourse vary along a variety of dimensions, presenting children and adults with different problems to solve. For example, as will be shown, these devices might be obligatory vs. optional, local vs. global, more or less rich, symmetric, or transparent, intricately tied or not with other subsystems, and

functionally simple vs. complex. More generally, such variations reflect different mappings among forms, on the one hand, and syntactic, semantic, and/or pragmatic functions, on the other hand.

1.2 Domains of child language

Some examples below illustrate the consequences of the general distinctions and approaches described above for more specific questions within each of the three domains to be explored by subsequent chapters: reference to entities (Section 1.2.1), space (Section 1.2.2), and time (Section 1.2.3). Within each of these domains, I first summarise some major distinctions encoded by all linguistic systems within the sentence and in discourse, then describe some differences in how these distinctions are marked across languages, and finally indicate some of the specific developmental questions that must be addressed in the light of these observations.

1.2.1 Denoting entities

1.2.1.1 Universals

All languages provide means of marking both grammatical relations within the sentence and pragmatic distinctions in discourse. For example, at the sentence level, subjecthood is marked in English by some morphological properties of pronouns (e.g. case distinctions in *he/him, she/her, they/them*), by the position of noun phrases (preverbal and/or sentence-initial subjects), and by subject-verb agreement through verbal and nominal morphology (e.g. *The dog/it comes* vs. *The dogs/they come*). At the discourse level, the English forms in (1.16) show a continuum ranging from the least to the most presupposing types of NPs. Indefinite determiners introduce referents that are not known to the interlocutor, thereby marking *new* information, while definite ones and pronouns denote mutually known entities, thereby marking *given information* (e.g. Chafe 1974, 1976, 1979; Halliday and Hasan 1976). As shown in (1.17), uses of presupposing forms involve a number of factors, such as the presence of competing referents in the universe of discourse, requiring the use of definite nominals to disambiguate reference before pronouns or zero forms can be used.

(1.16) indefinite nominal < definite nominal < overt pronoun < zero pronoun

(1.17) I bought an orange and an apple. I ate the orange, but the apple was rotten and (0) stunk, so I threw it away.

In addition, clause structure also contributes to the marking of information status. In particular, many languages follow a general principle, according to which new information is placed towards the end of the utterance by means of various structures.

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Thus, in English, in addition to a structure such as (1.18), other structures allow the placement of indefinite referent introductions after the verb, for example existentials (1.19) or subject-verb inversions (1.20).

(1.18) A man was standing behind the door.

(1.19) There was a man behind the door.

(1.20) Behind the door stood a man.

1.2.1.2 Variability

Although all languages provide markings of sentence-internal and discourse distinctions, they vary in many ways, as briefly illustrated here (see further discussion in Chapter 3). Depending on the language, the marking of grammatical relations may rely to different degrees on word order or on morphology. In the absence of morphology, a language such as Chinese relies more on word order than a language such as Italian, which presents a rich morphology. Furthermore, nominal determiners might serve a number of functions, such as carrying morphological distinctions, counting (e.g. French *une pomme* ‘a/one apple’), marking non-specific reference (*I want a dog*) or labelling referents (*This is a dog*). Finally, languages rely differentially on various markings to distinguish newness from givenness. The opposition between indefinite and definite nominal determiners is obligatory in English to distinguish newness from givenness, while clause structure is entirely optional. Romance languages are similar to English in this respect, although they partially grammaticalise the given/new distinction, since all clitic (unstressed) pronouns must be preverbal (e.g. (1.21)), whereas no such rule applies to nominals (e.g. (1.22)). In sharp contrast to these languages, nominal determiners are entirely optional in other languages. For example, although Chinese determiners can be used to differentiate newness (numerals) from givenness (demonstratives), these devices are optional, while position in the clause is obligatory to mark information status (new information must be postverbal).

(1.21) Il l’a mangé.

(‘He_[Sub] him_[Obj] ate’ → ‘He ate him.’)

(1.22) Le chat a mangé le rat.

(‘The cat ate the rat.’)

1.2.1.3 Developmental perspective

In summary, then, all languages provide devices to simultaneously mark sentence-internal and discourse-internal distinctions, both of which are necessary for speakers to denote entities. However, the relative importance and functional complexity of one or the other type of device varies across languages. Further discussion (Chapter 3) will show that the relative contribution of different devices

to the marking of information status must be examined within a cross-linguistic perspective in light of all of the functions they serve in a given language, including their (syntactic and semantic) functions within the sentence and their discourse functions in organising information flow. As will also be shown (Chapter 5), studies focusing on sentence comprehension across languages suggest that markings present different degrees of difficulty to children (e.g. Ammon and Slobin 1979) and that their use depends on their relative availability and reliability (MacWhinney and Bates 1989). Little is known, however, about how discourse and sentence factors might jointly affect uses of devices within a cross-linguistic perspective. From a developmental point of view, some of the research presented in this book examines whether several properties of the relevant devices affect development, such as their local vs. global nature, their optional vs. obligatory nature, and their functional complexity. One of the main hypotheses examined in Chapter 8 is that children's reliance on different devices when denoting entities is related to both the formal and functional properties of their language.

1.2.2 *Space in language*

1.2.2.1 *Universals*

A number of phenomena in language are related to the expression of motion and location. Examples (1.23) to (1.25) illustrate two basic distinctions encoded by all languages in this domain. First, (1.23) involves a static situation, while (1.24) and (1.25) involve dynamic ones. Second, both (1.23) and (1.24) involve a general location which situates a referent (the baby in the kitchen), whereas (1.25) implies a change of location (from outside to inside).

(1.23) The baby is sitting in the kitchen.

(1.24) The baby is running in the kitchen.

(1.25) The baby is running into the kitchen.

The denotation of entities in such utterances is directly related to the marking of information status. More generally, the expression of motion and location requires the *linearisation* of space in discourse (Levelt 1981), that is, the organisation of spatial information into a sequence of successive utterances. Among other problems to be solved in this process is the management of presupposition. For example, the speaker must provide some minimal *spatial anchoring* enabling the interlocutor to reconstruct the space that is represented in discourse, including locations and location changes that may be implied across utterances. As illustrated in (1.26), once locations have been introduced in the universe of discourse, they become accessible and can serve as spatial anchors for further clauses in discourse. Consequently, if some relevant conditions are met, speakers can presuppose the identity of the

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relevant referents, using pronouns, omitting to mention them altogether and/or relying on world knowledge.

(1.26) Watch out! The baby is in the kitchen and it's running.

1.2.2.2 Variability

Languages present great variations in the particular ways in which they mark general universal distinctions such as the ones described above. Variations include first the particular systems of devices provided from language to language. For example, whereas some languages express spatial relations by means of prepositions, others do so by means of postpositions (e.g. Turkish). Some languages provide case markings to distinguish general locations from changes of location (e.g. the German dative and accusative case, respectively). Languages such as English or German provide spatial particles (e.g. English *up/down, away, back*), which do not exist in other languages (such as Romance languages). Second, languages partition in different ways the semantic universe of spatial relations. Thus, prepositions that are seemingly similar across languages need not encompass the same set of spatial relations, for example everything that can be expressed by English *on* need not or cannot be expressed by French *sur*.

Yet a third type of cross-linguistic variation concerns the ways in which languages organise different types of spatial information across various elements in the clause. This type of variation involves the structure of the entire clause as a result of a relative reliance on grammatical vs. lexical processes. In this respect, Talmy (1975, 1983, 1985, 2000) distinguishes several language families depending on how they express motion events, among which the following two will be relevant in subsequent chapters. *Satellite-framed* languages, which include Germanic languages such as English or German, encode the manner of motion in the verb and information concerning the path of motion in verbal satellites such as prepositions or particles. In contrast, *verb-framed* languages, which include Romance languages such as French or Spanish, express the path of motion in the verb, only expressing manner peripherally, if at all. This difference is illustrated in the French equivalent (1.27) of English (1.25) above. As shown by the literal translations below, it is the main verb (*entrer* 'to enter') which expresses the change of location.

(1.27) Le bébé entre dans la cuisine (en courant).

[Lit.: 'The baby enters in the kitchen (by running).']

1.2.2.3 Developmental perspective

In summary, despite the universals that characterise this domain, there are wide variations in how languages express motion and location. Recent cross-linguistic research (discussed in Chapter 6) shows different developmental patterns,

which have led to a revival of the linguistic relativity hypothesis, according to which language-specific factors affect development. Such results are observed with respect to both static spatial relations or dynamic motion events, in comprehension or in production, at the sentence or at the discourse level, during the emergence of language or during later phases of development. As will be suggested (Chapter 11), other more wide-ranging cross-linguistic differences in child development may be related to the variations that can be observed in this domain. As will be shown, however, more cross-linguistic research is still necessary to determine the relative contribution of sentence and discourse factors in determining the developmental process. Relevant evidence will be presented (Chapter 9) on the basis of children's narrative productions across several languages.

1.2.3 Time in language

1.2.3.1 Universals

Time in language involves two tightly related but distinct types of markings: temporal and aspectual ones. The linguistic category of *tense* typically relates the time of a denoted situation to the time of the immediate speech situation, although other types of uses are also possible (for more details see Chapter 3). Thus, example (1.28) presents an event as having taken place at some point situated before the immediate speech time, whereas example (1.29) presents an event as occurring during speech time.

(1.28) John ate an apple.

(1.29) John is eating an apple.

The related category of *aspect* makes a universal distinction between *perfective* vs. *imperfective* aspect. As will be shown subsequently (Chapter 3), these aspect markings are tightly related to the semantic nature of predicates, such as their *resultativity*, which determine some interpretations of verbal inflections and their co-occurrences with other temporal-aspectual devices. In addition, in all languages they make a central contribution to the distinction between the *foreground* and *background* of discourse (e.g. Hopper 1979a, 1979b, 1982). Roughly, the foreground corresponds to the chronologically ordered events that make up the main plot line of a narrative, while the background corresponds to more secondary situations that surround this foreground. For example, (1.30) presents Mary's arrival in the foreground as a point that occurs during the interval of John's eating in the background. In contrast, in (1.31), Mary's arrival would typically be interpreted as a point that occurs after John has finished eating his apple, both events being foregrounded.

(1.30) John was eating an apple. Mary came in.

(1.31) John ate an apple. Mary came in.

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1.2.3.2 Variability

Although some temporal and aspectual oppositions are universal, wide cross-linguistic variations exist in the particular systems of devices available to mark them (e.g. Comrie 1976, 1985; Dahl 1985; Smith 1983, 1986, 1991). For example, whereas English provides an imperfective progressive (-ing) with all tenses (*he is/was/will be running*, etc.), French provides aspectual oppositions only in the past (e.g. *il a couru* ‘he ran/has run’ vs. *il courait* ‘he was running’), neutralising aspect in the present (*il court* ‘he runs/is running’), despite optional periphrastic constructions explicitly marking the progressive (*il est en train de courir* ‘he is in the course of running’). Furthermore, a language such as Chinese has practically no morphology. As a result, it provides no grammaticalised tense forms, optionally locating the time of events by means of adverbials and marking aspect by means of particles or adverbials (e.g. perfective particle *le*, imperfective particle *zhe*, imperfective adverbial *zai4*). In addition, some properties of Chinese are related to its agglutinative nature, such as complex verbal forms, often called *resultative verb constructions*, which involve several verbs to express simultaneously different information components (e.g. *pao3-guo4-qu4* ‘run-cross-go’).

1.2.3.3 Developmental perspective

From a developmental point of view, some hypotheses have been put forth according to which children’s acquisition of verbal morphology reflects the existence of universal grammatical categories such as subjecthood (Chapter 5). According to other hypotheses, acquisition is determined by universal semantic dimensions such as resultativity, which give rise to similar patterns across languages (Chapter 6). In particular, some results suggest that children’s uses of verbal morphology is determined by universal situation types, leading them to mark at first only aspect and not tense. Such findings have led some to put forth the *defective tense hypothesis*, according to which children should associate particular markings with particular event types, because their cognitive immaturity leads them to focus on the immediately perceptible results of events. However, two types of evidence go against such hypotheses. The first type shows that the predicted patterns simply do not hold in some languages, casting some doubts on the universal impact attributed to grammatical or semantic categories. The second shows evidence for other types of determinants, not taken into account by the hypothesis, particularly functional factors, such as the marking of various distinctions in interpersonal interaction and the grounding of information in discourse. Although some research has begun to address such questions, little is known about how sentence and discourse factors might jointly determine the acquisition of temporal-aspectual devices by children within a cross-linguistic perspective. The research presented subsequently (in Chapter 10)

will address both of these questions, examining the relative impact of semantic and discourse determinants on the acquisition of temporal-aspectual markings across languages.

1.3 Overview of contents in subsequent chapters

The remainder of the book is divided into two parts. In the first part, Chapter 2 compares different approaches to language acquisition with respect to a number of controversial issues, further showing how functional approaches account for the regulation of personal, spatial, and temporal information in discourse. Chapter 3 then discusses some general similarities and differences across linguistic systems, which are shown to be relevant for our understanding of language. Chapter 4 examines studies of children's discourse, including their early conversational skills, their increasing ability to decontextualise information in communication, and their reliance on cognitive *macrostructures* to represent event sequences. Chapter 5 reviews studies of children's comprehension and production of referring expressions, which present strikingly divergent claims about the acquisition of the nominal and pronominal system. The evidence suggests that discourse-internal functions are a late development in comparison to other uses, but little is still known about children's discourse-internal uses of clause structure across languages. Chapter 6 discusses the acquisition of spatial and temporal-aspectual devices. In both domains, studies have invoked either language-independent factors or language-specific ones to account for recurrent and variable developmental patterns. Some evidence suggests that children have difficulties with the linear organisation of spatio-temporal information and that typological factors influence their discourse organisation.

The second part of the book first pursues this literature review in Chapter 7, which focuses on pervasive methodological problems in the study of language acquisition. The remainder of this chapter describes the design of the study presented in subsequent chapters, which examines the narrative productions of children and adults in four languages (English, German, French, and Chinese) in order to address some of the unanswered questions previously raised. Chapter 8 examines how animate characters are introduced and mentioned subsequently in the narratives. It is shown that the relative functional complexity of these devices, which contribute to two levels of organisation (the sentence and discourse), accounts for the cross-linguistic similarities and differences that can be observed in the acquisition process. Chapter 9 examines the expression of motion and location within and across utterances. It is concluded that sentence factors (grammaticalisation or lexicalisation) and discourse factors (spatial anchoring and marking the status of spatial information) both affect children's uses of spatial devices and interact during acquisition, resulting in invariant as well as language-specific developmental patterns. Chapter 10 examines the

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uses of temporal-aspectual devices in the narratives. The evidence partly supports the ‘defective tense hypothesis’, but also shows the impact of language-specific and discourse factors on uses of tense/aspect markings.

Chapter 11 synthesises the results, comparing them with those of previous studies. The discussion highlights three main recurrent points across domains. First, discourse-internal functions develop only gradually in all languages, allowing children to organise discourse without reliance on non-linguistic context. Second, the evidence shows the impact of – and interactions among – two main types of determinants: syntactic and semantic factors affecting how children learn to represent events within well-formed utterances, and functional factors affecting how they learn to regulate information flow across these utterances within well-formed discourse. Third, only some aspects of the developmental process can be generalised to all languages, while others are clearly language-specific. In each domain, cross-linguistic similarities and differences are shown to either complement or invalidate the conclusions of previous studies. Finally, more general conclusions are drawn in the context of available models of language acquisition. It is argued that the simultaneous contribution of linguistic devices to the organisation of the sentence and of discourse is a crucial key to understanding language acquisition. This type of multifunctionality is universal, even though cross-linguistic variations result from the different ways in which languages map sentence and discourse functions onto forms. An adequate model of acquisition therefore requires an account of how the sentence and discourse levels of organisation are related within a cross-linguistic perspective. Concluding remarks make some suggestions for future lines of research that still need to be further explored.

I Available theories and data

2 *Theoretical issues*

The present chapter provides theoretical background by spelling out some of the major current debates that oppose different approaches in developmental psycholinguistics. I first summarise a number of main controversial issues that are currently debated in the study of language acquisition (Section 2.1). I then focus on some fundamental properties of language within functional approaches to language (Section 2.2), including multifunctionality and context-dependence, as well as the existence of two levels of linguistic organisation, the sentence and discourse. Finally, I examine general universal principles of discourse organisation that underlie how speakers regulate the flow of personal, spatial, and temporal information across utterances in cohesive discourse (Section 2.3). Subsequent chapters show how these principles constitute fundamental aspects of our linguistic competence that must be mastered by children and that affect their acquisition of linguistic devices across domains.

2.1 Some main theoretical issues in theories of language acquisition

I briefly summarise here five major recurrent issues that have been controversial among different approaches to language acquisition: claims about the innateness of language vs. its gradual construction by the child (Section 2.1.1); the relative importance attributed to form and structure vs. function and context-dependence as criterial properties of language (Section 2.1.2); the related focus on competence vs. performance (Section 2.1.3); the relative continuity vs. discontinuity in the course of acquisition (2.1.4); different views of the relation between language and cognition during development, varying in terms of whether and how language may have a structuring role on thought (Section 2.1.5). Although I highlight these issues by sharply contrasting views for ease of presentation, it should be clear that at least some of these controversies might be best viewed as reflecting dimensions or continua, along which theories can be placed as a function of their primary focus.

2.1.1 Nativistic and constructivistic approaches

The first debate, and perhaps the most fundamental one, concerns the relative role of innate knowledge vs. gradual learning mechanisms in our account

of language development. I contrast here ‘nativistic’ vs. ‘constructivistic’ views, focusing on three points around which these views differ. First, these different positions have focused on different aspects of the timing of acquisition, choosing to highlight either precocious knowledge or gradual and/or late developments. Second, and most importantly, these different viewpoints make different assumptions about children’s biological endowment at birth, postulating different degrees of initial knowledge to account for ontogenesis. Finally, the answers proposed to this second question have implications for the ways in which models go about accounting for observed developmental changes, postulating very different mechanisms for ontogenetic development.

2.1.1.1 Timing

With respect to timing in acquisition, some approaches assume that language is discovered instantaneously or extremely early by the child, whereas others assume that it is acquired during a long and gradual process, resulting in rather late developments. Innateness has been typically invoked in the face of the striking speed and systematicity with which all children seem to acquire their native language. Regardless of the wide diversity of environmental factors surrounding them, and despite an imperfect and fragmentary input, children seem quickly to display knowledge of the rules of grammar, allowing them to produce and comprehend an apparently infinite number of well-formed sentences. This phenomenon has led some to postulate that language acquisition is determined by biological factors specific to our species and to predict strikingly early developments. Researchers in this tradition have indeed pointed out surprisingly precocious language abilities from the initial phase characterised by the emergence of productive speech (at around eighteen months) to a later phase (typically said to occur before five years), where children have been assumed to master language, particularly its grammatical system. Some recent research (e.g. Hirsh-Pasek and Golinkoff 1996) has also aimed at showing that yet more precocious recognition or comprehension processes occur before the initial phase of emergence.

In contrast, gradual learning processes have been typically invoked in the face of two types of phenomena. First, some striking regularities can be observed during the process of language acquisition, resulting in recurrent developmental sequences. As shown below, such regularities have been attributed to various factors, either endogenous cognitive factors or exogenous social factors related to interpersonal interaction. Second, some differences can also be observed in these sequences across languages, which have been attributed to the impact of language-specific or culture-specific factors. Indeed, some researchers within the constructivistic approach have argued that many developments occur after five years (until at least twelve years),

including the mastery of syntactic, semantic, and pragmatic aspects of language necessary for the organisation of discourse units that go beyond the sentence. These late developments have been typically attributed to external 'performance factors' within the first approach, such as factors linked to contextual constraints or to the limits of the child's developing cognitive system, which are claimed to be central to the child's linguistic competence within the second approach. I return to this point below.

2.1.1.2 Biological endowment in ontogenesis

A fundamental point of contrast among theories of language acquisition concerns the type of biological endowment they attribute to human infants at birth. Although early versions of this question asked whether some endowment should be acknowledged at all, this controversy has evolved, revolving now around the nature and specificity of this endowment. My purpose here is merely to point out some aspects of this complex question, which is central to several types of accounts concerning phylogenetic and ontogenetic development. On a phylogenetic scale, various debates concern the types of capacities that might be either entirely specific to our species or only found in much less developed forms in other species of the animal world. Among the capacities that have been claimed to be human-specific are abstract conceptual organisation and logico-mathematical reasoning, some forms of symbolic behaviour, the capacity for self-reflexive behaviour and more generally for higher forms of consciousness, complex interpersonal communication and social organisation, and special types of perceptual organisation (see Langer 2001 for some counter-arguments).

One aspect of this issue is the initial equipment that has been attributed to children at birth. Two extreme positions can be contrasted for the sake of presentation: *nativistic* and *behaviourist* views. At one extreme, nativistic models postulate that infants are equipped at birth with a brain that is entirely pre-programmed for the structure of human language. At the other extreme, behaviourist models postulate that the infant is at first a *tabula rasa* that is not endowed with any pre-programmed capacities. Each of these theoretical poles comprises weak and strong versions, depending on the extent to which they allow for qualifications to their main assumptions. In addition, other types of positions have also been proposed between these two poles, varying with respect to other dimensions. Among them, at least two major orientations can be distinguished: *cognitivist* and *interactionist* models. The former type of model postulates a general cognitive capacity allowing the infant to construct a gradually more complex representation of the world, while the latter type equips it with an initial capacity for social interaction, allowing it to participate in gradually more complex forms of communication. In both cases, language plays an important role

in providing a powerful symbolic system for the child's epistemological system or for its interpersonal interactions, both of which might be specific to the human species. However, as will be shown, theories vary here a great deal with respect to how special or crucial they consider the role of language to be and/or in whether or not they view particular aspects of children's cognitive or communicative capacities as being pre-programmed and species-specific.

The issue of innateness has come back to the forefront of various cognitive sciences, given a great number of accumulated results concerning the capacities of young infants in various domains, which have been uncovered since the middle of the twentieth century.¹ In fact, infancy has become the locus of much theorising in the light of findings suggesting that, shortly after birth, children display much complex perceptual and cognitive knowledge of the physical world surrounding them, which was not at all predicted to exist so early in the child's life by previous theories. These precocious capacities include the perceptual discrimination and the categorisation of entities in a number of domains, the discrimination of spatially relevant relations, the concept of object permanence, notions of gravity, of causality, of temporality, and so on. The discovery of such capacities has led to two types of interpretations. According to the first interpretation, such complex knowledge structures are innately available and used immediately after birth. According to the second interpretation, such knowledge structures are the result of an active process of perceptual activity, which takes place very quickly after birth and allows the child to apprehend and construct the world.

2.1.1.3 Mechanisms

The extent to which innateness is or is not postulated to account for language acquisition in the form of pre-programmed equipment has consequences for the types of mechanisms that are assumed to underlie developmental change in child language after birth. The nativistic position postulates either no learning process at all or a relatively limited set of deductive processes that are assumed to be necessary and sufficient to account for the discovery of (innately available) structural properties of language. The most extreme nativistic positions view changes in child language as directly reflecting a process of physiological maturation. Less extreme views postulate that, given their biological endowment, which provides children with all universal properties of linguistic structure, children must nonetheless make some inferences on the basis of the linguistic input that surrounds them, particularly in order to discover the particular properties that characterise their native language.

In sharp contrast, the behaviourist position, at least in its (now somewhat outdated) extreme form, postulates that children must construct all of language, since they are not endowed with any equipment whatsoever at birth. This construction

process is seen as involving gradually more complex associations between stimuli and responses as the child interacts with its environment. Different constructivistic views postulate some innate ‘predispositions’ on the part of the infant to learn the rules of language and/or of other behaviours in other domains. These intermediary positions vary with respect to the learning mechanisms they postulate, partly as a function of the type of initial equipment they attribute to the infant. Cognitivist models see language development as the consequence of a more general cognitive development, which is itself determined by biologically pre-programmed endogenous processes and underlies all of ontogenetic development across domains of knowledge. Interactionist models see social interaction as the most important source of learning mechanisms underlying all of child development, including language, cognitive, and/or social development. According to this position, developmental processes stem from an external social source, resulting from a process whereby interpersonal patterns are internalised.

2.1.2 Criterial properties of language

The second important debate among theories of language acquisition concerns the fundamental nature of human language. As noted in Chapter 1, theories diverge with respect to which specific properties of human language should be considered as criterial in differentiating our linguistic system from the communication systems of other species. For the sake of presentation, I briefly and somewhat brutally sketch a contrast between structural and functional approaches to language, leaving aside details for a later discussion below (Section 2.2 below, as well as Chapter 3).

2.1.2.1 Structural approaches

Structural approaches, best represented by Chomsky’s (1981) theory of Universal Grammar, focus on the syntactic structure of language. The general aim of these approaches is to account for our linguistic competence in terms of general and specific properties of grammar. In its original formulation, the aim of Chomsky’s theory (1957, 1965, 1968) was to define a finite system of components and rules that could generate an infinite set of grammatical sentences (and no ungrammatical ones). Central components of our linguistic knowledge included the capacity to judge grammaticality, to establish relations of equivalence between synonymous sentences, or to apply grammatical rules recursively. From a developmental point of view, the logical problem of *learnability* has been at the centre of this type of approach. Roughly, the theory puts forward innateness as a solution to this developmental problem, which can be formulated as follows (also see Saleemi 1992): how can we account for children’s grammatical competence, given that it seems to

be manifest quite early, that children cannot learn an infinite corpus of grammatical sentences, and that they are not provided with sufficient evidence in the input that would enable them to determine the properties of linguistic structure? Available evidence that might help children discover their language could be of two types, depending on whether it provides them with *positive* or *negative* feedback. Typical examples of positive evidence are corrections provided by adults when children make errors, showing them what the correct grammatical forms should be. However, other forms of positive evidence have been proposed, including expansions of incomplete segments or other types of reformulations providing surrounding structures (Gallaway and Richards 1994; Harris 1992). Although such adult interventions have been shown to occur, structuralists argue that they are neither necessary for language acquisition nor frequent and systematic enough to provide sufficient evidence for a successful learning mechanism. Negative evidence could take the form of ungrammatical sentences, providing children with examples of what is not allowed by the grammar. This type of evidence is at best rare in the input heard by the child. Furthermore, even if it were frequent, it could not constitute sufficient evidence for relevant linguistic properties, since it would not provide the child with the criterial information concerning the precise nature of the error, except if it took the form of metalinguistic statements (hardly likely to be efficient at the youngest age). This general question has led to several versions of innate theories in which knowledge of the basic grammatical structure of human language is present at birth. In such theories, and despite variations across them, this type of knowledge is presumed to be universal and species-specific, notwithstanding some cross-linguistic variations accounted for in other ways, particularly by means of *parameters* (see Chapter 3).

2.1.2.2 Functional approaches

Functional approaches conceive of language as a tool for communication. The study of language, then, consists of determining how linguistic devices serve as means for particular types of goals in particular types of contexts. Two properties are fundamental to all functional approaches, notwithstanding large variations across them: multifunctionality and context-dependence. Multifunctionality is linked to the fact that language is seen as having two broad functions, a representational function and a communicative function, which make it into a powerful semiotic system, simultaneously serving to represent propositional information and to regulate social interaction. Furthermore, language is intrinsically linked to its context of use. In this respect, the structure of all languages directly encodes context-dependence by providing devices that anchor speech to its context of utterances, indicating the personal, temporal, and spatial parameters of the speech situation. Clearly, the focus on these properties implies that the particular linguistic

phenomena that are of most interest to functionalists only partially overlap with those that are of most interest to structuralists. Functionalists are concerned with numerous and varied phenomena, some of which are considered by structuralists to be simply outside of the scope of 'grammar' per se and therefore outside of the scope of linguistic theory. One aspect of the debate is therefore to determine what should or should not be of concern in a theory that aims at accounting for the universal properties that are specific to human language. Another aspect is to confront these two approaches with respect to a subset of grammatical phenomena that are at the core of both of them (although for different reasons). Examples will be provided below when we discuss different approaches to phenomena such as pronominalisation, spatial semantics, or temporal-aspectual markings.

2.1.3 *Structure vs. process, competence vs. performance*

Tightly related to this differential focus on various properties of language is the relative importance attributed by different theories to two further aspects of language and of language behaviour. First, some mainly focus on the properties of linguistic structure, as these properties might be established at a given point in time, while others are concerned with the processes of linguistic change whereby this structure comes about historically or during ontogenesis. Second, theories vary in whether they focus on speakers' linguistic *competence*, which is characterised in terms of their abstract knowledge of grammar, vs. a variety of *performance* factors that might influence their use of language in particular contexts.

2.1.3.1 *Structure and process*

In structural approaches, language is seen as a global and self-sufficient structure of interrelated elements and rules. The system-internal properties of this structure are assessed from a synchronic perspective, which examines language (language-in-general or particular languages) as it stands at a given point in time. With few exceptions (e.g. Lightfoot 1991), this type of analysis is typically carried out independently of the previous or future states exhibited by the linguistic system, as well as independently of factors that exist outside of the system and that might determine its nature at the particular point chosen for analysis. In contrast, diachronic analyses focus on language change and on the reasons for this change, invoking both system-internal properties of language and system-external (cognitive, socio-cultural) factors that might exert pressure on the system and thereby motivate change. In this second view, language is seen as a dynamic entity, which is always changing through time, and it is the process of change that explains the very nature of the system.

These different foci can be observed if we consider how different theories address questions related to language acquisition. As noted above, most nativistic models place heavy emphasis on the grammatical structure of language, which is viewed as being biologically pre-programmed in the child. This characterisation applies especially to the most extreme nativistic models, which postulate that language acquisition is entirely determined by physiological maturation. However, it also underlies other less extreme nativistic views, even though they make some room for developmental mechanisms, such as additional inferences allowing the child to discover the structure of language. Yet other proposals (Pinker 1979, 1984, 1989) focus on the structure of child language, although some of these models differ from nativistic models in two major ways. First, they do not define this structure exclusively in syntactic terms, but rather as a bundle of intricately related semantic and syntactic properties. Second, some do not view this structure as being pre-programmed from the very beginning, but rather as resulting from a process of construction on the part of the child, who is seen as being ‘bootstrapped’ by syntactico-semantic language properties during the course of development. Finally, a third type of model, which is more functionally inclined, focuses on the process of language development, invoking a variety of factors and types of knowledge to account for the course of this development. Among these factors are numerous socio-cultural and/or discourse pragmatic factors, not considered to be part of the system in structural approaches, and viewed by functional approaches as centrally determining how child language emerges and evolves (Bates 1976; Bates and MacWhinney 1982; MacWhinney and Bates 1989; Karmiloff-Smith 1979, 1985, 1987, 1992). This third view is clearly process-oriented and it further differs from the other views described above in that it is centrally concerned (rather than at best peripherally) with factors determining how language is used in relation to context.

2.1.3.2 Competence and performance

Since Chomsky’s (1957, 1965, 1968) original formulation of Universal Grammar, studies of language or language development have often made a distinction between two aspects of speakers’ linguistic behaviour: their *competence* and their *performance*. Grammatical knowledge constitutes the stuff of their linguistic competence, which is brought to bear on any occasion of language use. Such a view applies to a number of models, regardless of whether they view this competence as being available at birth or constructed by the child over time. Performance factors which might influence language use are all considered to be external to this basic competence, such as various difficulties linked to young children’s immature cognitive system or pragmatic factors linked to the functions of linguistic devices in particular contexts of use. In contrast to such a view, functional developmental models

(e.g. Bates and MacWhinney 1982) see performance factors as central to linguistic behaviour and to language acquisition, rejecting to different degrees the distinction between competence and performance, and considering that linguistic competence is but the result of combined performance factors that drive development.

Incidentally, this differential focus on structure vs. process and/or on competence vs. performance in various accounts of language and of language behaviour also constitutes a major point of disagreement among theories of human cognition. This point will be relevant below, when we consider different views of the relation between language and cognition (Section 2.1.5). Some theories of cognitive development, such as Piaget's, place most of their emphasis on the structural properties of rational thought, viewing these properties exclusively in terms of a global logico-mathematical structure, which evolves in successive stages. In contrast, some views adopt a process-based approach to account for change in children's cognitive and language development, postulating that similar developmental processes underlie parallel recurrent phases in child language and in other behavioural domains (e.g. Karmiloff-Smith 1984, 1987, 1992). More generally, this second type of approach differs fundamentally from Piaget's in that it focuses primarily on cognitive processes in relation to the contexts in which they occur, rather than on the abstract structure of human cognition. The most explicit example of this second approach can be found in other traditions of psychology, such as the one that gave rise to Vygotsky's theory of child development (Vygotsky 1962; see discussions in Wertsch 1981, 1985, 1991). This approach puts forth a larger theory of human action, in which any action, including language use for communication or reasoning in problem-solving situations, is considered to be inherently related to function and context.

2.1.4 Continuity and discontinuity

Yet another dimension differentiating various approaches concerns the extent to which they postulate some important degree of continuity or discontinuity during the course of development from the infant's 'initial' state at birth to the adult's 'final' state. The first position in this respect conceives of development as involving major transformations that reflect a general reorganisation into successive stages, each one being qualitatively different from the preceding one. Such stages, for example, are at the centre of Piagetian theory, which accounts for the development of rational thought in terms of four major stages, reflecting universal processes of *assimilation* and *accommodation*, whereby children gradually construct and transform their cognitive representations: the *sensori-motor* period (up to about eighteen to twenty months), the *pre-operational* period (between two and six years), the stage of *concrete operations* (emerging at around seven years), and the stage of

formal operations (emerging at around ten years). Thus, consider classical examples of young children's reasoning in *conservation* tasks. The child is presented with two identical containers A and B, containing the same quantity of liquid. The liquid of B is then poured into a third container C of different height and width, thereby provoking different levels of the liquids in the two containers, and the child is asked if A and C contain the same amount of liquid. At the stage of concrete operations, children typically respond that there is less liquid if the level goes down or more liquid if the level goes up. Through a subsequent process of *decentration*, they become able to co-ordinate all dimensions of the problem, thereby abstracting away from the visual illusion provoked by the level differences. The same process can be observed in different domains of behaviour, including language development, where it might result in new uses and interpretations of linguistic devices (see Section 2.1.5 below).

Other models from very different traditions also postulate the existence of major transformations in language development, even though they do not propose as elaborate a system of stages as the one in Piaget's theory. In particular, some nativistic models of language acquisition account for syntactic development by means of a series of 'revolutions' linked to the fact that the child discovers tightly related properties of the grammatical system. Thus, some of these models account for language development on the basis of inferential processes, whereby children find evidence in the surrounding input for the discovery of the relevant properties of their native language. The discovery of some properties might have major implications for a whole range of other properties in the child's language. For example, as will be discussed in more detail later on (Chapter 5), properties such as finiteness, WH-movement, subordination, and null subjects may all be intricately related during language acquisition, such that the discovery of some of these aspects of language should lead to the discovery of other aspects, since all are part of a more global system of interrelated rules.

In contrast, the second position postulates that development is a continuous process, which does not involve any major reorganisation. Continuity may be postulated for different reasons, depending on the theoretical premise on which it is founded. For example, in some nativistic models of language acquisition, continuity is based on the assumption that developmental change exclusively results from sheer maturational processes. These processes are endogenous, even though they might depend on exposure to the environment during *critical periods*, as is also the case for various physiological and behavioural developments that can be observed in ontogenesis or in the development of other species. Within an entirely different framework, some cognitivist models of language and cognitive development view development as involving quantitative changes in children's capacity to process information (e.g. in long-term or working memory). A number of approaches to cognitive development

have been proposed, some of which diverge in significant ways from Piaget's original proposal with respect to the issue of continuity. For example, Pascual-Leone (1987) sees developmental change as being in great part quantitative rather than qualitative, involving the central role of several operators. These operators include the *activation* and *inhibition* operators, which are controlled by executive processes and result in focused attentional behaviour, as well as other operators governing automatised behaviour. However, despite these debates, such models share with Piagetian theory the idea that child development is determined by an underlying progression in cognitive development, presumed to be general to all knowledge domains, language-independent, and universal.

2.1.5 Language and cognition

A third and most controversial question opposing different approaches to language acquisition concerns the extent to which and the ways in which language and cognition should be related. This complex question has always been rampant in linguistic and psycholinguistic theory, but it has taken on much importance in current theorising. It must be broken down into at least three more specific questions, to which theories of language acquisition provide different answers. First, theories make different assumptions concerning the domain-specificity of human knowledge. Second, at least two views have been proposed to relate general properties of language and of cognition during ontogenesis: one view puts forth the cognitive prerequisites and determinants of all developmental change, while the other claims that language structures human cognitive organisation. Third, these theories vary in whether they see language particulars as affecting individuals' cognitive organisation.

2.1.5.1 Domain-specificity

Theoretical positions concerning the relation between language and cognition first differ with respect to the relative specificity of human linguistic capacities. *Modularist* approaches (Chomsky 1981; Fodor 1983) conceive of human capacities as being independent of each other, each forming a self-contained *module*. Modularity is assumed to reflect a high form of specialisation and of differentiation in the brain and it has been postulated to characterise the organisation of human cognition at minimally two different levels. First, our language capacity (particularly our abstract knowledge of grammar) is assumed to be autonomous in relation to a number of cognitive capacities that might be involved in other behavioural domains. Second, different aspects of our linguistic competence are themselves assumed to consist of different modules, each relatively autonomous from the others (phonology, syntax, semantics, pragmatics).

In contrast, *connectionist* approaches to language and language acquisition (see a discussion in MacWhinney and Bates 1989) conceive of human behaviour as belonging to complex networks, organised in a hierarchical and horizontal fashion, and assumed to reflect interconnections of neural networks. Language is thus linked to other cognitive capacities and its different components are linked together into a global interrelated whole. Other models (Karmiloff-Smith 1992) are intermediate in this respect, in that they acknowledge that the final state (adult system) is modular, but view previous states as evolving from general capacities during the course of development. Such models, then, argue that children begin with general language-independent capacities and gradually evolve towards a modular system, as they learn to take language as its own problem-solving space, thereby postulating a development that goes from general to specific capacities. As shown below, approaches to language acquisition that do assume some relation between language and cognition further vary in fundamental ways with respect to whether they attribute to language a structuring role on the development of cognition.

2.1.5.2 Cognitive prerequisites and determinants

Among the approaches that attempt to relate language and thought, some conceive of all changes in children's behaviours as being determined by an underlying general progression in cognitive development. The best examples of this approach are Piagetian and neo-Piagetian theories. As noted above, Piaget conceives of human cognitive development as following a series of stages, whereby children gradually construct more abstract representations. In this respect, language use is no different from any type of behaviour, such as reasoning in problem-solving situations across various domains of knowledge, constituting but one of the many domains of child development.² Just as young children fail conservation tasks, they also display particular types of language behaviours reflecting their stage of cognitive development. On the basis of observations made in various types of situations (free games, explanations, narratives), Piaget (1923) interprets the child's language as being first *egocentric* before becoming social. During this period, children use language merely to accompany their own actions or, when they communicate with others, they have difficulties viewing the same situation from different perspectives.

Other proposals inspired from different traditions have focused on cognitive prerequisites and determinants of language acquisition. An early model developed by Slobin (1970, 1973, 1982) proposed that children construct language by relying on basic cognitive concepts derived from sensori-motor activity, such as the concept of an agent acting on a patient, which corresponds to a universal *canonical scene* encoded in language. As shown in subsequent chapters, various semantic and/or cognitive models have also appealed to cognitive determination, for example relying on

notions such as perceptual salience, semantic primitives, and cognitive complexity to account for the acquisition of linguistic devices. All of these models postulate the existence and determining role of general perceptual and cognitive processes guiding the child's gradual development during first language acquisition.

2.1.5.3 Semiotic mediation

In contrast to these proposals, a different approach attributes to language use a privileged status in relation to other types of human behaviours. For example, a central claim in Vygotsky's theory (1962) is the principle of *semiotic mediation*, whereby language structures most (albeit not all) of human cognitive and social development. In a phylogenetic perspective, Vygotsky postulates that human language has transformed the behaviour of our species, allowing the emergence of rational thought and of complex social interaction. Similarly, from an ontogenetic point of view, the emergence of language implies a fundamental cognitive reorganisation, simultaneously allowing the child to construct abstract concepts and to participate efficiently in interpersonal interaction. This approach leads to a different interpretation of language development than the one proposed by Piaget. According to Vygotsky, language is social from the very beginning, but during an initial phase the child has not yet differentiated its cognitive and communicative functions. Functional differentiation is a gradual process resulting from the internalisation of external social speech for the regulation of cognitive activity. This internalisation process begins in interpersonal interaction, where children learn the regulatory function of language with adults or older peers. Egocentric speech reflects an intermediary phase in this process, whereby children use language to regulate their own actions. Research indeed shows that children produce more egocentric speech in social situations (since the pioneering work of Kohlberg *et al.* 1968). Microgenetic analyses focusing on small-scale development during the course of adult-child interactions also show that the form of children's egocentric speech in problem-solving situations is heavily dependent on the guidance provided by adults earlier in discourse (Hickmann 1978, 1986; Hickmann and Wertsch 1978; Wertsch 1991, 1985; Wertsch and Hickmann 1987).

Vygotsky's view of child development, then, is compatible with functionalist models, in that it places the inherent multifunctionality of language at the centre of the child's development. In this respect, although Piagetian theory has clearly acknowledged the social communicative nature of language, it has almost exclusively focused on its representational function in the study of cognitive development. Vygotsky's view is also compatible with a number of other hypotheses concerning the impact of language on human activity. In particular, if human language structures cognitive and social behaviour, further questions arise concerning the

variability that is observed across different languages. Although Vygotsky himself did not address this question, focusing rather on the impact of universal semiotic properties of language on human behaviour, recent revivals and extensions of his theoretical framework have begun to draw its implications for questions concerning cross-linguistic variation (Lucy and Wertsch 1987). We turn to these questions below.

2.1.5.4 Cross-linguistic variability

The relation between language and cognition is at the centre of another debate concerning the extent to which language-specific properties may have an impact on human behaviour. Among the views that have been proposed in answer to this question, some focus more on universal properties of human language and development, others on the implications of cross-linguistic variation for development. Despite its long history, this debate has not been adequately confronted by empirical research, until its recent revival in several language-related disciplines. Until recently, most developmental models have assumed that the results concerning language or cognitive development that were obtained with children of one particular language should hold for all children, regardless of their native language. The past twenty or so years have witnessed a growing interest in cross-linguistic research (e.g. Berman and Slobin 1994; MacWhinney and Bates 1989; Slobin 1985b). Some models have proposed universal perceptual and cognitive principles to account for how children acquire language, but they have been particularly attentive to cross-linguistic variability, acknowledging that language particulars may constrain the learning process. Thus, Slobin (1985a) proposes that children acquire language by means of a number of perceptual and cognitive strategies or *operating principles*. For example, one such principle leads children to focus more easily on suffixes rather than on prefixes or infixes (the strategy known as *Pay attention to the end of words!*), resulting in different rhythms of acquisition across languages. A different model (Bates and MacWhinney 1987; MacWhinney and Bates 1989) accounts for cross-linguistic variation on the basis of general perceptual and cognitive processes. In this functionally inclined *Competition Model*, languages are seen as providing speakers with indices, which either compete or coalesce in mapping form–function relations. Speakers rely on those indices that are the most reliable and accessible in their particular language during language production and language comprehension. Such processes can be observed with adults as well as with children, despite the fact that some changes can also be observed with increasing age in some languages.

As shown below, yet other studies have revived the hypothesis of *linguistic relativity* postulating that the systemic properties of languages have a major impact on human cognition. Originally put forth in its most explicit form by Whorf (1956;

but see Gumperz and Levinson 1996 for theoretical antecedents), this hypothesis can be broken down into two premises and a conclusion (see Gumperz and Levinson 1996; Hickmann 2000). The first premise of *linguistic difference* states that there are substantial differences in the semantic structures of languages, while the second premise of *linguistic determinism* goes on to posit that implicit or explicit linguistic categorisations may partially determine or co-determine non-linguistic behaviour (categorisation, memory, perception, or thinking in general). The implied conclusion, then, is that individuals' thinking partially differs across linguistic communities. As summarised below (Gumperz and Levinson 1996: 25), the resulting *Whorfian syllogism* is in sharp contrast to the more commonly accepted *anti-Whorfian syllogism*, historically well represented, for example, by the Kantian tradition.³

The Whorfian syllogism:

- (1) Different languages utilise different semantic representation systems which are informationally non-equivalent (at least in the sense that they employ different lexical concepts);
- (2) semantic representations determine aspects of conceptual representations; therefore
- (3) users of different languages utilise different conceptual representations.

The anti-Whorfian syllogism:

- (1') Different languages utilise the same semantic representation system (if not at the molecular level then at least at the atomic level of semantic primes);
- (2') universal conceptual representations determine semantic systems, indeed THE semantic representation system just is identical to THE propositional conceptual system (the innate 'language of thought'); therefore
- (3') users of different languages utilise an identical conceptual representation system.

As shown in more detail subsequently, cross-linguistic research has recently revived Whorf's hypothesis in a new light, providing new directions of research in order to assess adequately, to qualify, and to extend the hypothesis (Gumperz and Levinson 1996; Nuyts and Pederson 1997). In this respect, Lucy (1992a, 1992b, 1996) reviews past research in several disciplines, showing the often sterile ways in which this hypothesis has been misinterpreted, seemingly disconfirmed, and therefore dismissed for many years. Serious 'tests' of the hypothesis must provide cross-linguistic evidence that goes beyond relatively minor vocabulary sets (e.g. colour terms), encompassing central grammatical categories that are obligatory, recurrent, and often not accessible to consciousness. According to the Whorfian view, such categories affect individuals' (unconscious, automatised) *habitual behaviour*, which provides the deepest and most obvious locus for the impact of language on speakers' perceptual and cognitive performance.

An example can be found in Lucy's own (1992b) research on English vs. Yucatec Mayan number markings. English provides an obligatory plural marking for a large set of lexical nouns, with a numeral that directly modifies the noun (e.g. *one candle*), except for substances (e.g. sugar, wax) which require a special kind of determiner for the individuation of specific entities or quantities (e.g. *a cube/spoon of sugar*). In contrast, Yucatec provides optional plural markings for a small set of lexical nouns, while numerals require the use of classifiers providing crucial information about particular properties of the denoted entity (shape and substance, e.g. *one candle* would be expressed as *one long thin wax*). Adults' performance in various non-linguistic tasks (recall and recognition of pictures, classification of objects) is greatly affected by the properties of their language, for example in classification tasks involving triads of objects (*Is X more like Y or more like Z?*), English speakers show a preference for shape-based classifications, while Yucatec speakers show a preference for material-based classifications.

Other examples concern spatial systems across languages, not all of which fit the commonly accepted set of linguistic and cognitive universals defined on the basis of European languages (e.g. as defined in Miller and Johnson-Laird 1976; Talmy 1983, 1985, 2000). This linguistic relativity has been shown for a Mayan language such as Tzeltal (e.g. Brown 1991, 1994; Brown and Levinson 1991; Levinson 1991, 1994, 1996, 1997) and it has an impact on speakers' behaviours, for example in situations where they are asked to identify/locate referents in relation to various configurations. Thus, contrary to the assumption that location universally involves a canonical egocentric system with three co-ordinates (up/down, front/back, left/right), Tzeltal speakers rely either on an absolute system by virtue of a fixed notional inclined plane (*uphill/downhill*) or on a non-absolute but non-egocentric system of co-ordinates, whereby objects are located in terms of their contact with other objects. In addition, contrary to the assumption that specification is greater with respect to the ground than with respect to the figure, Tzeltal spatial location requires a high degree of information concerning the figure (shape, position, adhesion, manner of obtaining position, etc.), whereas the general nature of the ground is under-determined. This last point raises the question of whether all languages make the same ontological commitments, for example with respect to the what/where distinction between 'entities' and 'locations', which has been claimed to be a universal property of linguistic systems and of human cognition reflected in the neural substrate of the brain (Jackendoff 1996; Landau 1996; Landau and Jackendoff 1993; Landau and Stecker 1990).

From a developmental point of view, research has begun to show some variations in the rhythm and course of development across languages, which cast doubts on earlier assumptions concerning universal prerequisites and determinants of

acquisition. Subsequent chapters of this book present data that support the claim that some aspects of acquisition are variable across languages, despite important universal patterns, that can be observed even across languages that are quite different in many respects. In addition, such variations have been observed from very early on, at a point in development previously assumed to be most strongly determined by universal biological constraints (Berman and Slobin 1994; Bowerman 1985, 1989, 1994, 1996; Bowerman and Choi 2001; Choi and Bowerman 1991; Slobin 1991, 1996). This variability has led some authors to adopt a partially ‘relativistic’ view, according to which the particular properties of our language have an impact on our attentional processes and cognitive organisation. Thus, Bowerman (1996) highlights the need better to articulate precocious general cognitive abilities, that might be independent of language, with later abilities ‘contaminated’ by the implicit or explicit categories of particular languages (see a critical discussion in Vandeloise 1998). Similarly, Slobin (1991, 1996) and Berman and Slobin (1994) propose that our language influences our ‘thinking for speaking’, that is the way in which we organise our representations for the purposes of communicating in discourse.

2.2 Functional approaches to language

The remainder of this chapter focuses on the theoretical underpinnings of functional approaches to language, which provide the main framework for this book. It is difficult to present an all-encompassing unified functional theory, given the large scope and heterogeneous nature of the relevant phenomena, the myriad of factors necessary to account for them, and the proliferation of proposed models. Nonetheless, it is possible to show the theoretical unity across these approaches, which share common theoretical underpinnings, such as the assumption that language is inherently multifunctional (Section 2.2.1), context-dependent (Section 2.2.2), and characterised by different levels of organisation (Section 2.2.3).

2.2.1 Multifunctionality

All functional theories share the common assumption that multifunctionality is an inherent and fundamental property of language. Roughly, all linguistic systems consist of multiple relations among forms and functions at different levels: a given form may serve different functions and a given function may be realised by different forms. In order to briefly illustrate multifunctionality, consider the different utterances in (2.1) to (2.4) as possible requests in English (see Ervin-Tripp 1976). For our purposes here, note that the last two utterances may have several functional values depending on the context, for example as requests to carry out

an action (to get the knife, as in (2.1) and (2.2)) or as utterances requesting and providing information (concerning the location of the knife).

- (2.1) Go get the knife in the kitchen.
- (2.2) Could you please get the knife in the kitchen?
- (2.3) Where is the knife?
- (2.4) The knife is in the kitchen.

Although all functional approaches would agree to the centrality of a general principle of multifunctionality, the ways in which they operationalise this concept differ a great deal. For example, among the writings that have founded functional theory, Benveniste (1966) distinguishes two broad types of linguistic functions, the referential and social functions of language, linked to the linguistic encoding of propositional information and to interpersonal aspects of linguistic communication, respectively. Jakobson (1971) distinguishes five different functions, corresponding to the different parameters of the speech situation on which language can focus: the *expressive* function (focus on the speaker), the *conative* function (focus on the addressee), the *referential* function (focus on the denoted referent, other than the participants), the *metalinguistic* function (when the denoted object is language itself), and the *poetic* function (focus on the communication channel). Halliday (1975) characterises language in terms of three functions: the *ideational* function, linked to the linguistic encoding of propositional information; the *social* function, related to interpersonal aspects of language use; and the *textual* function, pertaining to the interrelations among utterances in discourse context (discussed in more detail in Section 2.3 below). Silverstein (1987b) distinguishes three main functions of language: the *referential*₂ function, linked to the abstract syntactico-semantic structure of language; the *pragmatic*₂ function, related to the use of language in context and best reflected in the existence of a large number of *indexical* signs (see Section 2.2.2. below); and the *pragmatic*₁ function, linked to the use of language to accomplish various speech acts.

Despite differences across models, all agree that language has at least two broad functions, roughly a *representational* function and a *communicative* function, other functions corresponding to more specific functional subcomponents or intersections of these two main functional categories. Such a ‘macrofunctional’ level is meant to characterise all of language, while ‘microfunctional’ analyses aim at accounting for particular phenomena, for example how particular devices or subsystems of a given language are used in particular contexts. Functional theories simultaneously focusing on these different (and other intermediary) conceptual levels are necessary in order to move back and forth between data analysis and theory construction. The microfunctional level will be illustrated in more detail subsequently (Chapter 3),

when we discuss universal and language-specific properties of particular devices within different domains.

2.2.2 Context-dependence

Context-dependence is the second inherent and fundamental property of language within functional approaches. It characterises the fact that all utterances bear an intrinsic relation to the contexts in which they are used, and it is reflected in the very structure of all languages. In particular, all languages provide an *indexical* component, that is signs that cannot be used or interpreted except in relation to their contexts of use. The concept of indices was originally proposed by Peirce (1931–5), who distinguished among several types of signs: indices, icons, and symbols.⁴ In their purest form, indexical signs are a part of the objective reality they signal (smoke points to fire), icons bear an intrinsic relation of resemblance to their object (the drawing of an entity), and symbols bear an arbitrary relation to their object, taking on their semiotic value by means of conventions that are socially agreed upon by members of a community (English *chair*, French *chaise*). Indexicals and icons in language are complex, in that most are partly symbolic, also bearing an arbitrary conventional relation to their denotatum. Furthermore, although all indexical devices point to something in the context, thereby anchoring speech to the personal, spatial, and temporal parameters of the speech situation, language comprises several types of indexicals, varying along three dimensions.

A first distinction contrasts exophoric and endophoric indices as a function of the particular aspect of the context to which they are related. Exophoric uses typically point to some aspect of the immediate non-linguistic situation, endophoric ones to some discourse-internal aspect of the context.⁵ These two types of context-dependence have been coined with various terms, for example *exophora* vs. *endophora*, *deixis* vs. *anaphora* or *cataphora*, *deictic* vs. *intralinguistic* uses, *speaker* vs. *discourse* *deixis* (e.g. Anderson and Keenan 1985; Bühler 1982; Fillmore 1975, 1982; Halliday and Hasan 1976; Hickmann 1987b, 1991a; Jarvella and Klein 1982; Lyons 1975, 1977; Silverstein 1976b; Wales 1986; Weissenborn and Klein 1982). Examples of exophoric devices include first and second person pronouns (*I*, *you*) denoting the immediate interlocutors, third person pronouns (*he*, *she*), definite nominals (*the book*), or demonstratives (*that*) denoting other entities in the situation. In the spatial domain, demonstratives can encode distance in relation to the speaker or listener (e.g. *here/there*, *this/that book*) and some verbs of motion (e.g. *come/go*, *leave/arrive*) express a displacement towards or away from a presupposed point (the *origo*). This *origo* is typically taken to be some aspect of the immediate speech situation (e.g. *Let's go*), unless otherwise specified, for example in previous discourse (e.g. *John was waiting for Mary at the airport, but she arrived with a delay*

of one hour). Temporal deictic devices also locate the time of denoted situations in relation to the speech situation. Thus, past inflections mark a moment that occurred before speech time and an adverb such as *yesterday* further specifies that this moment occurred during some particular interval (say usually during the previous day and/or within the past twenty-four hours). In comparison, endophoric uses relate utterances to the linguistic context of speech as speakers link the ongoing utterance to the preceding or subsequent utterances (within and across speaking turns). Connectives constitute obvious local ways of linking successive clauses, for example temporally or causally (e.g. *then, while, when, because*). Endophoric links also include other tense-aspect markings (verbal inflections, particles, adverbials) that serve to organise information in discourse, as well as the use of referring expressions that presuppose in various degrees the existence and identity of referents in discourse (e.g. English third person pronouns). As shown below (Section 2.3), endophoric uses are necessary for the construction of *discourse cohesion*, particularly in the absence of relevant mutual background knowledge that could be established otherwise in other situations.

Proposals have been made to relate these two kinds of indexical uses in various ways (e.g. Ehlich 1982; Jakobson 1971; Jarvella and Klein 1982; Fillmore 1982; Hickmann 1982, 1987b, 1991a; Halliday and Hasan 1976; Hinrichs 1986; Karmiloff-Smith 1979; Levinson 1983; Lyons 1975, 1977; Schiffrin 1990; Silverstein 1976b). For example, Halliday and Hasan (1976) argue that some linguistic indices are primarily exophoric and secondarily endophoric, while the reverse is true of other indices, depending on whether their main function is to index something in the non-linguistic or linguistic context. Typically, indexical devices pertaining to person, space, and time can be either exophoric or endophoric: some are primarily exophoric, but they can be used in an endophoric way; others are primarily endophoric, but they can be used in an exophoric way; yet others are primarily non-indexical, but they can be used as indexicals. For example, in reported speech, first and second person pronouns, as well as spatio-temporal devices, refer to the parameters defining the reported situation, rather than the immediate one. In the utterance *John said, 'I saw you there yesterday'*, *John* and *I* are coreferential, while *yesterday* and *there* denote a location in time and space in relation to the reported situation (rather than the immediate speech situation). Conversely, third person pronouns typically refer to entities previously mentioned in discourse, but they can be used to denote referents that are present and in attention focus (e.g. *John was mad, he . . . vs. Look at him!*). In addition, some spatial prepositions can be used independently of context in relation to inherent properties of entities (e.g. *X is in front of the truck*, given that trucks have an inherent front), but they can also be interpreted deictically in relation to various aspects of the immediate situation,

such as the speaker's location or the formal vs. informal nature of the description (e.g. *X is in front of the tree*) (Carlson-Radvansky and Irwin 1994; Garnham 1989; Grabowski and Weiss 1996; Herskovits 1986; Levelt 1984).

Some analyses do not view the distinction between exophoric and endophoric uses as central to account for discourse uses of language, focusing on the more general notion of relative *accessibility* (Chafe 1974, 1976, 1979; Cornish 1996, 1999; Ehlich 1982). Roughly, irrespective of whether knowledge of the existence and identity of entities stems from linguistic or non-linguistic context, the interlocutors co-construct a universe of discourse, forming mental representations of the denoted entities and relying on such representations for efficient communication. From a developmental point of view, however, subsequent chapters will show that the distinction between endophoric and exophoric indices is particularly relevant, even if it is not always easy to make in the empirical study of child language, and some have even hypothesised that endophoric uses evolve out of exophoric ones in acquisition (Atkinson 1979; Hickmann 1987a, 1991a; Karmiloff-Smith 1979; Lyons 1975).

Indices further vary along other dimensions (Silverstein 1976b). A second distinction opposes *referential* and *non-referential* indices, depending on whether indexical signs involve the denotation of an entity that is presupposed from context. Thus, a demonstrative expression such as *this book* may be used to denote a particular entity available in linguistic or non-linguistic context, whereas greetings (*Hello!*) or forms of address (*Mister*) do not actually denote any referent, serving exclusively different social interactive functions. Most of our utterances contain both types of indices, which together contribute to the multifunctional value of our messages. A third related dimension further differentiates *creative* and *presupposing* indices, depending on whether indexical signs depend on a shared presupposition or contribute to bringing about some aspect of the speech situation. For example, in contrast to English, which provides a single second person pronoun *you* (singular or plural), many languages differentiate different types of pronouns to denote the interlocutor in different ways (e.g. French *tu/vous*, German *du/Sie*), depending not only on number, but also on the nature of the social relation that exists among the interlocutors. Thus, French *tu* roughly denotes an interlocutor with whom the speaker has a familiar or symmetric relation, while *vous* can denote a plurality, but also an interlocutor with whom the speaker has an unfamiliar or asymmetric relation (inferior to superior). In using the form *tu* (particularly for the first time), the speaker may thereby create a new type of social relation between him and his interlocutor. Children's endophoric uses of indexical signs will be at the centre of the subsequent chapters in this book, with a main focus on referential and presupposing indices in the development of cohesive discourse.

2.2.3 Sentences and discourse

A major implication of multifunctionality and context-dependence is the need to distinguish two levels of linguistic organisation: the sentence and discourse. This distinction has already been illustrated by means of reflexive vs. non-reflexive pronouns (see Chapter 1), reflexives being highly constrained grammatically to particular coreferential relations within the clause (e.g. *John washed himself/him*). A number of theoretical questions have arisen in linguistics and in philosophy as a result of considering units of analysis that are larger than the sentence or, more generally, of seriously relating utterances to their contexts of use. Various proposals have been made in order to account for language use in discourse, some of which are quite general, others more specifically designed for some particular aspects of discourse. Some general models have been proposed to account for a very large range of phenomena, such as Grice's theory (1968, 1975, 1978, 1981) of *conversational maxims and implicatures*. Grice postulates that interlocutors are guided by a general co-operative principle and that they abide by several general guidelines or *maxims* underlying the efficient use of language (see Levinson 1983 for details): speakers' contribution must be true (*maxim of Quality*), sufficiently informative but not more than necessary (*maxim of Quantity*), relevant to the discourse at hand (*maxim of Relevance*), and orderly and not obscure (*maxim of Manner*). Violations of such maxims may have different effects, such as communication problems, but may also express reported speech, irony, metaphors, and the like. The general principles of this theory have been applied in accounts of specific phenomena (e.g. Levinson 1987 on uses of pronouns in discourse), as well as being further extended by Sperber and Wilson (1986) in a more general theory of Relevance.

These models are quite powerful, but it is unclear whether they can by themselves provide a sufficiently specific account for some phenomena without some prior knowledge of the formal and functional properties of given linguistic systems, particularly within a cross-linguistic perspective. More specific models have also been proposed to account for the interpretation of texts. For example, some *discourse models* (Kamp 1979, 1981) allow logical analyses of texts, postulating that a *discourse representation structure* must be first constructed from the sequences of sentences in texts before these texts can be interpreted. Similarly, *mental models* have been proposed to account for interpretative processes in language or for the construction of representations in particular domains (e.g. Denis 1991; Johnson-Laird 1983; Tversky 1991). In addition, extensions of traditional functional approaches focusing on multifunctionality and context-dependence show that the (syntactic, semantic) organisation of the sentence is (at least partly) determined by the (linguistic and non-linguistic) context of the speech situation. For example, sentences establish a certain perspective, which depends partly on the extent to which elements

are salient and communicative, given various aspects of the interpersonal context (e.g. Chafe 1974, 1976, 1979; Danes 1974; Firbas 1964, 1966, 1971, 1992; Foley and van Valin 1985; Halliday and Hasan 1976; Klein and von Stutterheim 1978; Lambrecht 1994; MacWhinney 1977; Silverstein 1976a, 1976b, 1987a). More generally, such approaches have focused on information flow and information structure within and across sentences in discourse and some extensions have done so systematically across languages. We turn to some aspects of this last type of approach.

2.3 Functional aspects of reference in cohesive discourse

Among the different factors affecting the well-formedness of discourse, particular attention will be placed in subsequent chapters on principles of organisation that are necessary for *discourse cohesion*. I begin by defining discourse cohesion in general terms (Section 2.3.1), then turn to two principles governing the uses of linguistic devices for the organisation of discourse cohesion across languages. The first principle consists of marking *information status* as a function of mutual knowledge (Section 2.3.2), and the second one involves the *grounding of information* as a function of communicative focus (Section 2.3.3). I highlight some general developmental implications of these principles for language acquisition (Section 2.3.4), which will be further discussed in subsequent chapters.

2.3.1 Discourse cohesion

Cohesion in discourse exists when the uses and interpretations of linguistic devices are interdependent across utterances (Chafe 1976; Halliday and Hasan 1976). As summarised by Halliday and Hasan (1976: 4):

Cohesion occurs where the interpretation of some element in the discourse is dependent on that of another [across clauses]. The one presupposes the other in the sense that it cannot be effectively [or can only be partially] decoded, except by recourse to it. When this happens, a relation of cohesion is set up and the elements, the presupposing and the presupposed, are thereby at least potentially integrated into a text.

Cohesion is a necessary property of discourse, but its relative importance in determining speakers' utterances varies with the degree to which the situation requires reliance on discourse-internal context (maximal in some situations, minimal in others). Situations that depend heavily on non-linguistic context do not require heavy reliance on discourse-internal organisation. For example, speech uttered in front of a vegetable counter in a shopping situation may involve much reliance on linguistic or non-verbal deixis (e.g. demonstratives, labelling, pointing), which can be used efficiently in this type of situation. In contrast, narratives produced in

the absence of mutual knowledge illustrate situations that require a great deal of reliance on discourse-internal organisation. In these cases, a narrator talks about entities that are not known to his or her interlocutors and recounts events they have not witnessed. Therefore, linguistic devices are necessary to *regulate the flow of information* from utterance to utterance, following at least two general principles: the *marking of information status*, whereby speakers indicate the degree to which different components of the information in their utterances are presupposed; and the *grounding of information*, whereby they indicate what is the main information in focus and what is secondary. From each of these two principles follow various rules, either obligatory or optional in a given language, which partly determine how speakers use linguistic devices in different domains to regulate the information flow across utterances in discourse. We turn to each of these general principles below. Different more specific aspects of each principle will be discussed in detail from a cross-linguistic perspective subsequently (Chapter 3).

2.3.2 Information status in discourse

The first principle governing the regulation of information flow in discourse concerns the status of denoted information in relation to mutual knowledge. This aspect of discourse organisation has been discussed in the literature under several headings, which I first briefly summarise below in terms of the distinction between *new* vs. *given* information. Any stretch of discourse requires that speakers indicate whether the denoted information is relatively given or new, particularly in the absence of a relevant non-linguistic context (Chafe 1976; Clark and Haviland 1977; Haviland and Clark 1974; Halliday and Hasan 1976). When speakers cannot assume that their interlocutors know about a particular referent, they must first introduce this entity in discourse by means of linguistic devices that do not presuppose existence and identity. For example, consider (2.5), in which the speaker is talking about a common friend John and introduces a new referent (*a beautiful painting*) using an indefinite nominal determiner which marks that the denoted information is brand new. In contrast, definite noun phrases (*the painting, it*) maintain reference after entities have been introduced, presupposing their identity to different degrees, for example depending on potential ambiguities due to competing candidates in surrounding discourse. Similarly, verbal anaphora and ellipsis also presuppose states and events already mentioned, for example (2.6) and (2.7).

- (2.5) Yesterday John found a beautiful painting in an antique furniture store near his house. He liked it so much that he went back there today and bought it for cash.
- (2.6) John went home and so did Mary.
- (2.7) Where did John go? Home.

In addition, any stretch of discourse requires that speakers share a common spatio-temporal frame of reference. When interlocutors talk about entities that are present in the immediate speech situation and about events that are happening in that situation, they can simply assume that this spatio-temporal frame is the *hic-et-nunc* (here-and-now), thereby taking the speech situation as their *origo*. However, when the denoted entities and events are displaced, they must provide a minimal amount of information allowing the interlocutor to locate them in space and time. Thus, as the speaker introduces a new referent in (2.5) above, he or she simultaneously provides information about time (*yesterday*) and place (*an antique furniture store near his house*). Reference can then be maintained to John (*he*), to the painting (*it*), and to the spatial frame (*there*) in an utterance that contains a deictic motion verb and particle (*went back*) presupposing that John left the spatial frame between the initial time frame (*yesterday*) and a new subsequent one (*today*).

As will be shown in subsequent chapters, although the binary distinction between given and new information captures some aspects of information structure in discourse, the marking of information status is best characterised in terms of a continuum corresponding to the relative *accessibility* of referents, that is the relative ease or difficulty with which information concerning the existence and identity of denoted entities is recoverable in the universe of discourse. Degree of accessibility is itself a function of a number of intersecting factors determining the degree to which the existence and identity of referents can be retrieved in discourse. Thus, as noted in Chapter 1, the linguistic forms available in all languages for the denotation of entities in discourse can be placed along a continuum, which is illustrated by the English forms in (2.8) (reproduced from Chapter 1). This continuum corresponds to the degree to which different forms presuppose the existence and identity of entities in discourse: indefinite nominals (e.g. *a car*), definite nominals (e.g. *the car*), overt pronominal forms (e.g. *it*), zero elements (e.g. *The car slid and 0 hit the tree*).

(2.8) indefinite nominal < definite nominal < overt pronoun < zero pronoun

2.3.3 *Information grounding in discourse*

In addition to marking information status, speakers must *ground information*, that is present it as belonging to the *foreground* vs. *background* of discourse. Roughly, utterances in the foreground correspond to the skeleton of the narrative, that is to the chronologically ordered main events that constitute the time line and make the plot line move forward, whereas backgrounded ones need not be chronologically ordered, for example because of a relation of simultaneity or overlap, and they correspond to secondary information surrounding the foreground. As shown repeatedly across languages, a number of devices contribute to the presentation of backgrounded vs. foregrounded situations: aspect, subordination, word

order, and voice (Chvany 1985; Dry 1981, 1983; Ehrlich 1987, 1988; Givón 1987; Hopper 1979a, 1979b, 1982; Kamp 1979; Li *et al.* 1982; Reinhart 1984; Schiffrin 1981, 1990; Thompson 1987; Tomlin 1985, 1987).

For example, grammaticalised aspect (verbal inflections, particles), which can be used in conjunction with other temporal-aspectual devices (adverbials, connectives), marks different *perspectives* in relation to the temporal structure of situations: the perspective of the *imperfective* is located within the internal structure of ongoing situations, whereas *perfective* aspect marks an external perspective which represents situations independently of their internal structure as points, for example after events have stopped and/or have been completed. Thus, as noted in Chapter 1, the inflections of (2.9) (perfective *came in*, imperfective *was eating*) represent Mary's arrival as a point that occurs after John began eating the apple and before he finished it: Mary's arrival is a foregrounded event moving the plot line forward, John's eating a backgrounded event overlapping with the foreground. Similarly, (2.10) shows how imperfective aspect and subordination can coincide as backgrounding devices: the perfective past (*sat down, started to read, rang*) marks foregrounded events, the subordinated progressive (*while he was reading*) a backgrounded event.

- (2.9) John was eating an apple. Mary came in.
(2.10) John sat down and started to read a book. While he was reading, the door bell rang.

2.3.4 Developmental implications

I conclude this chapter by highlighting some of the developmental implications of functional approaches to language acquisition, with particular attention to the type of approach to be adopted in subsequent chapters. To summarise the discussion so far, all functional approaches share a common emphasis on two fundamental properties of language: multifunctionality and context-dependence. In addition, I argued that two levels of linguistic organisation must be distinguished: the sentence and discourse levels. Although most approaches acknowledge the existence of these two levels, they have typically focused on either one or the other level. One of the main points to be stressed throughout subsequent chapters is that we must consider both levels simultaneously. In particular, the well-formedness of utterances depends both on sentence-internal rules, governing how propositional information is organised within the sentence, and on discourse rules, governing the relations between utterances and their contexts of use.

We must therefore account for how children master the uses of devices at both the sentence and discourse levels. At the sentence level they must learn to express

semantic and syntactic relations in grammatically well-formed sentences in which they refer to entities, predicate states or events about them, and situate them in time and space. In addition, we must account for how they relate utterances to their contexts of use and learn to anchor their speech to the non-linguistic and linguistic context. The gradual mastery of both types of context-dependence is a central aspect of their linguistic competence. Children at first anchor speech in the immediate here-and-now, then learn to anchor speech locally and globally in discourse when they begin to displace reference away from the speech situation. It will be suggested that the development of discourse-internal organisation has implications for what cognitive psychologists have traditionally called the process of 'decontextualisation' in development, whereby children free themselves from immediate perception. Discourse cohesion requires that children master endophoric uses of linguistic devices, thereby promoting their ability to use language as its *own* context. This new type of context implies a form of abstraction, which has direct consequences for children's participation in gradually more complex forms of interpersonal communication and, more generally, more complex forms of cognitive activity. Finally, general all-purpose cognitive capacities may not suffice to account for some of the processes that take place during this development. In particular, this book will argue for an approach that views multifunctionality and context-dependence as fundamental properties of language, while simultaneously acknowledging the impact of linguistic structure on development and the importance of some processes that might be 'specialised' for language behaviour, as compared to other forms of human activity.

This position was inspired by two theoretical perspectives, originating in debates that run across cognitive developmental psychology, on the one hand, and linguistic theory, on the other hand. First, it adopts some of the ideas developed by some traditions of cognitive developmental psychology (e.g. Vygotsky 1962), concerning the structuring role of language on cognitive development. Such ideas, however, must be updated in the light of recent advances in developmental psycholinguistics. Second, it also adopts a version of Whorf's (1956) 'linguistic relativity' hypothesis, according to which some aspects of cognitive organisation may be influenced by the structure of the particular language to be acquired. On the one hand, the two general principles of discourse organisation discussed above are universal. On the other hand, the existence of large cross-linguistic variations raises the question of potential differences that may occur during the course of development. Thus, regardless of their native language, all children must learn these discourse principles in order to be able to communicate efficiently in situations where maximal reliance on discourse is required. In all languages a variety of devices are available and necessary to relate utterances to non-linguistic and linguistic aspects of speech situations, for example

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to indicate who speaks to whom, where and when, about what focal information, and in relation to what presupposed knowledge. However, languages vary greatly in the particular devices they make available to speakers for this regulation, presenting children with different problems to solve during the acquisition process. We first turn below to a more detailed discussion of universal vs. language-specific aspects of each principle (Chapter 3), before addressing the developmental questions on the basis of a review of the relevant available literature (Chapters 4 to 7).

3 *Cross-linguistic invariants and variations*

This chapter highlights some universal vs. language-specific properties of linguistic systems which bear on the developmental issues to be raised in subsequent chapters. I first briefly describe some of the general typological dimensions along which languages vary (Section 3.1). I then present in more detail invariant and variable properties of linguistic organisation at the sentence and discourse levels in each of the three domains to be examined subsequently from a developmental point of view. First, denoting entities (Section 3.2) requires the marking of universal distinctions concerning the discourse status of information as a function of mutual knowledge. However, languages rely to different extents on two types of markings: *local* markings affecting the nominal system and *global* markings affecting the entire clause. Similarly, space in language (Section 3.3) involves universal distinctions in the representation of motion and location, as well as general principles governing spatial anchoring in discourse. However, languages vary a great deal in the particular systems of spatial devices they provide and in how they distribute spatially relevant information in the clause. Finally, systems of temporal-aspectual markings (Section 3.4) universally allow speakers to represent various types of situations from different perspectives, to locate these situations temporally, and to ground information as a function of discourse focus. However, they vary in important ways, such as the extent to which markings are grammaticalised, rich, symmetric, and transparent. Hypotheses concerning the impact of such universal and language-specific properties of linguistic systems on the rhythm and course of development will then be examined in subsequent chapters in the light of the available literature on child language.

3.1 Some general typological dimensions

We begin with three general typological dimensions along which languages vary: properties of their morphological systems (Section 3.1.1), their general orientation towards subjects vs. topics (Section 3.1.2), and their reliance on processes of lexicalisation vs. grammaticalisation for the encoding of information in different domains (Section 3.1.3).

3.1.1 Morphological systems

One major source of variation across languages stems from the extent to which they provide morphological markings and from the properties of these morphological systems. I briefly describe four of these properties below, all of which have been shown to have an impact on the rate and course of acquisition in different domains of child language: the richness of morphological systems, their transparency, their uniformity, and a number of other formal properties characterising these markings.

3.1.1.1 Morphological richness

The richness of morphological systems concerns the complexity of the markings provided, as shown by the number and types of distinctions encoded. Some languages present practically no morphology, whether in their verbal or nominal system. Thus, Chinese has no verbal inflections and therefore no grammaticalised tense, person and/or number distinctions in the verb. Optional adverbials temporally locate events, for example in the past or non-past (e.g. *jin1tian1* ‘today’, *zuo2tian1* ‘yesterday’, *you3yi4tian1* ‘a long time ago’), particles mark aspect (e.g. perfective *le*, imperfective *zhe*), as well as adverbials (imperfective *zai4*), and particles or verbs mark modality (e.g. *dei3* ‘must’, *neng2* ‘can’). Chinese also has no obligatory markings in the nominal/pronominal system for case, gender, or number distinctions, although some relevant morphemes are optional (except under particular conditions, as shown below): optional *men* marking the plural in personal pronouns (e.g. *wolmen* ‘we’, *wol* ‘I’ or ‘we’); particles marking role relations (e.g. *ba3* or *bei3* for preverbal objects with OSV or SOV word orders); specific classifiers, optional with determiners, which categorise nominals as a function of various dimensions (see further discussion in Section 3.2 below).

Furthermore, languages that do have morphological systems vary a great deal with respect to the richness of these markings. English presents a relatively weak morphological system. Only number is marked on nominals (plural *-s*, e.g. *dog/dogs*) and no markings occur on nominal determiners (*a/the N*). The pronominal system presents two-way number distinctions (singular, plural), three-way case distinctions (nominative, genitive, other roles), as well as three-way gender distinctions, mostly linked to sex or animacy (masculine, feminine, neuter). Person distinctions are roughly restricted to the auxiliary *to be* (e.g. *am/is/are*) and to the third person singular with present inflections otherwise (e.g. *have* vs. *has*, *eat* vs. *eats*, *walk* vs. *walks*). Verbal morphology also encodes tense (past, non-past), aspect (progressive, non-progressive), while most other distinctions are carried by auxiliaries (e.g. future *will*, conditional *would*). In comparison, German provides a much richer morphology. A number of markings occur on nominal determiners, on nominals, and on pronouns: a two-way number distinction, a four-way case system (nominative,

accusative, dative, genitive), and a three-way gender system (masculine, feminine, neuter), which is mostly grammatical and only partially linked to sex or animacy. Furthermore, these markings also occur on modifiers such as adjectives and past participles, for example the adjective *klein* ‘small’ is marked for [Sg-Masc-Nom] in *ein kleiner Hund*, for [Sg-Masc-Acc] in *einen kleinen Hund* (‘a small dog’), and for [Sg-Fem-Nom/Acc] in *eine kleine Katze* (‘a small cat’). German verbs also provide a variety of person distinctions among first, second, and/or third persons with auxiliaries and other verbs, particularly in the present (e.g. with the verb *gehen* ‘to go’: *gehe, gehst, geht, gehen* ‘go’), but also to a lesser extent in the past (e.g. *ging* vs. *gingst* ‘went’).

French is intermediary with respect to morphological complexity.¹ It presents three-way case distinctions on personal pronouns, as well as two-way number and gender distinctions on nominal determiners, pronominals, and some modifiers. Gender (masculine, feminine) is mainly differentiated on singular nominal determiners and on third person pronouns. Gender markings also occur on a subset of adjectives (e.g. *grand* ‘big [Masc]’ vs. *grande* ‘big [Fem]’) and of past participials (e.g. *mis* ‘put [Masc]’ vs. *mise* ‘put [Fem]’). Grammatical gender is by far the most frequent, although gender is partly linked to sex in the case of animate NPs and in these cases it is also partially marked on some nouns in relation to sex in the case of animate referents (e.g. *le chien* ‘the [Masc] dog [Masc]’ vs. *la chienne* ‘the [Fem] dog [Fem]’; *le maître* ‘the [Masc] teacher [Masc]’ vs. *la maîtresse* ‘the [Fem] teacher [Fem]’). Number is marked on nominal determiners, which oppose singular forms with a plural form neutralising gender. With the exception of rare irregular nominal forms (e.g. *le cheval* ‘the [Sg] horse [Sg]’ vs. *les chevaux* ‘the [Pl] horses [Pl]’), number is not marked on nouns in the oral modality, being only partially marked on (first and second person) pronouns. Case is only marked on pronouns, that is different clitics exist for all persons depending on whether the NP is a subject, a direct object, or an indirect object. French verbal morphology marks tense, aspect, modality, and mood. The most person distinctions occur with auxiliaries (*être* ‘to be’, *avoir* ‘to have’), but these markings are otherwise variable with different verb classes (see below).

3.1.1.2 Morphological transparency

Another variable property of morphological systems is the *transparency* with which they encode various distinctions. This property is linked to several dimensions, such as the symmetry of the marked distinctions. For example, the verbal morphology of many languages simultaneously marks tense and aspect distinctions, but these two types of markings are more symmetric in some languages than in others. English distinguishes progressive and non-progressive forms in all tenses and modalities (e.g. *She eats/ate, is/was eating*). In contrast, French

differentiates perfective and imperfective forms only in the past (e.g. *Elle mangeait* ‘She was eating’, *Elle a mangé* ‘she ate’), neutralising aspect in the present (*Elle mange* ‘she eats/is eating’) and providing no inflection specialised for the marking of ongoing events, although periphrastic constructions are available in all tenses for this purpose (e.g. *Elle est/était en train de manger* ‘She is/was in the course of eating’). The same is also true of German, although the available aspect distinctions in the past provide a less clear-cut opposition between the perfective and imperfective as compared to French (see Section 3.4.1 below). Spanish, in comparison, presents both types of properties: a perfective vs. imperfective distinction in the past (e.g. *Comió/Comía* ‘[She] ate [PFV].’/‘[She] ate [IMPF]’), as well as progressive vs. non-progressive forms in the past and non-past (*Esta/estaba comiendo* ‘[She] is/was eating’).

3.1.1.3 *Morphological uniformity*

A related property of morphological systems, which is variable across linguistic systems, is their relative *uniformity*. Uniformity refers to whether or not morphological paradigms are consistent in their (high or low) level of complexity. In order to be uniform, a morphological system must contain only complex forms or no complex forms at all, in contrast to other paradigms that are mixed in this respect. For reasons that will become clearer below (Section 3.2), recent discussions have invoked this property particularly in relation to verbal morphology. For example, as noted above, Chinese has no verbal morphology and therefore no distinction between finite and non-finite forms (notwithstanding aspect particles). No verbal form, then, is complex with respect to person marking, and the Chinese verbal paradigm is therefore uniform. Similarly, Italian presents different verbal forms with all persons (which all differ from the infinitival form) and its verbal paradigm is therefore uniform. In contrast, English simultaneously presents complex verbal forms that diverge from the infinitive (*eats, eating, eaten*) and simple ones (*eat*) which are formally identical to the infinitival form. As a result, its verbal paradigm is mixed and it is therefore not uniform. This particular property of verbal morphology has been claimed to have major consequences for a variety of linguistic phenomena, such as whether a given language does or does not allow null elements in independent finite clauses (Jaeggli and Safir 1989; Hyams 1989, 1992b; Sano and Hyams 1994). Thus, English (mixed system) does not allow null elements in these contexts, whereas both Italian and Chinese (uniform systems) do so.

3.1.1.4 *Other formal properties of morphological markings*

Among the languages that present morphological systems, great variation also occurs with respect to the particular formal properties of these markings.

This type of variation can be illustrated in two ways. First, the form of morphological markings may vary with properties of the items they modify. For example, English presents basically one past tense morpheme (-ed) used on a majority of verbs, as well as a variety of so-called *irregular* forms (e.g. *come/came, go/went, eat/ate*). The system is more complex in German, where the distinction between regular and irregular verbs is less clear than in English. In contrast, French verbal morphology presents different endings for several classes of verbs, which are partly defined in terms of their phonological properties:² verbs with infinitives ending in -er (e.g. *manger* ‘to eat’), by far the most frequent; most verbs with infinitives ending in -ir (e.g. *finir* ‘to finish’); a third heterogeneous class comprising a number of verb forms (e.g. some verbs ending in -ir, such as *dormir* ‘to sleep’, and other verbs, such as *voir* ‘to see’).

Furthermore, morphological markings vary along another formal dimension concerning their position in relation to the item they modify. Markings might be placed before the constituent they modify (*prefixes*), after it (*suffixes*), or inside it (*infixes*). Similarly, note that a related fact concerns grammatical markings other than morphological ones. For example, depending on the language, some markings may take the form of *prepositions* or of *postpositions*, for example English provides prepositions which occur before the NP they modify (such as the spatial prepositions *on, under, above*), whereas Turkish expresses similar relations by means of postpositions, which occur after the NP they modify. As shown subsequently (Chapters 5 and 6), it has been argued that such formal differences affect the relative ease or difficulty encountered by children during language acquisition. For example, late overgeneralisation errors occur in some languages with past forms, and children have fewer difficulties acquiring morphological markings which are unit-final (suffixes) in comparison to other types (prefixes, infixes).

3.1.2 Orientation to subjects or topics

Languages have also been categorised as being *subject-oriented* vs. *topic-oriented*. This dimension is partly related to morphological properties, which contribute to the marking of subjecthood. Subjecthood can be described as a bundle of features, some of which are distributional and others morphological. Depending on the language, the subject NP has one or all of the following properties: it is in sentence-initial position (at least in so-called canonical clauses; see further discussion in Section 3.2. below), it governs verb-agreement (partially marked by distinctions in the verbal morphology), and/or it is marked with nominative case (in languages that provide case markings). In contrast to English, Chinese has practically no morphology and therefore neither subject-verb agreement nor case markings.³ As a result, the sentence is not organised around the subject, but rather

in terms of a *Topic-Comment Structure*: a topic is established before something is predicated of it (as in subject-oriented languages), but this structure is not articulated through the grammatical network of the sentence. Example (3.1) (from Li and Thompson 1981) illustrates such a topic-comment structure in Chinese.

- (3.1) Nei4chang2 huo3, xing4kui1 xiao1fang2dui4 lai2 de kuai4.
(that fire fortunately fire-brigade come PCL fast)
(‘That fire, fortunately the fire-brigade came quickly.’)

The extent to which languages may or may not be categorised in terms of such a two-way distinction is a matter of debate (also see Li and Thompson 1976). Thus, it has been argued that some Romance languages such as French (Lambrecht 1981, 1987) or Italian (Bates and Devescovi 1989), which have been traditionally classified as subject-oriented languages on the basis of their morphological properties, actually share some properties with Chinese with respect to topic-orientation. Depending on the language, this argument may be based on different phenomena. For example, particular French structures, such as the so-called left-*dislocations*, which are heavily used in informal spoken speech, exhibit a Topic-Comment Structure, whereby one or more topic NPs are placed in front of the sentence and followed by a predication that contains a coreferential clitic pronoun, for example (3.2). Related structures also exist that do not contain coreferential clitics but merely preposed nominals, for example (3.3). Similarly, French speakers strongly ‘resist’ the placement of new information in initial position, heavily relying on existential structures such as (3.4) and more strikingly (3.5), where the presentational function of the utterance (presenting a missing referent in discourse) overrides the semantic value of the utterance, resulting in a proposition that has no truth value (see related examples in Blanche-Benveniste *et al.* 1990). This rule is not strictly speaking grammaticalised (in the sense that it is not prescribed by the grammar, at least not in the written register), but it is heavily followed in the spoken register. In this respect, French resembles Chinese, where new information must be postverbal (see Chapter 1, as well as further details in Section 3.2 below).

- (3.2) Son vélo, les pneus, Pierre il doit les gonfler.
(‘His bike, the tyres, Pierre he must pump them.’)
(3.3) Son vélo, les pneus, Pierre il doit s’y mettre.
(‘His bike, the tyres, Pierre he must get started (with them).’)
(3.4) Y’a un type qui arrive.
(‘There’s a guy that comes.’)
(3.5) Moi, j’ai un livre que j’ai pas.
(‘As for me, I have a book that I don’t have.’)

3.1.3 Lexicalisation and grammaticalisation

A third general dimension differentiating languages concerns the ways in which systems encode information through grammatical or lexical means. The question of how to relate the grammar and the lexicon is controversial and rampant in linguistic theory, lying beyond the scope of this discussion. Nonetheless, some of the specific issues it raises are relevant to subsequent chapters, as illustrated by three examples. First, some languages mark distinctions in their verbal morphology, while others express equivalent or related distinctions by other lexicalised, semi-lexicalised, or periphrastic means. For example, as noted above (also see Section 3.4. below), whereas English grammaticalises the distinction between progressive and non-progressive forms, French expresses this distinction by means of a periphrastic construction (*être en train de* ‘to be in the course of’). In languages such as Chinese, which provide no grammaticalised tense forms, speakers have optional lexical means such as adverbials, which partially perform some of the same functions. Furthermore, Chinese provides several means of marking aspect, including adverbials (imperfective *zai4*) and particles (perfective *le*, imperfective *zhe*), as illustrated in (3.6) and (3.7). The particle *le* has also been claimed to mark several meanings depending on its position (perfectivity when verb-final, *current relevance* when sentence-final), but some analyses propose the unified meaning ‘focus on a new state’ to encompass both of these uses (see a review in Li, 1990). Finally, Chinese provides complex verbal constructions that can mark simultaneously a process and the result of this process, for example (3.8). According to some analyses (Smith 1985), all of these markings may serve as the basis for pragmatic inferences concerning tense.

- (3.6) Ta1 pao3 le
(3p run LE)
(‘He ran.’)
- (3.7) Ta1 pao3-zhe. / Ta1 zai4 pao3.
(3p run-IMP) / (3p IMP run)
(‘He is/was running.’)
- (3.8) Ta1 pao3-xia4-lai2 le
(3p run-down-come LE)
(‘He ran down.’)

A second example, noted in Chapter 1 and further discussed below (Section 3.3.), concerns the linguistic representation of motion events. As shown by Talmy (1975, 1983, 1985, 2000), languages differ greatly with respect to how they express motion events that imply a change of location. In particular, whereas path information is grammaticalised in some languages (*satellite-framed* languages), for example by

means of particles and prepositions, it is lexicalised in the verb roots of other languages (*verb-framed* languages) (e.g. English *to go/run into/out of* vs. French *entrer/sortir en marchant* ‘to enter/exit by running’). As will be shown, a major consequence of this cross-linguistic difference is that different aspects of motion may be more or less salient than others in a given language, becoming more or less accessible to speakers in a variety of situations.

Third, within a cross-linguistic perspective it is sometimes difficult to maintain traditional distinctions between grammatical vs. lexical classes or between *open-class* vs. *closed-class* items, frequently used to describe child language (also see a discussion in Slobin 1997). Roughly, closed-class items have been taken to include grammatical elements, such as inflections, prepositions, particles, connectives, and the like, in contrast to open-class items, roughly including lexical items, such as nouns, verbs, adjectives, and the like. Some linguistic elements resist such classifications, such as pronominal systems. On the one hand, pronouns are akin to nouns in that they can be substitutes for nouns when we denote entities (hence their label as *pro-nouns*), and they could be included among other items of the open class on this ground. On the other hand, pronouns are part of a larger network of complex grammatical processes, some properties of which are variable across languages. As noted above, the properties of clitic pronouns in Romance languages, as well as the particular settings exhibited by different languages with respect to null subjects, have both been linked to properties of their verbal morphology (Givón 1976, 1983; Lambrecht 1981, 1987; Jakubowicz *et al.* 1996; Jakubowicz and Rigaut 1997). Thus, Romance clitic pronouns have been interpreted as being akin to morphological markings, for example as providing kinds of verbal prefixes marking topic and/or subject agreement. In addition, the possibility of omitting subjects in languages such as Spanish or Italian has been linked to the richness and/or uniformity of their verbal morphology. As a result, it becomes at least necessary to qualify the distinction between closed-class and open-class items substantially, perhaps in terms of a continuum, rather than a dichotomy (also see Victorri 1999).

3.2 Denoting entities

We now turn to more detailed illustrations of invariant and variable properties of languages in each of the domains to be examined in subsequent chapters, beginning with the linguistic means available to denote entities. This section focuses more particularly on three points concerning this aspect of language: grammatical principles characterising pronominal forms (Section 3.2.1); functional principles governing *local* vs. *global* markings of discourse status (Section 3.2.2); and the multifunctionality of these different markings, which serve to mark simultaneously syntactic, semantic, and pragmatic distinctions (Section 3.2.3).

3.2.1 Grammatical principles

Pronouns illustrate some crucial assumptions underlying Chomsky's (1981) theory of Government and Binding, such as the assumptions of innateness and modularity discussed in Chapter 2. According to this view, children are endowed with knowledge of the general grammatical principles defining all human languages and with a number of *parameters* or dimensions providing different *settings* along which languages vary. Their task is then to discover the particular parametric settings characterising their native language. Theoretical variants revolve around various issues, such as the role of maturation and the general nature of parameters or the particular parametric values of given languages.

General principles of Universal Grammar can be illustrated by Principles A to C (Chomsky 1981), sketched non-technically in (3.9) in their most accepted and frequently cited version, leaving aside theoretical details and variants (*bound* = c-commanded by an element in an argument position, *free* = not bound). These principles define *binding conditions* for reflexive pronouns (*bound anaphors*) as opposed to non-reflexive pronouns (*pronominals*) and lexical expressions (*R-expressions*). Roughly, a reflexive must have an antecedent that is higher in the tree in the same *local domain* (e.g. the clause), whereas other expressions cannot be bound by such an antecedent.

- (3.9) A. An anaphor must be bound in its governing category.
 B. A pronominal must be free in its governing category.
 C. An R-expression must be free.

Principles A to C account for the grammaticality and interpretations of sentence variants such as those shown in (3.10) and (3.11) (indices show coreferential relations between pronouns and nouns, among which impossible ones are marked by asterisks). For example, pronominalisation by means of a reflexive is obligatory in (3.10a) (coreferential subject and object NPs), while the non-reflexive object pronominal in (3.10b) and the object nominal in (3.10c) are only possible if these NPs are not coreferential with the subject NP. Notwithstanding theoretical debate, the structurally dependent *command*-type relations inherent in these principles also capture a variety of phenomena, including facts about the directionality of coreference between non-reflexive pronouns and full expressions, for example the *blocking* of backward or forward coreference in sentences such as (3.12) to (3.14).⁴

- (3.10) a. John_i likes himself_i.
 b. John_i likes him_{j,*i}.
 c. John_i likes John_{j,*i}.
 (3.11) a. John_i believes that Mary likes him_{i,j}.
 b. John_i believes that Mary likes *himself_{i,j}.
 c. John_i believes that Mary likes John_{j,*i}.

- (3.12) He_i says that John_{j,*i} ate an apple.
(3.13) He_i ate an apple before John_{j,*i} left.
(3.14) Near John_i, he_{j,*i} saw an apple.

These principles apply to all languages, despite cross-linguistic variations, captured in this framework by parameters. One source of cross-linguistic variation, which has been extensively studied in recent studies of child language, is related to *null subjects*, which were illustrated in Chapter 1, as shown again by examples (3.15) and (3.16). The *pro-drop* parameter differentiates languages that allow null subjects in independent tensed sentences (*pro-drop* languages) from those that do not allow them (*non-pro-drop* languages). For example, null subjects are expected in Spanish (3.15) and obligatory in (3.16). As a result, explicit subjects are optional and they only occur in specifically marked contexts, such as the contrastive context in (3.17). In contrast, null subjects are not possible in the English equivalents, where overt thematic or expletive subjects are required. It has also been suggested that a related parameter might be necessary to differentiate *zero-topic* from *non-zero-topic* languages, accounting for null elements in relation to a set of properties (e.g. *topic chaining*) that are only found in some languages (Huang 1984). Huang proposes that languages fall into one of four classes resulting from the crossing of these two parameters: non-zero-topic and non-pro-drop (e.g. English), pro-drop and non-zero-topic (e.g. Italian, Spanish), pro-drop and zero-topic (e.g. Chinese, Japanese), and zero-topic and non-pro-drop (e.g. German).⁵ According to this proposal (see also among others Li and Thompson 1976, 1979, 1981), the more general parameter of *discourse vs. subject* orientation accounts for a bundle of properties including zero-topics shared by languages such as Chinese and Japanese.

- (3.15) Está comiendo una manzana. / Está comiendo una manzana.
(‘[I] am eating an apple.’) / (‘[S/he] is eating an apple.’)
(3.16) Está lloviendo.
(‘[It] is raining.’)
(3.17) YO estoy comiendo una manzana.
(‘[As for ME] I am eating an apple.’)

3.2.2 Functional pragmatic principles

Within an entirely different perspective, pronouns illustrate functional pragmatic properties of languages. In this section, we focus particularly on properties of various types of referring expressions in relation to information structure in discourse. As noted previously (Chapters 1 and 2), all languages provide ways of marking the discourse status of information by differentiating *given* and *new* entities in discourse and/or entities that have different degrees of *accessibility*

(e.g. Chafe 1974, 1976, 1979; Halliday and Hasan 1976). These devices are of two types: *local* markings on the noun phrase and *global* ones affecting the entire clause. Languages, however, rely differentially on these two types of devices. As shown below, in some languages local markings are obligatory and global ones are entirely optional, whereas the reverse is true in others. In addition, optional markings may be more or less heavily used in particular contexts, depending on the language.

3.2.2.1 *Local markings of discourse status*

In all languages NPs can be ordered along a continuum representing the degree to which they presuppose the existence and identity of referents (Givón 1976, 1983; Silverstein 1976a, 1987a). Such a continuum, which was briefly mentioned in preceding chapters, is further illustrated in (3.18) below for three Indo-European (IE) languages: English, French, and German. In these languages, indefinite determiners do not presuppose mutual knowledge and therefore serve to mark referent introductions (newness). In contrast, definite nominals and pronouns denote mutually known entities (givenness) and they vary in terms of how much they presuppose the identity of these entities. Among them zero elements (e.g. *He walked in and 0 took off his hat*) constitute the most presupposing forms of all, since they provide no information whatsoever concerning the referent. A variety of other forms exist, such as demonstratives, which typically denote given entities, except in some contexts, such as English *this N* (but not *that N*), which can be used in colloquial speech to mark newness (e.g. *I saw this guy, he . . .*).

(3.18) Referring expressions and information status in English, French, and German

NOMINALS		PRONOMINALS				
INDEFINITE	<	DEFINITE	<	EXPLICIT	<	NULL
NEW		GIVEN		GIVEN		GIVEN
<i>a dog</i>		<i>the dog</i>		<i>it</i>		<i>0</i>
<i>un chien</i>		<i>le chien</i>		<i>il</i>		<i>0</i>
<i>ein Hund</i>		<i>der Hund</i>		<i>er</i>		<i>0</i>

Languages rely differentially on local markings of information status. In particular, determiners are grammatically obligatory in English, French, and German, where the indefinite/definite distinction obligatorily marks new/given entities. In contrast, determiners are grammatically optional in Chinese and not obligatory to mark information status. The main NP types available in Chinese are sketched in (3.19) and illustrated in (3.20) (local markings are indicated in bold, superscripts in (3.19) correspond to examples (a) to (h) in (3.20)):

- (1) Numerals or other quantifying determiners (e.g. *yi1* ‘one’ (3.20a), *san1* ‘three’ (3.20b)) and/or various classifiers (e.g. *ge*, *zhi1* (3.20a, b, c), to be further discussed below) can be used as optional newness markers to introduce referents;
 - (2) demonstratives (*zhei4* ‘this’ (3.20e), *nei4* ‘that’ (3.20f)), as well as explicit pronouns (3.20g) and zero elements (3.20h) always denote mutually known referents;
 - (3) bare nouns (without determiner or classifier (3.20d)) potentially denote given or new information (under some particular conditions, see below) and serve various other functions (e.g. labelling, non-specific uses).
- (3.19) Referring expressions and information status in Chinese

NOMINALS		PRONOMINALS		
(NUM)+CL+NOM ^{a,b,c}	BARE ^d	DEM ^{e,f}	EXPLICIT ^g	NULL ^h
NEW	NEW/GIVEN	GIVEN	GIVEN	GIVEN

- (3.20) a. **yi1-ge** gou3; **yi1-zhi1** gou3
 (one-GCL dog); (one-SCL dog)
 (‘one/a dog’)
- b. **san1-ge** niao3; **san1-zhi1** niao3
 (three-GCL bird); (three-SCL bird)
 (‘three birds’)
- c. **ge** gou3; **zhi1** gou3
 (GCL dog); (SCL dog)
 (‘a/some dog’)
- d. gou3
 (‘dog’)
 (‘a/some/the dog(s)’)
- e. **zhei4-ge** gou3; **zhei4-zhi1** gou3
 (this-GCL dog); (this-SCL dog)
 (‘this/these dog(s)’)
- f. **nei4-ge** gou3; **nei4-zhi1** gou3
 (that-GCL dog); (that-SCL dog)
 (‘that/those dog(s)’)
- g. **ta1**; **ta1men**
 (3rd person); (3rd person plural)
 (‘she/he/it/they’); (‘they’)
- h. **0** mai4 le **0**
 (buy LE)
 (‘(He) bought (it)’)

Structurally Chinese classifiers (CL) are combined with determiners (DET) and nouns (N) as shown in (3.21). A classifier must precede the noun if a determiner is used, resulting in the structure DET + CL + N, illustrated in (3.20a, b, e, f). A classifier may also precede the noun if no determiner is used, resulting in the structure CL + N illustrated in (3.20c), but it need not do so, as illustrated by the bare nominal in (3.20d). Classifiers are of two types: the *general* classifier *ge*, possible with any noun, and numerous *specific* classifiers (over a hundred), which depend on lexical content, for example various terms for measurement (*bang4* ‘pound of’), containers (*ping2* ‘bottle of’, *bei1* ‘glass of’), aggregates (*tao4* ‘set of’, *wol1* ‘brood of’), and particular classes either commonly marked in some contexts (*zhang1* for leaves or sheets of paper, *ben3* for books, *zhi1* for animals, with exceptions, e.g. *pi2* for horses, optional *tou2* for cattle) or rarely marked except in special contexts (e.g. *wei4* for humans). All classifiers (general or specific) can denote given or new information. In newness contexts, however, a classifier is typically used, even in the absence of DET, at least with new singular entities.⁶ Furthermore, specific classifiers seem to be preferred in these contexts, at least if they are available and common for a given class (Erbaugh 1986; Li and Thompson 1981; Sun 1988).

(3.21) ((DET) + CL) + N

3.2.2.2 *Global markings of discourse status*

In all languages clause-structure variations constitute another type of marking for discourse status, which is of a more global nature, since it affects the organisation of several elements in the clause.⁷ Despite much cross-linguistic variation, word-order (sometimes in relation to other procedures) contributes to the marking of information structure according to the following two complementary general principles that recur across many languages: given information tends to be placed towards the beginning of the utterance, new information towards the end (hereafter the *given-first* and *new-last* principles, respectively).⁸ For example, with respect to the marking of newness, several types of structures allow NPs to occur towards the end of the sentence in languages such as English, French, and German. First, subject-verb inversions such as (3.22) and (3.23) allow speakers to place subject NPs denoting new information in postverbal rather than sentence-initial position.

(3.22) a. Sitting on the fence is a bird.

b. Auf dem Zaun sitzt ein Vogel.

c. Sur la barrière se trouve un oiseau.

(3.23) a. At that very moment appears a dog.

b. In dem Moment kommt ein Hund.

c. A ce moment-là apparaît un chien.

Second, existentials such as (3.24) to (3.26) constitute particular types of *presentative* structures commonly used to mark newness across languages. They follow the same principle as inversions (postverbal new information), but have particular properties, that is *dummy expletive* subjects (*there, es, il*) and/or specific verbs (*be/have* or posture/motion verbs in some languages), typically in clearly identifiable structures. Some existentials, however, are more difficult to distinguish from inversions, for example German existentials frequently consist of inversions with sentence-initial spatial adverbs (e.g. *da* ‘there’ in (3.25b)), akin to inversions with complex adverbials such as (3.22b) and (3.23b) above.⁹

- (3.24) a. There was once a dog.
b. Es war einmal ein Hund.
c. Il était une fois un chien.
- (3.25) a. There is a dog.
b. Da ist ein Hund.
c. Il y a un chien.
- (3.26) a. There comes/sits a dog.
b. Da kommt/sitzt ein Hund.
c. Il y a un chien qui arrive/s’assied.

Third, in all languages postverbal position can be achieved in other less specialised ways, especially when a new entity is introduced in relation to another previously introduced referent. Thus, in English (3.27) the referent introduction (*a dog*) is merely an object NP in a SVO structure.

- (3.27) She had/ saw/ heard/ found/ bought a dog.

Depending on the language, global markings of newness are either optional or obligatory. Thus, despite variable constraints on word order (see below), postverbal position is merely an optional complement to indefinite determiners in English, French, or German. Some constructions can even be restricted to particular contexts (e.g. the somewhat literary flavour of subject-verb inversions in English or French), while others might be actually highly preferred in some languages (e.g. existential constructions in spoken French). In contrast, postverbal position is an obligatory newness marker in Chinese, as illustrated by (3.28) (from Li and Thompson 1981; relevant NPs in bold). The introductions in (a) to (c) are all postverbal and therefore appropriate, whether they are locally marked by a numeral and/or a (specific or general) classifier. Postverbal position is achieved here by subject-verb inversion, which is a common presentative device, but only possible with a subset of posture and motion predicates. In contrast, the bare noun in (d) is preverbal and therefore

cannot denote new information.¹⁰ As for sentences (e) and (f), they are ungrammatical, since they combine local newness markings (numeral and/or classifier) with preverbal position. Finally, examples (g) and (h) illustrate other structures in which new information is postverbal: existentials (g), in which the introduction is placed after the verb *you3* ('have') and which may be followed by another verb in a structure; SVO transitive structures (h), in which the NP denoting the new referent is in object role.

- (3.28) a. Lai2 le **yi1-ge** [**yi1-wei4**] **ren2**.
 (come LE **one-GCL** [**one-SCL**] **person**)
 ('A person came.')
- b. Lai2 le **ge** [**wei4**] **ren2** le.
 (come LE **GCL** [**SCL**] **person** LE)
 ('A person has come.')
- c. Lai2 le **ren2** le.
 (come LE **person** LE)
 ('[There] came [a/some] person(s).')
- d. **Ren2** lai2 le.
 (**person** come LE)
 ('[The] person(s) has/have come.')
- e. ***Yi1-ge** [**yi1-wei4**] **ren2** lai2 le.
 (**one-GCL** [**one-SCL**] **person** come LE)
- f. ***Ge** [**wei4**] **ren2** lai2 le.
 (**GCL** [**SCL**] **person** come LE)
- g. You3 **yi1-zhi1** **gou3**. / you3 **yi1-zhi1** **gou3** lai2 le.
 (have **one-SCL** **dog**) / (have **one-SCL** **dog** come LE)
 ('There is/was a dog.') / ('There is/was a dog (that) comes/came.')
- h. Ta1 you3 **yi1-zhi1** **gou3**.
 (3p have **one-SCL** **dog**.)
 ('He has/had a dog.')

With respect to reference maintenance, we saw that the given-first principle is partially grammaticalised in some languages. Thus, in Romance languages, all clitic pronouns are obligatorily preverbal regardless of their roles, resulting in a different word order, for example SVO vs. SOV in the two-argument structure of examples (3.29) and (3.30) (reproduced below from Chapter 1) or S-V-O-IO vs. S-O-IO-V order in the three-argument structure of examples (3.31) and (3.32).¹¹

- (3.29) Le chat a mangé le rat.
 ('The cat_S ate_V the rat_O')

- (3.30) Il l'a mangé.
(‘He_S him_O ate_V’ → ‘He ate him.’)
- (3.31) La maîtresse donne des livres aux enfants.
(‘The teacher_S gives_V books_O to the children_{IO}.’)
- (3.32) Elle les leur donne.
(lit: ‘She_S them_O them_{IO} gives_V.’ → ‘She gave them to them.’)

Other types of structures have particular functions across languages. For example, passive or passive-like structures allow speakers of nominative-accusative languages to maintain reference to a highly presupposed topical referent in patient role. However, the variability of clause-structure in discourse is much greater in some languages than in others. For example, although presentational structures such as existentials are recurrent means of introducing referents across languages, they are also heavily used for reference maintenance in French, particularly in contexts where a referent is reintroduced after not being at the centre of discourse for a while, for example (3.33).

- (3.33) Il y a le policier qui revient, furieux de n'avoir rien trouvé.
(‘There’s the policeman that comes back, furious not to have found anything.’)

In addition, as mentioned above, spoken French makes heavy use of various structures, such as *dislocations* to the left ((3.34) and (3.35)), to the right ((3.36) and (3.37)), or to both the left and right ((3.38) and (3.39)). Any NP may be dislocated to the periphery of the clause on either of its two sides and several NPs may be thus dislocated, particularly to the left, as in (3.40). Analyses of such constructions (e.g. Lambrecht 1981, 1987) show that they serve a number of functions, such as the promotion of NPs to topical status and that they are constrained by information status. When reference is specific, only definite nominals denoting given information may be dislocated, not indefinite ones denoting new information, for example (3.41) and (3.42). If reference is non-specific, a different pronoun must be used, for example the demonstrative *ça* (3.43).

- (3.34) Le chat, il a mangé le rat. (‘The cat, he ate the rat.’)
- (3.35) Le rat, le chat l'a mangé. (‘The rat, the cat ate it.’)
- (3.36) Il a mangé le rat, le chat. (‘He ate the rat, the cat.’)
- (3.37) Le chat l'a mangé, le rat. (‘The cat ate it, the rat.’)
- (3.38) Le rat, il l'a mangé, le chat. (‘The rat, it ate it, the cat.’)
- (3.39) Le chat, il l'a mangé, le rat. (‘The cat, it ate it, the rat.’)

- (3.40) Le chat, le rat, il l'a mangé. ('The cat, the rat, it ate it.')
 (3.41) *Un chat, il a mangé le rat. ('*A cat, he ate the rat.')

(3.42) *Il a mangé le rat, un chat. ('*He ate the rat, a cat.')

(3.43) Un chat, ça mange les rats. ('A cat, that eats rats.')

3.2.3 Multifunctionality

In sum, all languages provide similar local and global markings of information status, but in some of them local markings are obligatory and global ones optional, whereas the reverse is true in others (notwithstanding other distinctions and constraints). Furthermore, as briefly noted in Chapter 1, these different markings of information status have other functions, all of which must be learned by the child. As shown below, these different functions pertain to various syntactic, semantic, and pragmatic properties of utterances at the sentence and discourse levels. In this respect, languages vary a great deal with respect to how they map these different sentential and discourse functions onto the same forms.

3.2.3.1 Other functions and properties of local markings

Local markings of information status are part of larger systems involving other distinctions. First, as noted above, these forms carry a variety of markings, including nominal morphology in some languages (e.g. case, number, gender) and other types of elements (e.g. classifiers in Chinese). English pronouns contrast with respect to gender (*she, he, it*), number (*they* vs. *he*), or case (only available with pronouns, e.g. *he/him*). Examples (3.44) and (3.45) also show number markings with English nominals (plural *-s*), absence of nominal determiner, or use of a special determiner vs. use of the indefinite determiner.

(3.44) I bought (some) oranges.

(3.45) I bought an orange.

A second distinction is the one between specific and non-specific reference, which corresponds to whether or not the speaker intends to denote a particular entity. In contrast to the NP *an orange* in (3.45), which denotes a particular orange, the same expression in (3.46) presumably would not denote a particular orange, that is the speaker wants any piece of fruit belonging to a particular class. Similarly, example (3.47) shows a generic use, typically marked by plural forms in English, whereby the predication (being good for one's health) applies to the class of all oranges.

(3.46) I want an orange.

(3.47) Oranges are good for your health.

Third, the examples in (3.48) show how indefinite determiners can also be used to label referents in *predicating* constructions that allow speakers to assign to an entity membership to a class of referents. In such utterances it is the demonstrative or personal pronoun (*this, it*) that denotes the referent, while the indefinite form is part of the predicate which attributes some property to this entity. Related constructions are illustrated in (3.49) and (3.50), although they are formally and functionally different from those in (3.48). As noted above, existential constructions (*There is a dog*) serve to introduce them in discourse, differing from structures such as (3.48), which serve to identify them, and from utterances such as (3.50), which draw the listener's attention to the existence of a particular referent (otherwise presupposed through ellipsis from non-linguistic context).

(3.48) This is an orange. / It's an orange.

(3.49) There's an orange.

(3.50) Look! An orange!

Finally, examples (3.51) to (3.53) illustrate a further semantic distinction between mass and count nouns. What is denoted in (3.51) is not an individuated entity, but rather a substance (absence of determiner in the NP *water*), individuation being possible through specification of the container as in (3.52) (the complex determiner *a glass of water* in (3.52)) and/or some form of quantification through special determiners as in (3.53) (*some*). Thus, in English special determiners or zero determiner forms signal mass nouns or a plurality of new entities otherwise marked by plural morphology.

(3.51) I poured water into the glass.

(3.52) I drank a glass of water.

(3.53) I poured some water into the glass.

This system of form–function relations may take different forms across languages. Thus, French distinguishes definite/indefinite articles both in the singular and in the plural, for example (3.54), treating mass nouns differently (partitive construction in (3.55)). Furthermore, in French and in German indefinite determiners (French *un/une*, German *ein/eine*) simultaneously serve an introductory function (new information in (3.56)) and a numerical function (counting in (3.57)), whereas English differentiates indefinite determiners (*a N*) and numerical ones (*one N*) for singular entities.¹²

(3.54) J'ai acheté une orange/des oranges.

(‘I bought an orange/some oranges.’)

(3.55) J'ai versé de l'eau dans mon verre.

(‘I poured water in my glass.’)

- (3.56) Hier j'ai trouvé un chien et je l'ai adopté.
(‘Yesterday I found a dog and I adopted it.’)
- (3.57) Donnez-moi une orange, deux pommes et trois bananes.
(‘Give me one/an orange, two apples and three bananas.’)

3.2.3.2 *Other functions and properties of global markings*

As shown above with respect to local markings, global markings are also multifunctional, contributing to both sentential and discourse organisation. In particular, in addition to marking discourse status, word order is one of the devices that serve to organise grammatical relations within the clause. As noted in Chapter 1, in the absence of a complex morphology, NP position is even the main feature serving to mark role relations in some languages, whereas languages with rich morphological systems allow more word-order variation in this respect. More generally, the extent to which languages rely on global markings for sentence or discourse organisation depends in part on the availability or absence of local markings. Thus, Chinese has basically no morphology, providing only rare and optional local markings (classifiers, number in pronouns, patient particles). As a result, word order is a central marking in discourse and in the sentence.

In addition, a number of other constraints affect the extent to which NP position constitutes a contrastive marking of information status in discourse. For example, regardless of information status, German requires the verb to be always in the second position of main or independent clauses, for example subject-verb inversions are obligatory with sentence-initial elements (XVS order in (3.59) vs. SVO in (3.58)), while verb-final order is obligatory in subordinate clauses (e.g. SOV in (3.60)).¹³ In these cases, position as such does not mark newness, even though it might result from other processes (speech act, sentence-initial discourse connectors, subordination) which do centrally contribute to discourse organisation.

- (3.58) Eine Frau/die Frau/sie hat angerufen.
(‘A woman/the woman/she has called.’)
- (3.59) Gestern hat eine Frau/die Frau/sie angerufen.
(lit. ‘Yesterday has a woman/the woman/she called.’)
- (3.60) Ich habe gefragt, ob eine Frau/die Frau/sie angerufen hat.
(lit. ‘I asked if a woman/the woman/she called has.’)

3.3 Space

Invariant and variable aspects of linguistic systems can also be illustrated in the spatial domain. I focus below on four fundamental aspects of this domain: basic types of distinctions differentiating situations in which entities are spatially related (Section 3.3.1); the packaging of different types of information

relevant to the representation of motion events (Section 3.3.2); different patterns exhibited by languages with respect to how they organise the universe of spatial relations (Section 3.3.3); the anchoring of spatial information in discourse (Section 3.3.4).

3.3.1 Figures, grounds, and situations

Notwithstanding theoretical or terminological divergence and debated cross-linguistic differences (see further discussion below), we begin with Talmy's proposal (1975, 1983, 1985, 2000) to characterise spatial reference as involving a basic schema, defined by two minimal components: the *figure*, which is the entity about which motion or location is predicated, and the *ground*, which is the entity to which the figure is related.¹⁴ The figure and ground are related within various situations, among which three major types are distinguished in all languages. A first universal distinction contrasts *static* and *dynamic* situations. Static situations locate a figure in relation to a ground by means of a number of possible spatial relations (e.g. *to be in, on, under, above*, and so on), whereas dynamic ones involve some displacement of the figure in relation to the ground, whether this displacement consists of voluntary motion (e.g. *to run, walk, crawl, climb*, and so on) or not (e.g. *to fall down, to disappear*, and so on). A second universal distinction contrasts motion events that do or do not result in a change of location, that is displacements that take place within one general location vs. those that imply distinct source and goal locations (e.g. *to run in vs. into, to swim in vs. across*, and so on).

These different types of situations are represented by different types of predicates. As illustrated below, static predicates may be simple copulas (e.g. English *be* in (3.61)) or more complex predicates providing further information, such as position, posture, and/or some spatial configuration (e.g. English *stand, lie, sit* in (3.62) and (3.63), German *stehen, liegen, sitzen* in (3.64) and (3.65), French modifiers such as the adjectives *debout* 'standing' or the past participial *assis* 'sitting' in (3.66) and (3.67)). Although such diverse predicates exist in all languages, the extent to which they are used is variable. For example, a copula is minimally obligatory in English, except in cases of anaphoric or elliptic use (e.g. (3.68)), but in other languages a posture verb is obligatory (e.g. German (3.64) and (3.65)). In contrast, in other languages specific verbs are only used in some particular discourse contexts (e.g. the contrastive or salient uses in French (3.66) and (3.67) in comparison to the more neutral *Le bébé est sur la table* 'The baby is on the table') and they furthermore obey a number of other constraints, for example they are most typical of animate referents in French. Finally, in some languages such as Chinese the same device that serves to locate a referent can function either as a verb (e.g. *zai4* 'be-at' in (3.69)) or as a 'co-verb' (e.g. *zai4* 'at' in (3.70) which contains a posture verb (*zuo4* or *zhan4* 'sit')).

- (3.61) The baby is in the kitchen.
 (3.62) The baby is standing/lying/sitting in the kitchen.
 (3.63) The book is standing on the shelf.
 (3.64) Das Baby steht/liegt/sitzt in der Küche.
 ('The baby is standing/lying/sitting in the kitchen.')
- (3.65) Das Buch steht auf dem Regal.
 ('The book is standing on the shelf.')
- (3.66) Le chat est assis, le chien est debout.
 ('The baby is sitting, the dog is standing.')
- (3.67) Attention, le bébé est debout sur la table, il va tomber!
 ('Watch out! The baby is standing on the table, it's going to fall!')
- (3.68) The dog is in the living room, the baby in the kitchen.
 (3.69) Ying1er2 zai4 ke4ting1, gou3 zai4 chu2fang2
 (Baby be-at living room, dog be-at kitchen)
 ('The baby is in the living room. The dog is in the kitchen.')
- (3.70) Ying1er2 zuo4 zai4 zhuo1zishang4. Gou3 zhan4 zai4 shu4 xia4
 (Baby sit be-at table on. Dog sit be-at tree under.)
 ('The baby is sitting on the table. The dog is sitting under the tree.')

Dynamic situations involve the use of predicates representing some type of displacement on the part of the figure. Although any motion event involves a change of location in some sense, all languages distinguish dynamic situations in which the displacement of the figure does or does not necessarily imply a change of its location or, more generally, a change of state, for example English (3.71) vs. (3.72) (reproduced from Chapter 1).

- (3.71) The baby is running in the kitchen.
 (3.72) The baby is running into the kitchen.

Various other aspects of dynamic situations may be represented in the predicates of all languages, notwithstanding the particular ways in which this information is organised in a given language (see Section 3.3.2 below). At least four types of information can be represented. First, some aspect of the utterance expresses the *path* of motion, which might involve a boundary to be crossed by the figure, for example *into*, *out of*, *across* in (3.72) to (3.74), or a particular direction followed by the figure, for example *up* and *down* in (3.75).

- (3.73) The baby is running out of the kitchen.
 (3.74) The baby is running across the kitchen.
 (3.75) The baby is running up/down the sofa.

Second, utterances representing motion might also involve a deictic reference point. For example, motion takes place in relation to a specified *origo* in examples (3.76) and (3.77), which provides a source or goal location. Such locations, however, may also be entirely implicit on the basis of presuppositions from context, as in (3.78) (see also Section 3.3.4 below). Some motion verbs inherently contain a deictic component, for example English *come* and *go* contrast with respect to the perspective taken on the event, that is motion towards a reference point in (3.79) and away from it in (3.80).¹⁵

(3.76) The baby is running away from the kitchen.

(3.77) The baby is running back into the kitchen.

(3.78) The baby is running away/back.

(3.79) The baby came in.

(3.80) The baby went out.

Third, the manner in which motion is carried out may or may not be expressed. For example, motion verbs such as *walk*, *run* and *crawl* in (3.81) and (3.82) all specify the manner of motion, providing information concerning the physical activity carried out by an agentive figure in order to achieve a particular type of displacement. In contrast, some verbs such as *come* and *go* simply express motion in relation to a path, as in (3.79) and (3.80) above. In this case the focus is placed on the path, while the manner is irrelevant.¹⁶

(3.81) The baby is walking/running/crawling in the kitchen.

(3.82) The baby is walking/running/crawling into the kitchen.

Fourth, dynamic predicates might express displacements that are voluntarily carried out by an agent or provoked by some external cause constituting the source of the motion. For example, whereas all of the above examples involve an agentive figure, the displacement of different entities in (3.83) to (3.87) (curtain, pigeons, leaves, door) is caused by some other source (the baby, the wind). These examples also show how causativity may be combined with other types of information in English, that is with direction in (3.83), with a boundary in (3.84) and (3.85), with deixis in (3.86), and with results in (3.87).

(3.83) The baby is pulling the curtain down.

(3.84) The boy pushed the car into the garage.

(3.85) The wind blew all the leaves across the yard.

(3.86) The baby is chasing the pigeons away.

(3.87) The boy kicked the door open.

3.3.2 Packaging motion

Languages present wide variations in the systems of devices they provide for the marking of the above distinctions. I focus here on a major typological difference among languages, which will be central to subsequent chapters, namely the ways in which they package spatial information in the clause, particularly in utterances that represent a change of location. In this respect, recall from preceding chapters that Talmy (1975, 1983, 1985, 2000) classifies languages into two major groups: *satellite-framed* languages (also called *manner-oriented* languages) vs. *verb-framed* languages (also called *path-oriented* languages). As illustrated above with English examples, satellite-framed languages typically encode the manner of motion in the verb root and various pieces of information relevant to its path in verbal satellites that are combined with the verb root, such as prepositions, particles, adverbials, and the like. In contrast, verb-framed languages encode the path of motion in the verb root and its manner by peripheral means (if manner is encoded at all, see below). French examples (3.88) to (3.96) illustrate this language group. Thus, the verb roots in these examples all encode information concerning the path, that is boundaries (*entrer* ‘to enter’, *sortir* ‘to exit’, *traverser* ‘to cross’), deixis (*partir* ‘to leave’, *arriver* ‘to arrive’), direction (*monter* ‘to go up’, *descendre* ‘to go down’). Manner can be expressed by means of various adjuncts, such as adverbials and gerunds expressing bodily manner (*à quatre pattes* ‘on all fours’, *en marchant* ‘by walking’, *en courant* ‘by running’, *en nageant/à la nage* ‘by swimming’, *en rampant* ‘by crawling’) or instrumental information (e.g. *en vélo* ‘by bike’, *en voiture* ‘by car’, *en avion* ‘by plane’). However, manner information is peripheral and most typically not expressed, except for the purposes of emphasis and/or contrast in discourse. Furthermore, in contrast to English, a language such as French does not allow transitive and intransitive uses of the same motion verbs to express caused vs. spontaneous motion, requiring the use of a special causative construction (*faire* ‘to make’ + INF) for the former type of event, for example (3.95) vs. (3.96), respectively.

- (3.88) Le bébé entre dans la cuisine en marchant/courant/rampant.
 (‘The baby enters in the kitchen by walking/running/crawling.’)
- (3.89) Le bébé sort de la cuisine en rampant/à quatre pattes.
 (‘The baby comes out of the kitchen by crawling/on all fours.’)
- (3.90) Le bébé a traversé la rue en courant.
 (‘The baby has crossed the street by running.’)
- (3.91) Le bébé est parti en marchant.
 (‘The baby has left by walking.’)
- (3.92) Le bébé est arrivé en marchant.
 (‘The baby has arrived by walking.’)

- (3.93) Le bébé est monté sur le canapé.
(‘The baby has ascended on the sofa.’)
- (3.94) Le bébé est descendu du canapé.
(‘The baby has descended from the sofa.’)
- (3.95) La balle roule dans la cuisine.
(‘The ball rolls in the kitchen.’)
- (3.96) Le garçon fait rouler la balle dans la cuisine.
(‘The boy rolls the ball in the kitchen.’)

It should be noted that this typological difference only applies to cases where motion implies a change of location, but not to most cases where motion occurs within a general location. Thus, a great number of motion verbs encoding manner exist and are frequently used in Romance languages. However, when they occur as main verbs, they typically represent motion without a change of location. Consider (3.97), which shows the French equivalent of English (3.81) (*The baby is walking/running/crawling in the kitchen*), in contrast to (3.88) (reproduced below), which shows the French equivalent of (3.82) (*The baby is walking/running/crawling into the kitchen*). The utterance in (3.97) represents motion within the kitchen and cannot involve a change of location from outside to inside. Note that the same preposition (*dans* ‘in’) is used in French, whether motion does or does not involve a change of location, since this distinction is lexicalised in the verb root, whereas different prepositions or particles are used for this purpose in English.

- (3.97) Le bébé marche/court/rampe dans la cuisine.
- (3.88) Le bébé entre dans la cuisine en marchant/courant/rampant.

Note that many additional cross-linguistic differences exist even among languages belonging to the same group. Thus, German presents a complex system of particles that can encode rather varied and specific information about motion and location, for example *hin/hierher* in (3.98) and (3.99) or *hinauf* in (3.100). In addition, German differentiates dynamic situations with or without changes of locations by means of case, for example in (3.101) the dative case marks a general location, whereas the accusative case marks a change of location. Dutch can mark this distinction by the position of the locative element as shown in (3.102). Chinese further differs from other satellite-framed languages in that it is an agglutinative language, which provides special complex verbal constructions for the packaging of information. Such constructions were illustrated in relation to temporality above (*pao3-xia4-lai2* le ‘run-ascend-come LE’ or ‘climb up’), where manner is combined with direction. Similarly, in (3.103) manner is combined with both deixis and direction. In both cases particle-like verbs (*lai2* ‘come’ and *qu4* ‘go’) indicate direction towards and away from the *origo*, respectively.

- (3.98) Das Baby geht hin.
 ('The baby goes there [in the direction away from the *origo*.]')
- (3.99) Das Baby kommt hierher.
 ('The baby comes here [in the direction towards the *origo*.]')
- (3.100) Das Baby klettert auf den Baum hinauf.
 ('The baby climbs up the tree.')
- (3.101) Das Baby krabbelte in der/die Küche.
 ('The baby crawled in the + DAT/into the + ACC kitchen.')
- (3.102) De baby rent de keuken in. / De baby rent in de keuken.
 ('The baby runs into the kitchen. / The baby runs in the kitchen.')
- (3.103) Tal pa3-guo4-qu4.
 (3p jump-cross-go)
 ('He jumped over.')

Finally, recent studies show that Talmy's typology does not capture some important differences across languages. Thus, cross-linguistic analyses show wide variations in how spatial systems are organised across languages, which raise a number of questions concerning some previously postulated universals (Brown 1991, 1994; Brown and Levinson 1991; Hill 1982; Levinson 1991, 1994, 1996, 1997; Pederson *et al.* 1998). For example, some languages provide complex systems of devices (*positionals*) as a function of diverse properties of the figure (shape, texture, position, and the like). In such languages, then, the locus of the spatial relation is to be found in how the figure is denoted, rather than in its relation to the ground, which is derived from figure properties. As noted in Chapter 2, such a system does not correspond to any of Talmy's typological options, being neither verb-framed nor satellite-framed and raising questions concerning some of his universals, such as the supposed greater focus on the ground than on the figure and the supposed universal distinction between location and identity (the *what/where* distinction).

3.3.3 *Organising the universe of spatial relations*

Languages also provide different ways of organising the universe of spatial relations. In particular, languages highlight some features of these relations more than others and provide different ways of grouping spatial configurations as being more or less alike. As shown by Bowerman (1989, 1996), although a number of Indo-European languages (such as French, Spanish, English, German, and Dutch) all rely on a formally comparable system of prepositions to mark spatial relations, the particular ways in which these different languages 'cut up' this universe is partially quite variable. For example, in English (3.104) and (3.105) *in* and *on* distinguish two types of spatial relations between a figure and a ground (containment and contact, respectively). English further groups the type of configuration shown in (3.105)

together with the ones in (3.106) to (3.109), expressing all of these relations with the same preposition *on*. In comparison, although Dutch also distinguishes (3.104) from (3.105) and (3.106) with two different prepositions (*in* and *op*), it further differentiates the configurations shown in (3.107) and (3.108) (*aan*) and the one in (3.109) (*om*). As for Spanish, it makes no distinction among these different spatial configurations, relying on the same preposition (*en*) to express all of them.

- (3.104) The apple is in the bowl. (Dutch *in*; Spanish *en*)
(3.105) The cup is on the table. (Dutch *op*; Spanish *en*)
(3.106) The fly is on the door. (Dutch *op*; Spanish *en*)
(3.107) The handle is on the pan. (Dutch *aan*; Spanish *en*)
(3.108) The picture is on the wall. (Dutch *aan*; Spanish *en*)
(3.109) The ring is on her finger. (Dutch *om*; Spanish *en*)

Similarly, languages display different ways of grouping spatial relations with dynamic predicates (Bowerman 1989, 1996). Thus, the English preposition or particle *on* is used in (3.110) and (3.111), while the preposition *in* is used in (3.112) and (3.113). Korean distinguishes some relations as involving a *tight* vs. *loose* fit between the figure and ground (with the predicates *kkita* and *nehta/nohta*, respectively). In sharp contrast to English, it thereby groups together (3.111) and (3.113), differentiating them from cases such as (3.110) and (3.112) (which are further differentiated along dimensions such as containment and support).¹⁷

- (3.110) He put the cup on the table. (Korean *nohta*)
(3.111) He put the lid on the jar. (Korean *kkita*)
(3.112) He put the apple in the bowl. (Korean *nehta*)
(3.113) He put the video cassette in its case. (Korean *kkita*)

Languages, then, differ in at least two ways with respect to how they represent spatial configurations. They provide explicit markings that group situations in different ways (e.g. English *in/on*, Dutch *in/op/aan/om*, Korean *kkita/nehta/nohta*). In some cases, however, they also provide ‘all-purpose’ neutral markings simply indicating that some relation is entailed without further specification (e.g. Spanish *en*). Another illustration of this latter case is shown in French with two types of cases (Hickmann in preparation). First, some situations would be typically represented with the neutral preposition *à* ‘at’ as in (3.114).¹⁸ Second, compare English (3.115) and (3.116) to their French equivalents in (3.118) to (3.119). In contrast to English, where the same preposition *on* can be used irrespective of the verb, uses of particular prepositions in French partially depend on the verb with which these devices are used. As shown subsequently (Chapter 6), in a number of cases French speakers display a preference for neutral *à* with specific verbs such as *accrocher* or

suspendre ('to hook', 'to hang'), but might use either *sur* ('on') or *à* with the plain copula (see further discussion of French 'colourless' and 'colourful' prepositions in Vandeloise 1986, 1991; Vandeloise *et al.* 1993). Finally, note that some cases would not involve the use of any preposition, but rather plain verbs, such as dynamic situations involving clothing (3.120). These examples further illustrate how some information which is coded in one language by means of spatial prepositions can be distributed over different means in another language.

- (3.114) Elle a une bague au doigt.
(‘She has a ring at the finger.’)
- (3.115) The coat is (hanging) on the hook.
- (3.116) He is hanging the coat on the hook.
- (3.117) Le manteau est au/sur le crochet.
(‘The coat is at/on the hook.’)
- (3.118) Le manteau est suspendu au crochet.
(‘The coat is hanging at the hook.’)
- (3.119) Il accroche le manteau [au crochet].
(‘He is hooking the coat [at the hook].’)
- (3.120) Elle met/enfile ses gants.
(‘She puts/makes-fit her gloves.’)

3.3.4 *Spatial anchoring*

Finally, the expression of motion and location also requires that speakers organise spatial information in cohesive discourse. As already discussed previously (Chapters 1 and 2), this regulation of information minimally implies a necessary relation between utterances and their contexts of use. For example, we rarely specify fully both figures and grounds, nor both source and target locations in the case of motion events, often taking for granted the existence and identity of one or several of these entities on the basis of discourse presuppositions. An utterance such as (3.121) presupposes both the source location (where the interlocutors are) and the target location (where they are planning to go). In comparison, both source and target locations are fully specified in (3.122), presumably because emphasis is placed on the entire distance covered. As noted in Chapter 1 (example reproduced below), the location of the baby in the clause *it's running* can be recovered from a previous clause in (3.123) (*The baby is in the kitchen*).

- (3.121) Let's go.
- (3.122) The baby ran all the way from the sofa to the kitchen.
- (3.123) Watch out! The baby is in the kitchen and it's running.

Presuppositions in this respect follow the general principle of *anchoring*, whereby some reference point, either assumed from the immediate situation or established

in previous discourse, serves as the basis for the interpretation of general locations or changes of location in subsequent utterances. This process often involves associative reference and/or inferences from world knowledge in the domain of spatial reference. For example, in (3.124) and (3.125) we can interpret the predicates *climb up* and *fall down* from our knowledge of the world, for example we know that roofs and birds' nests are typically located high in space and therefore we need not further specify particular grounds (e.g. a house, a tree), except if it is necessary to do so for discourse purposes. Furthermore, definite NPs such as *the roof* in (3.124) or *the post office* in (3.126) involve a known or generic kind of location (e.g. the post office around the corner or any post office) or a part-whole relation (house roof) that need not be further specified.

- (3.124) The fire started on the roof, but the fireman managed to climb up and to extinguish it.
- (3.125) My cat fell down while climbing to catch a bird's nest.
- (3.126) I have to go to the post office.

Furthermore, the extent to which speakers specify ground entities in discourse depends on formal constraints, which may vary from language to language. Thus, English prepositions require some ground specification, as shown by the fact that pronominalisation is possible with (3.127) and (3.128), but omission of the ground is not possible in (3.129) and (3.130). In contrast, particles and adverbials do not require the mention of a ground, as shown by the possible omissions in (3.131) to (3.134).¹⁹ In comparison, some languages present a number of forms, which might be called *pronominal adverbials*, allowing speakers to partially presuppose the ground referent while simultaneously expressing the corresponding spatial relations, for example French and German (3.135). In addition, as noted above, German makes a heavy use of particles, some of which can provide very specific information concerning figures, grounds, and their relations in static and dynamic situations.

- (3.127) The baby is on it.
- (3.128) The baby runs into it.
- (3.129) *The baby is on.
- (3.130) *The baby runs into.
- (3.131) The baby is up.
- (3.132) The baby climbed up.
- (3.133) The baby ran in.
- (3.134) The baby ran across.
- (3.135) Le bébé est dessus/dedans.
Das Baby ist darauf/darin.
(‘The baby is on/in (it).’)

3.4 Time

3.4.1 Tense and aspect

As briefly noted in Chapter 1, tense and aspect are tightly related categories (Comrie 1976, 1985). Tense relates the time of a denoted situation to the time of the immediate speech situation or to some other temporal point established in discourse. Roughly, grammaticalised tense makes a universal distinction between the past and the non-past. Thus, whereas (3.136) presents an event as taking place during speech time, (3.137) and (3.138) situate the event at some point before speech time, and (3.139) further situates it before another event which is itself situated before speech time.²⁰ Other uses of these forms are possible. For example, the present tense may be used to narrate events in particular situations, including if they have occurred before speech time. Such uses of the *historical present* may serve specific functions in discourse (e.g. Wolfson 1978, 1979), although little is known about their formal and functional variability across languages.²¹

- (3.136) John is eating an apple.
- (3.137) John was eating an apple.
- (3.138) John ate an apple.
- (3.139) John had eaten an apple when Mary arrived.

Depending on the language, further distinctions can be made. For example, the immediate past may be marked to different extents and in different ways, as in English (3.140) (adverbial *just*) or in French (3.141) (verbal construction *venir de* + INF ‘to come + INF’). The non-past includes a variety of markings, such as English (3.142) and (3.143), which express certainty, promises, and/or the future, including the immediate future (English *be going to*), as well as habitual and/or generic statements, such as (3.144) and (3.145).

- (3.140) John just ate an apple.
- (3.141) Jean vient de manger une pomme.
- (3.142) I’ll do it.
- (3.143) It’s going to rain tomorrow.
- (3.144) John eats an apple every day.
- (3.145) Apples are round.

Aspectual systems make a universal distinction between perfective vs. imperfective aspect. This category is also commonly called *viewpoint aspect* because its main function is to present situations from different viewpoints or perspectives. Perfective aspect presents situations from an external perspective as undifferentiated points, without reference to their internal structure, whereas imperfective aspect presents either atemporal situations or specific events as unfolding from within their

temporal structure. Some variations across tense-aspect systems can be illustrated by comparing the aspectual markings that can be found in English vs. French or German. In English, verbal morphology presents a distinction between progressive vs. non-progressive aspect.²² This distinction is productive and can be used in all tenses. In comparison, French inflections differentiate perfective vs. imperfective aspect in the past by means of an opposition between the *passé composé* in (3.146) or *passé simple* in (3.147), on the one hand, and the *imparfait* in (3.148), on the other hand. However, this distinction is neutralised in the present, as shown in (3.149), notwithstanding periphrastic constructions marking the progressive in the present, for example (3.150).²³

- (3.146) Paul a mangé une pomme.
(‘Paul has eaten [PC] an apple.’)
- (3.147) Paul mangea une pomme.
(‘Paul ate [PS] an apple.’)
- (3.148) Paul mangeait une pomme.
(‘Paul was eating [IMP] an apple.’)
- (3.149) Paul mange une pomme tous les jours.
(‘Paul eats [PRES] an apple every day.’)
- (3.150) Paul est en train de manger une pomme.
(‘Paul is [in the course of] eating an apple.’)

Similarly, German distinguishes aspect in the past, as shown by the *Perfekt* in (3.151) and the *Präteritum* in (3.152), but this distinction is neutralised in the present (3.153), except for periphrastic constructions, illustrated in (3.154). However, in contrast to French, where past inflections present a sharp distinction between perfective and imperfective aspect, German past inflections are more fuzzy in this respect, providing a distinction between some markings of the perfective (*Perfekt*) and other markings that are aspectually unmarked (*Präteritum*).

- (3.151) Hans hat einen Apfel gegessen.
(‘Hans has eaten [PFK] an apple.’)
- (3.152) Hans aß einen Apfel.
(‘Hans ate [PTT] an apple.’)
- (3.153) Hans ißt einen Apfel.
(‘Hans eats [PR] an apple.’)
- (3.154) Hans ist dabei einen Apfel zu essen.
(‘Hans is eating an apple.’)

Shifts in tense and aspect markings in narratives, in conjunction with other temporal-aspectual devices, have particular functions in discourse (e.g. Schiffrin

1981, 1990) and affect our interpretations of the relations among denoted events. For example, the different perspectives on situations provided by aspectual morphology have various consequences for the temporal relations that can be established in discourse. Consider again examples (3.155) and (3.156) (reproduced from Chapter 1), together with (3.157). Example (3.155) shows an opposition between the progressive and non-progressive past, but not (3.156) (two non-progressive forms) nor (3.157) (two progressive forms). Example (3.155) presents Mary's arrival as an undifferentiated point occurring during the interval of John's eating, that is sometime after he began eating the apple and before he finished it. Nothing is said about whether John finished his apple or not. In contrast, example (3.156) presents both situations as two undifferentiated points, and in this case it would be typically inferred that Mary arrived at some point after John finished eating his apple (even though no commitment is explicitly made in this respect by the utterance). As for (3.157), it presents two situations (John's eating, Mary's cooking) as both unfolding and as simultaneous or partially overlapping. We return to the role played by these different perspectives for the principle of *information grounding* in Section 3.4.3 below.

- (3.155) John was eating an apple. Mary came in.
- (3.156) John ate an apple. Mary came in.
- (3.157) John was eating an apple. Mary was cooking dinner.

In addition to verbal morphology, other devices can further mark the relations that are otherwise merely inferred. The connectives in (3.158) to (3.164) mark simultaneity or inclusion (*while*), succession (*then*), anteriority and posteriority (*before*, *after*). Some of these markers allow greater flexibility in clause order, for example clause order can be reversed in (3.162) as compared to (3.161) or in (3.164) vs. (3.163). In the absence of such markers, however, clause order is assumed to correspond to chronological order if only perfective inflections are used.

- (3.158) While John was eating an apple, Mary came in.
- (3.159) While John was eating an apple, Mary was cooking dinner.
- (3.160) John ate an apple, then Mary came in.
- (3.161) After John ate an apple, Mary came in.
- (3.162) Mary came in after John ate an apple.
- (3.163) John ate an apple before Mary came in.
- (3.164) Before Mary came in, John ate an apple.

3.4.2 *Predicates and situation types*

In all languages the uses and interpretations of temporal-aspectual markings is also tightly related to the semantic nature of predicates (Dowty 1979,

1982, 1986; Vendler 1967; Verkuyl 1972). Two dimensions have been claimed to play a central role in tense-aspect systems: *durativity* and *boundedness*. However, not all authors agree that both dimensions are essential, and the importance of these dimensions may furthermore vary from language to language. The dimension of durativity corresponds to whether predicates represent situations as lasting through some time (durative predicates) or not (non-durative or punctual predicates). Here it is important to distinguish what might be called *objective* and *linguistic* time. Although we can conceive of all situations as objectively taking some time, even if this time stretch is infinitesimal, the claim here is that languages provide discrete categories differentiating predicates that represent events as being instantaneous or as lasting through some interval of time. The dimension of boundedness corresponds to whether or not predicates represent situations as having an inherent *terminal point*, that is a point after which situations are considered to be over. Terminological variations can be found, for example *telicity* and *resultativity*, although some authors apply the latter to a subset of bounded predicates, namely those that have obvious results. Here again, some variation occurs as to whether these results must be perceptually visible (*to spill*, *to break*) or seemingly not so apparent (*to learn*) and/or whether they should include a number of features such as disappearance, fiction, and the like.

We may illustrate the impact of these two dimensions with Vendler's (1967) classification of English predicates into four groups: *states*, *activities*, *accomplishments*, and *achievements*. States (e.g. *be happy*, *be tall*) and activities (e.g. *to play*, *to run*, *to sing*) differ by virtue of the presence or absence of kinesis, but they share two properties: they are both durative and unbounded. Accomplishments (e.g. *to run a mile*, *to sing a song*) involve kinesis (like activities) and durativity (like both activities and states), but they are bounded (unlike states or activities). Achievements (e.g. *to die*, *to explode*) are bounded (like accomplishments) but not durative (unlike any of the above three categories). According to Vendler, the properties that differentiate these four classes account for various uses and interpretations of English tense/aspect markings in conjunction with other temporal-aspectual markings. For example, they determine the possibility of some co-occurrences between verbs and inflections, for example (3.165) is odd, or at best very marked in English. They also determine the possibility of some co-occurrences between inflections and adverbials, for example (3.166) and (3.167) are possible, but not (3.168) and (3.169). Finally they affect the interpretations we attribute to different utterances, for example the perfective implies completion of the denoted event with the bounded predicate *run a mile* in (3.170), but not with the unbounded predicate *run* in (3.171).

(3.165) *I'm knowing.

(3.166) John ran a mile in an hour.

- (3.167) John ran for an hour.
 (3.168) *John ran a mile for an hour.
 (3.169) *John ran in an hour.
 (3.170) John ran a mile, then he left.
 (3.171) John ran, then he left.

Vendler's classification has been extended to other languages, with the claim that it corresponds to universal concepts of situations (also called *Aktionsarten* or *situation aspect*). Other authors, however, have shown some problems with a direct application of this framework to some languages. For example, while some authors (e.g. Smith 1985) find that Vendler's framework provides an adequate characterisation of Chinese, other authors (e.g. Tai 1984) argue that it cannot account directly for some types of resultative constructions in this language, which do not fit any of the four verb types proposed by Vendler for English. While acknowledging the essential role of verb semantics on tense/aspect systems, yet other authors have proposed different views. For example, Klein (1994) argues that durativity is not a basic linguistic category, reflecting rather inferences and/or assumptions based on our world knowledge, proposing a classification into three predicate types: *0-state*, *1-state*, *2-state*. Predicates of the 0-state type attribute to denotata properties that are presented as permanent or atemporal (e.g. *be round*). Other predicate types represent situations that can be temporally located and they differ by virtue of whether they imply a change of state (2-state predicates) or not (1-state predicates).

In this respect, it is worth noting that the two domains of time and space are intricately related in several ways across languages. Among the links that relate these two domains is the central notion of *change of state*. The importance of this notion for both domains can be illustrated in two ways. First, changes of location are but a particular type of change of state. As a result, if a change of state is indeed a crucial defining property of boundedness, it is also the main criterion differentiating verbs of motion that do vs. those that do not imply a change of location. For example, as we saw, the predicate in *The baby ran in the kitchen* represents motion within a general location (no change of state), while the one in *The baby ran into the kitchen* represents a change of location, that is a change between two states that are defined spatially in this case (outside, inside), marked by the locative preposition *into*.

Second, the striking cross-linguistic difference described by Talmy (1975, 1983, 1985, 2000) and summarised above (Section 3.3) in relation to the representation of motion events centrally revolves around the temporal structure of the predicates. Thus, as noted above, the different ways in which verb-framed vs. satellite-framed languages represent motion mainly concern bounded predicates, that is predicates that involve a change of location and therefore a change of state (e.g. English *run into* vs. French *entrer dans*). In other cases, however, when displacements take place

within a general location, these two language families behave in similar ways (e.g. English *run in*, French *courir dans*). In a way, then, this particular cross-linguistic difference in the domain of space could be viewed as showing how languages of different families handle differently the temporal property of boundedness for a subset of predicates, roughly those predicates that represent motion events involving distinct states that are defined in relation to spatial location.

3.4.3 Temporal anchoring and grounding in discourse

Temporal-aspectual systems universally contribute to the anchoring and organisation of information across utterances in discourse. We saw that verbal morphology and other devices such as adverbials are means of temporally anchoring discourse, that is establishing some temporal relation between the denoted situations and either the immediate situation or some other temporal reference point. We also saw that morphological oppositions, in conjunction with other markers such as conjunctions or adverbials, allow speakers to mark and/or to infer temporal relations among the situations that are mentioned in discourse. As implied above, temporal relations can be deictic and/or anaphoric. Thus, the pluperfect tense (e.g. *had eaten* in (3.139) above) is *relative* rather than *absolute*, that is it takes as reference point the time of an event mentioned in discourse (Comrie 1985). In addition, it has been argued that even the simple past or temporal adverbials such as *then* can involve some binding across sentences in discourse (Schiffrin 1990). More generally, numerous types of temporal anaphora combine tense morphemes, conjunctions, and adverbials (e.g. Hinrichs 1986), and in all cases the interpretation of a temporal element is dependent upon another temporal element in previous discourse.

Furthermore, all types of temporal-aspectual markings are essential means of grounding information, that is of differentiating the *foreground* and *background* of discourse. Recall from previous chapters that this distinction corresponds to the ways in which situations are presented: roughly, the foreground corresponds to denoted situations that are interpreted as being ‘on the time line’, the background to events that surround this foreground (Dry 1981, 1983; Ehrlich 1987; Givón 1987; Hinrichs 1986; Hopper 1979a, 1979b, 1982; Thompson 1987; Tomlin 1985, 1987). For example, consider a narrative in which a speaker relates past events to an interlocutor who has not witnessed them and cannot be assumed to know anything about them. The different situations denoted during such a narrative can be presented in two ways: either as being part of the main plot of the narrative, that is as successively ordered events that make the time line move forward (foreground); or as secondary information, corresponding to states or events that are not necessarily chronologically ordered. Consider again examples (3.155) to (3.157) (reproduced below), together with (3.172) to (3.174). By virtue of the inflections used in these

two-clause sentences (and in the absence of connectives), the following grounding relations can be established in discourse, notwithstanding different clause orders: Mary's arrival is foregrounded and John's eating is backgrounded in (3.155) or in (3.172), whereas both events are foregrounded in (3.156) or in (3.173), and both are backgrounded in (3.157) or in (3.174) (but see interesting counter-examples in Chvany 1985).

- (3.155) John was eating an apple. Mary came in.
- (3.156) John ate an apple. Mary came in.
- (3.157) John was eating an apple. Mary was cooking dinner.
- (3.172) Mary came in. John was eating an apple.
- (3.173) Mary came in. John ate an apple.
- (3.174) Mary was cooking dinner. John was eating an apple.

Finally, verb semantics are also central for discourse organisation, contributing to the interpretation of temporal relations and of grounding relations among the situations denoted in discourse (e.g. Dry 1981, 1983; Kamp 1979; but see Dowty 1986). For example, consider (3.176) and (3.177) as possible continuations of (3.175), where all verbs are in the non-progressive past. The continuation (3.176) contains a bounded predicate, which is foregrounded and understood to happen right after (3.175). In contrast, (3.177) represents a state that is understood to overlap with (3.175) and to be backgrounded. Since the morphological markings are the same, it is the semantic nature of the predicates that determines our interpretation.

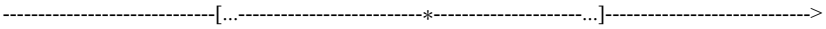
- (3.175) Mary walked into the room . . .
- (3.176) John greeted her.
- (3.177) John sat in the rocking chair.

Table 3.1 schematically summarises the impact of aspectual distinctions on our interpretations of temporal relations, as well as on discourse grounding (in the absence of other markers and notwithstanding the role of verb semantics). The same diagram can represent examples (A) and (B), where one event is foregrounded in relation to another. In contrast, two different diagrams must be used to represent (C) and (D), since these foregrounded events are interpreted as corresponding to two successive points in time (at least in one interpretation of these examples). Such general principles of discourse organisation seem to be universal, despite wide cross-linguistic variations in tense-aspect systems and therefore language-specific factors affecting particular aspects of our interpretations in discourse.

Table 3.1 *Impact of aspect on the interpretation of temporal relations among events*

- (A) John was eating an apple. Mary came in.
- (B) Mary came in. John was eating an apple.

[FOREGROUND]
Mary came in.

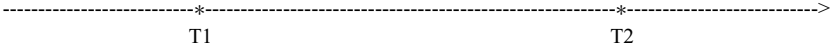


John was eating an apple.
[BACKGROUND]

- (C) John ate an apple. Mary came in.

[FOREGROUND]
John ate an apple.

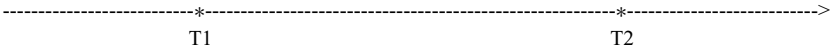
[FOREGROUND]
Mary came in.



- (D) Mary came in. John ate an apple.

[FOREGROUND]
Mary came in.

[FOREGROUND]
John ate an apple.



3.5 Summary

In summary, although all languages enable speakers to mark similar types of distinctions, they present some important systemic differences in each of the three domains we considered. Much of this cross-linguistic variation is linked to certain general properties of linguistic systems, such as the degree to which they rely on morphological systems, the nature of these systems, the orientation of languages towards subjects or topics, and the ways in which they package information by structural vs. lexical means. First, with respect to the denotation of entities, languages rely to different extents on local vs. global devices to mark simultaneously semantic distinctions (such as specific and non-specific reference), role relations within the clause (who did what to whom), and information status in discourse (what is given vs. new information, what is most presupposed or topical). Second, the expression of location and motion shows that similar distinctions may be expressed in quite different ways, depending, for example, on whether languages grammaticalise or lexicalise semantic information pertaining to bounded dynamic events (changes of location), such as manner, deixis, direction, and causativity. Furthermore, with respect to static situations, languages vary with respect to the

types of devices they make available to speakers, as well as with respect to the semantic organisation of the universe of spatial relations, even when they rely on seemingly similar devices (e.g. spatial prepositions). Finally, in the domain of temporal reference, languages rely on a variety of devices (verbal particles and morphology with different properties, adverbials, and conjunctions) to relate the time of the denoted event to speech time, while simultaneously expressing temporal relations among denoted situations in discourse. The uses of some of these devices are partially related to some predicate properties in the clause, such as boundedness, but also to some universal principles of discourse organisation, particularly the distinction between foreground and background as a function of communicative focus.

As will be shown subsequently (Chapters 5 and 6), an increasing number of developmental studies in all three domains show that such cross-linguistic variations have an impact on the rate and course of language acquisition. These studies raise some theoretical questions from a developmental point of view, some of which were discussed in Chapter 2. In particular, the results suggest that language and cognition are tightly related during the course of children's development, including during the earliest phases of language acquisition, that is during the emergence of productive language and even perhaps earlier during the prelinguistic period. Researchers have begun to explore new versions of the hypothesis of linguistic relativity. Some argue, for example, that language affects the ways in which children go about organising their activity of thinking when they are engaged in discourse and, more generally, that it affects their attentional processes from the earliest age onwards, leading them to pay more or less attention to different aspects of reality, which become thereby more or less accessible in everyday functioning. Before turning to this literature, we first consider in the next chapter more global aspects of discourse development reported by studies that have focused either on early conversational skills or on children's narratives in a variety of situations. As shown by a review of this literature, it was not until rather recently that researchers have begun to pay sufficient attention to the particular linguistic devices that must be acquired by children to organise discourse and to the universal and language-specific factors determining how this developmental process takes place.

4 *Coherence and cohesion in discourse development*

Before turning to the acquisition of particular linguistic devices in different domains, we first examine in this chapter developmental studies concerning general aspects of children's discourse organisation. Some of these studies invoke cognitive *macrostructures* to account for children's representations of event sequences (Section 4.1), others appeal to different types of social and/or cognitive skills to account for their early or later discourse abilities (Section 4.2). To summarise the discussion of this research (Section 4.3), neither set of studies has sufficiently examined children's uses of particular linguistic devices, relying on revealing but partially anecdotal evidence concerning these uses. One of the main arguments put forth in this chapter is that these devices contribute to two aspects of discourse organisation, *coherence* and *cohesion*, which have been implicitly confounded in many studies and which must be related for an adequate account of discourse development.

4.1 **Macrostructures**

A first type of framework has provided a general account of verbal and non-verbal knowledge about event sequences in the form of *macrostructures*. This research is inspired by a number of traditions across various disciplines such as psychology, linguistics, anthropology, or Artificial Intelligence (e.g. Bartlett 1964; Labov and Waletzky 1967; Propp 1979; Shank and Abelson 1977). For example, in cognitive psychology Bartlett's pioneering work on story recall served his proposal that memory is a reconstructive process that is dependent on the use of *cognitive schemata* or knowledge structures actively integrating incoming information. We examine below two types of macrostructures that have been postulated since then: *scripts*, which guide the organisation of familiar event sequences (Section 4.1.1), and *story grammars*, which are specialised for the organisation of stories (Section 4.1.2). As will be shown (Section 4.1.3), both types of macrostructures have been assumed to provide children with cognitive schemata in which complex events are represented into a hierarchically and sequentially organised structure. Such cognitive schemata have been claimed to underlie children's internal representations of events, as well as their external verbalisations concerning these representations, accounting for

various aspects of language use and, more generally, for the linguistic organisation of narrative discourse. The discussion of this research (Section 4.1.4) highlights the need to provide a proper account of how coherence and cohesion are related during discourse development.

4.1.1 *Scripts*

Scripts correspond to cognitive structures enabling children to represent common behavioural routines, such as going to the restaurant, going to school, or having a birthday party (e.g. Fivush *et al.* 1987; Fivush and Mandler 1985; French and Nelson 1985; Hudson and Nelson 1983; Hudson *et al.* 1992; McCartney and Nelson 1981; Nelson 1986, 1989, 1991, 1996; Nelson and Gruendel 1979, 1981; O'Connell and Gerard 1985; Shank and Abelson 1977; van Dijk 1980). Such routines typically involve a sequentially ordered set of familiar events, the structure of which is determined by a logical, chronological, and/or conventionally agreed upon type of sequence. For example, going to the restaurant typically involves choosing the restaurant, entering and sitting down, selecting and ordering dishes from a menu, being served, eating, paying, and leaving. Such scripts have been said to guide children's recall and verbalisations about complex but familiar event sequences, for which they typically display a much better verbal performance than with other types of event sequences.

As will become clearer below (Section 4.1.2), scripts and stories differ along at least three dimensions, which characterise the nature of the denoted events and/or the ways in which they are recounted in discourse. First, scripts typically involve routinised and predictable event sequences, whereas stories cover a wider range of event sequences, including unfamiliar ones, even if they can take a script as a starting point from which to depart. To illustrate this point, compare the 'normal' restaurant script described above with a situation where something 'odd' happens: the waiter falls down and spills the dishes, the food is burned, the waiter forgets to bring the bill, the owner offers the meal, the bill is not correct, and so on. In all of these cases, something 'unusual' creates an atypical situation, resulting in a problem to be solved or in a special ending, thereby transforming the script into something that is not 'script-like' and more 'story-like'. A second related property concerns the specificity of the denoted events. Unlike stories, scripts correspond to types of event sequences, which can be habitual or generic and which do not depart significantly from such types. A third dimension differentiating scripts from stories concerns the possible ways in which event sequences may be represented in discourse. In particular, although both types of schemata can give rise to a narrative, scripts typically involve the description of successive events in their chronological order, whereas stories allow for more variability with respect to how these events are presented and/or related to other surrounding events in discourse

(e.g. an event is highlighted and/or one event is presented as the background of another).

The line differentiating scripts from stories is not a hard and fast one, as each of these three dimensions is complex. For example, a script-like sequence of morning activities such as (4.1) can be transformed into a narrative that is more story-like in several ways. The denoted events may be more specific than in a script because they are at least partially anchored with respect to person, time, and place, as illustrated in (4.2), because of some special feature(s) not typically encountered, as illustrated in (4.3), and/or because they are related to other particular background situations, as illustrated in (4.4). The order in which the events occur may also differ from the predicted one, as shown in (4.5), or an event normally expected in the scripted sequence may not have occurred, as in (4.6). We return to these points below, but first turn to structures that have been postulated to capture the properties of stories, as distinct from other discourse types such as scripts.

- (4.1) Every day I get up, eat breakfast, brush my teeth, get dressed, and go to school.
- (4.2) Today I got up, ate breakfast, brushed my teeth, got dressed, and went to school.
- (4.3) Today I brushed my teeth all by myself for the first time, then . . .
- (4.4) I forgot to brush my teeth before going to school . . .
- (4.5) Today I got dressed before brushing my teeth . . .
- (4.6) Today I forgot to brush my teeth before going to school . . .

4.1.2 Story structure

Much research has aimed at providing general principles or rules to capture the general properties that characterise structurally well-formed stories (e.g. Fayol 1985, 1991; Labov and Waletzky 1967; Mandler 1978; Mandler and DeForest 1979; Mandler and Johnson 1977; Quasthoff and Nikolaus 1982; Stein 1982; Stein and Albro 1997; Stein and Glenn 1979, 1982; Stein and Nezworski 1978; Stein and Trabasso 1981; Trabasso and Nickels 1992; Trabasso and Rodkin 1994). Among these proposals, Labov and Waletzky (1967) have provided what is perhaps the most general and most often cited characterisation of the basic structure of stories. According to this account, stories roughly comprise the following basic and minimal components: a *setting*, a *complication*, and a *resolution*. Included is also an *evaluation*, which provides the narrator's attitude towards the denoted content. In addition, a number of other authors have constructed *story grammars* in order to further specify the structural properties of stories. Like grammars designed to account for the well-formedness of sentences, story grammars specify basic units constitutive of stories and rules defining how these units can be hierarchically and

Table 4.1 *Example of canonical story (Stein and Glenn 1979)*

Setting	Once upon a time there was a skinny little red mouse named Melvin, who lived in a big red barn.
Initiating Event	One day Melvin found a box of Rice Crispies underneath a stack of hay. Then he saw a small hole in the side of the box.
Internal Response	Melvin knew how good the cereal tasted and wanted to eat just a little bit of the cereal.
Internal Plan	He decided to get some sugar first so that he could sweeten his cereal.
Attempt	Then Melvin slipped through the small hole in the side and quickly filled his cereal bowl.
Consequence	Soon Melvin had eaten every bit of Rice Crispies and had become very fat.
Reaction	Melvin knew he had eaten too much and felt very sad.

sequentially arranged into well-formed stories. As will be shown, such properties partially determine the uses of various linguistic devices. In particular, in addition to ensuring linguistic cohesion (discussed in preceding chapters), these devices also mark the macrostructure of stories, raising some questions about how to relate these two aspects of narrative organisation.

Several story grammars have been proposed within this general framework, varying in the particular units and rules they provide. An illustration is shown in Table 4.1 (from Stein and Glenn 1979). This story grammar generates stories which contain a *Setting* and an *Episode* consisting of the following sequence of units: an *Initiating Event* which triggers an *Internal Response* on the part of the main protagonist, which is potentially related to an *Internal Plan* and motivates his or her *Attempt* to reach a goal, which itself leads to some *Consequence* resulting in a *Reaction*. Another story grammar is illustrated in Table 4.2 (from Mandler 1978). It generates stories consisting of the following units: *Setting*, *Beginning*, *Reaction*, *Attempt*, *Outcome*, *Ending*. In both cases these story grammars have recursive properties. For example, the story in Table 4.2 consists of two episodes, each about a main protagonist (Jennifer, Tom), which share a common *Setting* and which are temporally related (*the same day*). Related proposals characterise stories more generally in terms of a more abstract goal/plan structure revolving around one or more main protagonists (e.g. Stein and Trabasso 1981; Trabasso and Nickels 1992; Trabasso and Rodkin 1994; Trabasso *et al.* 1985; Trabasso and Sperry 1985; Trabasso *et al.* 1992; Trabasso and van den Broek 1985).

4.1.3 *Developmental evidence for internal macrostructures*

On the basis of experimental evidence, story grammars have been claimed to be psychologically real and to guide the processing and production of stories by adults and children. As discussed in detail elsewhere (Hickmann 1982), when

Table 4.2 Example of canonical story (Mandler 1978)

Setting	Once there were twins, Tom and Jennifer, who had so much trouble their parents called them the unlucky twins.
Beginning 1	One day Jennifer's parents gave her a dollar bill to buy the turtle she wanted, but on the way to the pet store she lost it.
Reaction 1	Jennifer was worried that her parents would be angry with her so she decided to search every bit of the sidewalk where she had walked.
Attempt 1	She looked in all the cracks and in the grass along the way.
Outcome 1	She finally found the dollar bill in the grass.
Ending 1	But when Jennifer got to the store, the pet store man told her that someone else had just bought the last turtle, and he didn't have any more.
Beginning 2	The same day Tom fell off a swing and broke his leg.
Reaction 2	He wanted to run and play with the other kids.
Attempt 2	So he got the other kids to pull him around in his wagon.
Outcome 2	While they were playing, Tom fell out of the wagon and broke his arm.
Ending 2	Tom's parents said he was even unluckier than Jennifer and made him stay in bed until he got well.

subjects are asked to recall anomalous stories, their recall decreases and they modify the texts in such a way as to make them more compatible with well-formed texts. Anomalous stories can be created by displacing units to different non-canonical positions or by deleting units altogether. The results show a general decrease in story recall, as well as subjects' reliance on various strategies, whereby they make the story more compatible with its canonical version. Some reorganisational strategies consist of producing two episodes, even when the presented story contains only one, in conditions involving a unit displacement (e.g. the Consequence displaced after the Setting in Table 4.1). Inversely, other strategies consist of reorganising into two episodes units that have been presented in the form of one episode (e.g. *interleaved* versions of Table 4.2, where the basic nodes of each episode are presented in direct succession: Beginning 1 and 2, Reaction 1 and 2, etc.). Finally, some strategies consist of spontaneously generating information corresponding to units that have been deleted.

Studies focusing on narrative structure have also examined children's productions in spontaneous or picture-elicited narratives, showing a gradual development of the story schema in children's narrative productions (e.g. Applebee 1978; Berman and Slobin 1994; Bronckart and Schnewly 1991; Espéret 1991; Kern 1997; Stein and Albro 1997; Trabasso and Nickels 1992). Applebee's (1978) often cited pioneering analyses show that with increasing age (between two and five years) children's productions gradually evolve across six basic types of narrative structures: *heaps*, *sequences*, *primitive narratives*, *unfocused chains*, *focused chains*, *narratives*.¹ Each one of these narrative structures shows a progressively more complex

combination of two basic structuring principles, *centring* and *chaining*. At one extreme, *heaps* (4.7) and *sequences* (4.8) do not constitute stories: *heaps* consist of lists of unrelated referents and events, *sequences* of a series of events linked by a shared attribute to a common nucleus (a character, a repeated action, the events of a day), through an association that is limited to similarity (e.g. A does X, Y, Z) and with a shifting nucleus. At the other extreme, *focused chains* (4.9) consist of a centre or nucleus, typically a main character who goes through a series of events, while true *narratives* (4.10) involve *an expansion of the centring of the focused chain* to complementary attributes, as well as the elaboration of new aspects of the theme or situation (Applebee 1978: 65).

- (4.7) A girl and a boy, and a mother and maybe a daddy. And then a piggy. And then a horse. And maybe a cow. And a chair. And food. And a car. Maybe a painting. Maybe a baby. Maybe a mountain stone, somebody threw a stone on a bear, and the bear's head broke right off. A big stone, this big. And they didn't have glue either. They had to buy some at the store. You can't buy some in the morning. Tomorrow morning they're gonna buy some. Glue his head on. And the baby bear will look at a book. (age 3;7)
- (4.8) Little boy played. He cried. He's all right. He went home. He went to bed. When he wakes up, you're gonna say good-night to him. (age 2;10)
- (4.9) Davy Crockett he was walking in the woods, then he swimmied in the water to get to the other side. Then there was a boat that picked him up. Then he got to the other side. He went into the woods. He was in the place where Indians made. The Indians came and got him. Then pretty soon he got loose. The Indians let him loose. (age 4;9)
- (4.10) There was a boy name Johny Hong King and finally he grew up and went to school and after that all he ever did was sit all day and think. He hardly even went to the bathroom. And he thought every day and every thought he thought up his head got bigger and bigger. One day it got so big he had to go live up in the attic with trunks and winter clothes. So his mother bought some gold fish and let them live in his head – he swallowed them – and every time he thought a fish would eat it up until he was even so he never thought again and he felt much better. (age 5;8)

Applebee's analyses seem to indicate an interplay between the structural properties of children's narratives and the development of discourse skills. Thus, the emergence of the principle of centring involves minimally the uses of coreferential

expressions denoting one highly topical reference across utterances. Centring then combines with chaining, involving the use of coreferential expressions (proper names, indefinite and definite determiners, pronouns) that denote a series of such topical referents as the plot unfolds, as well as the inclusion of complementary information in the background. Finally, the *lists* of referring expressions that characterise *heaps* most probably involve predicating constructions, whereby children simply label referents.

Research on narrative productions also shows the central role of a goal/plan in children's story schema from the earliest ages on, despite some important developmental progressions in children's spontaneous narrative structures. On the basis of narratives elicited (in kindergarten, third, and fifth grades) by means of story stems to be completed, Stein and Albro (1997) show that, although a large majority of children from the youngest age on have a minimal concept of a story, a developmental change occurs in children's capacity to access and interrelate internal states and actions simultaneously, as reflected in an increase in the number of protagonists introduced in their stories. Similarly, on the basis of picture-elicited narratives, Berman and Slobin (1994) show a basic understanding of the story schema from three years on. However, only the adults systematically provide all components (onset, unfolding, resolution), while children focus on some of these components, for example failing to provide explicit references to problem-solving until five years of age. Nonetheless, even young children have grasped the skeleton of the story, as shown by the fact that they can be invited to fill in information they have left out if sufficient scaffolding is provided (Trabasso and Rodkin 1994). Thus, although purposes and attempts, which reflect a hierarchical organisation around a goal plan, are frequently left out by children in their spontaneous narratives until five years of age, these components can be elicited even at four years by means of relevant questions. An analysis of children's narratives in pretend play vs. storytelling settings (Benson 1993) also shows that children develop a stronger mental model of a story between four and five years, as shown by the fact that five-year-olds produce more plotted narratives than four-year-olds in storytelling settings and that these narratives are more likely to include a conflict or a problem to be solved. Other developmental changes with increasing age include the gradually more explicit expression of internal states and the capacity to construct complex narrative structures involving embedded episodes. In addition, despite some developmental differences, narrators of all age groups (from three years on) use various linguistic devices to chunk information into units and subunits of various types (episodes, scenes) (Bamberg 1987, 1990; Bamberg and Marchman 1990, 1991, 1994; also see Bamberg 1997, for a range of other changes on the basis of a large literature).

Finally, some related research focuses on children's metacognitive ability to process and judge stories. Some studies have focused on various textual properties

specific to narratives, showing that awareness plays an important role in children's processing and comprehension of texts (e.g. Ackerman 1988; Ackerman and Jackson 1991; Ackerman, Jackson, and Sherrill 1991; Ackerman and McGraw 1991; Ackerman, Paine, and Silver 1991; Beal 1990; Brown 1978; Brown and DeLoache 1978; Brown and Smiley 1977; Espéret 1991; Harris *et al.* 1981; Markman 1977, 1979, 1981; Vosniadou *et al.* 1988; Zabrocky and Ratner 1986). Results show developmental progressions in children's ability to process several aspects of story content and structure, focusing, for example, on how they recognise central versus secondary information, make appropriate inferences of various kinds, and/or detect, judge, and correct pieces of information that are inconsistent or missing. Studies also show the gradual development of children's ability to judge whether different types of texts constitute good stories. For example, Espéret (1991) asked children to judge four types of sequences: *non-texts* (unconnected sentences), *scripts* (chronologically ordered events without an episodic structure), *openings* (incomplete stories, consisting of events without further narrative units, such as resolutions), and *stories* (complete episodic structures). Only the oldest children (nine and eleven years) were able to differentiate stories from all other text types, while younger children (five- to seven-year-olds) reject non-texts and accept all other text types.

4.1.4 *Relating coherence and cohesion*

A close examination of the studies focusing on macrostructures leaves some unanswered questions, particularly if we attempt to differentiate two major aspects of discourse organisation, *coherence* and *cohesion*, which have been typically confounded in previous research on children's discourse development. Roughly, *coherence* corresponds to properties of the content of discourse, for example as specified by story grammars in terms of various basic types of information units and rules governing their organisation in a structure. As discussed previously (Chapter 2), *cohesion* pertains to the use of linguistic devices to regulate information across utterances, for example for the purposes of marking information status and grounding information in discourse. Relating these two aspects of discourse is a difficult question, which has not been adequately addressed and raises several points, to which we turn.

The first question concerns the type of organisation that is best captured by these two aspects of discourse. The distinction between coherence and cohesion has been frequently phrased in terms of a contrast between linear or local vs. hierarchical or global discourse organisation (e.g. Berman and Slobin 1994). Thus, cohesion is typically defined on the local level of adjacent clauses that are successively ordered in discourse, coherence on the more global level of plot organisation. Such an opposition captures the general idea that the largest component of discourse cohesion

might pertain directly to linear organisation (e.g. referential continuity), while the largest component of narrative coherence might pertain directly to the hierarchical organisation of narrative units into larger chunks (e.g. episodic structure). However, this contrast is clearly insufficient to differentiate coherence from cohesion. Cohesion partially involves processes that go beyond adjacent clauses, for example some aspects of information status involve organisation around a global discourse theme or topic, which guides children's uses of various devices and overrides in some cases local adjacency constraints across utterances (see further discussion in Chapter 5). Inversely, coherence partially involves local adjacency and linear ordering, as, for example, the rules governing the order of successive episode-internal elements in the narrative schema.

The second question to be addressed when relating coherence and cohesion concerns the nature of the postulated narrative units and whether they may be partially dependent on rules governing the uses of linguistic devices in cohesive discourse. An important issue here is the extent to which the very existence of some of the units postulated by story grammars is determined by more general principles of discourse cohesion. The structural category of the *Setting* (Stein 1982; Mandler 1978), which provides the initial *orientation* of the story (Labov and Waletzky 1967), sometimes in relation to the *Initiating Event*, can perhaps serve as the best illustration of this point. The Setting plays a crucial role in discourse cohesion, serving to set the initial personal and spatio-temporal parameters of the plot: it introduces main characters along with the temporal and spatial frame serving as an initial reference point for the subsequent unfolding of the narrative. It is therefore no trivial question to ask whether the very reason for the existence of this category is largely (albeit not entirely) determined by discourse cohesive principles.² In fact, I would argue that the necessity of including such a unit in a 'good' story mainly reflects rules related to principles of cohesion discussed in previous chapters, such as information status and grounding in discourse. These rules involve the general principle of *anchoring*, whereby speakers must establish the personal and spatio-temporal parameters of the denoted situation in order to allow the interpretation of subsequent discourse.

This question partially revolves around uses of particular linguistic devices for discourse organisation, which presumably enter into coding decisions concerning the presence or absence of such parameters in various studies. For example, the mere mention of the protagonist's name as part of a unit other than the Setting does not suffice as a means of establishing the main personal parameter of the story, given that its interpretation would rely on mutual knowledge.³ Establishing this parameter, then, requires a separate (previous) statement, presumably containing some adequate linguistic device serving to introduce new referents, such as an existential structure containing a complex indefinite NP in the Setting (*There was a*

X named *Y* . . .). Similar remarks can be made about the spatio-temporal parameters, typically marked by a variety of devices towards the beginning of stories (Setting or Initiating Event), such as temporal adverbials or spatial phrases and clauses providing anchoring. Similarly, the Initiating Event typically introduces a secondary referent around which the plot revolves, also requiring appropriate devices for the marking of new information.

When interpreting results, it would therefore be of interest to break down the different criteria that enter coding decisions about story content in order to relate cohesion and coherence during discourse development. Thus, more empirical precision in the description of the criteria used for the presence of various structural components and for their relation, such as the means used for the regulation of information introduced in the Setting and mentioned in subsequent units, would provide further information in this respect. It is unclear whether linguistic forms are coded at all, whether these forms are coded independently of information status (first or subsequent mentions), and more generally whether a number of devices (partially variable across languages, see Chapter 3) should be taken as indices that children do or do not establish *Settings*. Similarly, causality relations (e.g. motivations for actions) are an essential aspect of goal/plan organisation, but it is not altogether clear how different types of markings might contribute to establishing such relations (e.g. connectives, adverbials, modals, propositional attitudes, etc.). In this respect, although Stein and Albro (1997) note an increase in children's mentions of explicit goals, it is unclear how explicitness is defined and/or whether it takes into account the contribution of children's developing discourse cohesion. For example, it collapses the *foregrounded* expression of psychological states as a narrative unit in its own right (e.g. *he wants to . . .*) and the *backgrounded* expression of goals as part of the temporal-aspectual contour of actions in another narrative unit (e.g. *he starts to . . .*). Similarly, the properties provided for *outcomes* in this study (such as several dimensions of transitivity) need not be specific to this type of unit, being more generally characteristic of all foregrounded events in cohesive discourse (see also related comments in Hickmann 1998a).

Third, another aspect of narrative structure that might be dependent on uses of linguistic devices is the set of rules assumed to govern the ordering of narrative units. As shown previously (Chapters 2 and 3), the general discourse principle of information grounding results in a variety of rules or assumptions on the part of interlocutors. By default, speakers follow the general principle of *chronological order*, according to which events successively denoted in discourse are ordered in time, unless otherwise marked by means of linguistic devices, such as temporal-aspectual morphology and connectives. Above and beyond the content of particular units, the ordering of these units into a canonical structure partially reflects these principles and it is linked to uses of particular linguistic devices. For example, the

fact that the Setting is placed in the initial position of the narrative is no coincidence, since this unit provides the initial parameters of the story, which serve as background for the rest of the story. Similarly, the immediately subsequent Initiating Event essentially serves to introduce the secondary referent that triggers the rest of the plot. Finally, the remaining units (Internal Reaction, Attempt, Consequence, Reaction) are chronologically ordered, even if they call for a number of assumptions and for general world knowledge concerning causal chains among events, which are indeed best captured by story grammars. As discussed below, this ordering of units can be violated to some extent without necessarily resulting in an anomalous story, but such order violations are only possible if adequate linguistic devices are used, allowing the interlocutor to reconstruct the correct sequence of the denoted events (e.g. oppositions among perfective and imperfective inflections or connectives such as *before*, *after*, *while*, *because*, etc.).

Finally, these points raise the more general question of the relation between abstract story schemata and their actualisation in particular discourse situations. Two positions are possible. The first one, predominantly adopted in most studies inspired by story grammars, assumes that children's underlying cognitive representation of story structure mainly accounts for their uses of linguistic devices. The second position, implicit in some approaches focusing more on discourse cohesion, is that this representation is itself (at least partially) a by-product of other principles governing discourse cohesion. The first position assumes that the development of cohesion is the result of an underlying universal story schema, which might be present in some form very early, but becomes gradually more sophisticated and/or is externalised by means of gradually more sophisticated verbal productions. The second one assumes that some such representation is actively constructed as the narrative unfolds, being shaped by the very process of linguistic organisation. This second position, then, leaves open the question of whether one should postulate two types of cognitive representations: an underlying, abstract, context-independent story schema vs. a particular representation which is constructed *on-line* for the purpose of communicating a particular story in a particular narrative context.

I have already illustrated elsewhere (Hickmann 1982) the need to address these questions on the basis of results reported within the story grammar approach. Thus, note that the displacement of some units to non-canonical positions results in non-cohesive sequences of referring expressions, for example in cases where a displaced unit containing a subsequent mention of a referent appears before the expression that first mentions this referent. Similarly, deleting a unit like the Initiating Event typically results in a cohesion anomaly, since this unit typically contains the introduction of a secondary referent that is at the centre of the plot. It is therefore likely that some of children's reorganisational strategies during story recall may consist of restoring cohesion in the face of such disruptions, for example by

introducing more than one secondary referent (resulting in double episodes) in the case of displacements or by including an Initiating Event containing such an introduction when it is missing. These and other points beg the question of how cohesion and coherence are related.

The problem of how to account for both types of organisation has not been tackled satisfactorily by previous research. With few exceptions, researchers have basically focused on one or the other aspect of discourse organisation, rather than on their relation. Studies focusing on narrative coherence have typically postulated the existence of cognitive schemata underlying subjects' performance in various tasks (e.g. comprehension, production, and recall of canonical vs. structurally anomalous stories), independently of the knowledge they may have of the linguistic properties of cohesive stories. Inversely, studies focusing on cohesion have typically focused on the linguistic properties of texts and on the pragmatic principles governing language use, independently of the knowledge children may have of the structural properties of stories. The need to relate structural coherence and textual cohesion in discourse organisation has been stressed in recent research focusing on children's narrative productions (e.g. discussions in Berman 1988, 1995, 1997; Berman and Slobin 1994; Fayol 1985, 1991). Several approaches to this question have been proposed.

First, some studies merely postulate simultaneous parallel developments in coherence and cohesion and do not make any particular claim about the relations between these two aspects of discourse organisation. For example, they show simultaneous developmental progressions in both aspects of children's narrative organisation or find linguistic correlates of their ability to comprehend story content (e.g. McCutchen and Perfetti 1982; Shapiro and Hudson 1991, 1997; Stenning and Mitchell 1985). However, an increasing literature on narrative development indicates an interdependence between coherence and cohesion which needs to be further examined. As will be shown later on (Chapter 5), much evidence shows that children are indeed sensitive to anomalies in discourse cohesion. They can produce self-corrections of cohesive devices (Karmiloff-Smith 1986, 1992; Karmiloff-Smith *et al.* 1993). They use cohesive devices to integrate information during on-line text processing from seven years onwards (e.g. Tyler 1981, 1983, 1984; Tyler and Marslen-Wilson 1978a, 1978b). Their recall of structurally anomalous stories is improved when referring expressions are changed to restore cohesive continuity, suggesting that both aspects of stories might be constructed simultaneously (Garnham *et al.* 1982). Finally, they can restore discourse cohesion when they have to process stories that contain anomalous referring expressions (Hickmann and Schneider 1993, 2000; Schneider *et al.* 1997).

Second, a number of studies argue or imply that macrostructures (scripts or story grammars) are major determinants of the use and acquisition of cohesive devices,

such as referring expressions (e.g. Orsolini 1990) or connectives (e.g. French and Nelson 1985). For example, they show earlier uses of some linguistic devices when (English-speaking) children tell scripted narratives based on familiar events repeatedly encountered in personal experience as compared to when they tell other types of narratives. When asked to speak about familiar events, children as young as two or three years use connectives and adverbials (e.g. *before*, *after*, *so*), inflections (timeless present), nominal determiners (*the teacher* vs. *a noise*, French and Nelson 1985). These findings suggest that familiar routinised event sequences facilitate the display of some discourse skills. They therefore raise the question of the relation between form use and narrated content, challenging the idea that children are unable to use devices appropriately because of their cognitive immaturity. More generally, Nelson (1991, 1996) proposes a model in which the verbalisation of scripted knowledge in social interaction provides a major mechanism for the emergence of a variety of later cognitive and linguistic developments.

A number of studies (further discussed in Chapters 5 to 7) also support the idea that children's uses of linguistic devices are related to macrostructures, although they do not necessarily postulate any particular relation between macrostructures and language development. Thus, discourse type or *genre* has been shown to be a major determinant of linguistic use. A variety of studies (Bamberg 1997; Bamberg and Marchman 1990, 1991, 1994; Bronckart 1985; Bronckart and Schneuwly 1991; de Weck 1991; de Weck and Schneuwly 1994) compare children's productions across different types of discourse situations, such as narratives of personal experience, fairy tales, and expository types of discourse, showing variations in their uses of devices such as referring expressions, temporal-aspectual morphology and/or connectives. Among other findings, children's uses of these devices in third person narratives mark the story macrostructure. Detailed analyses of such narratives (Bamberg 1987, 1990; Bamberg and Marchman 1990, 1991, 1994) show, for example, that, despite some developmental differences, narrators of all age groups use various devices (lexicalised inceptive aspect, forestalling devices, more explicit references to some characters) to *foreshadow* or *wrap up* information, not only chunking this information into episodes and scenes, but also indicating how these chunks relate to previous and subsequent discourse. For example, they intensify events or express the continuation of event sequences (young children), package small discourse units (older children), and mark the instantiation, re-instantiation, and completion of event sequences (older children and adults). Similarly, children's uses of referring expressions mark both the internal and external structure of stories. Thus, Hickmann, Kail and Roland (1995) show that, despite some important developmental differences (to be discussed in Chapter 5), children overmark references to story characters as a function of story structure in two

Table 4.3 Example of canonical story (Hickmann and Schneider 2000)

Setting	Once there was a snake who was very small.
Initiating Event	One day he was crawling around in the grass and he found an apple . ^a
Internal Response	He was hungry and he wanted to eat the apple .
Attempt	He opened his mouth and he bit into the apple .
Consequence	He swallowed too fast and he got the apple stuck in his throat.
Reaction	He coughed very hard.

^a Bold font shows the referring expressions denoting the target referent.

cases: when they cross an episodic boundary (thereby marking the internal story structure) and when they cross a picture boundary (thereby marking the external story structure).

Finally, yet a different approach, which is in line with the one adopted here, argues that there should be important interactions between these two aspects of discourse, each influencing the other during the course of development. According to this view (e.g. Berman 1995; Berman and Slobin 1994), narrative competence evolves from a complex web of interrelations among linguistic, cognitive and communicative components of children's knowledge, including interrelations between cognitive schemata for stories and their linguistic realisation in discourse activity. Note that one possible implication of such a view is that the capacity to construct discourse cohesion might be partially constitutive of the capacity to construct story coherence during development. Some studies are clearly necessary to address this question, for example by varying systematically the well-formedness of coherence and of cohesion, typically confounded in previous studies.

An illustration can be found in a study (Hickmann and Schneider 2000) where children (five, seven, ten years) were asked to retell stories containing an anomalous sequence of referring expressions and/or of narrative units.⁴ Table 4.3 illustrates a well-formed story version and Table 4.4 summarises the different experimental conditions resulting in anomalies. In the canonical version (Table 4.3), narrative units occurred in their expected order and all referring expressions were appropriate. In structurally anomalous versions unit displacements occurred, for example the Consequence was displaced before the Initiating Event, resulting in the sequence (4.11). In addition, as shown in (4.12), some anomalous versions (*low cohesion anomalies* in Table 4.4) contained only definite nominals and others (*high cohesion anomalies*) also contained an inappropriate subsequent mention (indefinite form). Finally, in structurally anomalous versions referring expressions were either left intact after the displacements as in (4.11) or they were changed, for example to obtain a cohesive sequence such as (4.13).

Table 4.4 Summary of all experimental conditions (Hickmann and Schneider 2000)

No structural anomaly	S	IE	IR	A	C	R ^a
Cohesive	—	<i>a</i>	<i>the</i>	<i>the</i>	<i>the</i>	—
Low cohesion anomaly	—	<i>the</i>	<i>the</i>	<i>the</i>	<i>the</i>	—
High cohesion anomaly	—	<i>the</i>	<i>the</i>	<i>the</i>	<i>a</i>	—
Consequence displaced before Initiating Event	S	C	IE	IR	A	R
Cohesion restored	—	<i>a</i>	<i>the</i>	<i>the</i>	<i>the</i>	—
Low cohesion anomaly	—	<i>the</i>	<i>the</i>	<i>the</i>	<i>the</i>	—
High cohesion anomaly	—	<i>the</i>	<i>a</i>	<i>the</i>	<i>the</i>	—
Initiating Event displaced after Attempt	S	IR	A	IE	C	R
Cohesion restored	—	<i>a</i>	<i>the</i>	<i>the</i>	<i>the</i>	—
Low cohesion anomaly	—	<i>the</i>	<i>the</i>	<i>the</i>	<i>the</i>	—
High cohesion anomaly	—	<i>the</i>	<i>the</i>	<i>a</i>	<i>the</i>	—

^a S: Setting; IE: Initiating Event; IR: Internal Response; A: Attempt; C: Consequence; R: Reaction. Nominal determiners indicate the types of target referring expressions that occurred in the corresponding unit.

- (4.11) C He swallowed too fast and he got **the apple** stuck in his throat.
 IE One day he was crawling around in the grass and he found **an apple**.
 [...]
- (4.12) IE One day he was crawling around in the grass and he found **the apple**.
 IR He was hungry and he wanted to eat **the apple**.
 A He opened his mouth and he bit into **the apple**.
 C He swallowed too fast and he got **the/an apple** stuck in his throat.
 [...]
- (4.13) C He swallowed too fast and he got **an apple** stuck in his throat.
 IE One day he was crawling around in the grass and he found **the apple**...

During story recall children's uses of referring expressions for referent introductions show several types of cases, illustrated in (4.14) to (4.16) (fourth-graders, relevant devices shown in bold): children introduced one target referent with inappropriate definite forms as in (4.14) or with appropriate indefinite ones as in (4.15); they introduced more than one target, for example (4.16), frequently also using in this case other relevant devices, for example complex referring forms (e.g. *another N*) and temporal-aspectual devices (e.g. *one more day*).

- (4.14) Once there was a monkey who was very silly. He wanted to play with **the balloon**. So he climbed up and got the balloon. He slipped. And he let the balloon go. And he felt very silly. That's it. (G4)

- (4.15) Once there was a cat who was very naughty. He was walking down by the park when he saw **a plant**. He was very hungry. So he wanted to taste the plant. He opened his mouth and bit into the plant. When – after he bit into the plant he was very sick. He ruined the plant. That’s it. (G4)
- (4.16) Once there was a frog. He was so happy. He went and he seen **a leaf** in the water. And he went and he jumped in and tried to get the leaf in the water. And he – he jumped so hard it sank. And then **one more day** (he was) he was swimming in the water. And he found **another leaf**. And he picked it up. And he says, ‘I got a leaf’. And that was the end. (G4)

With increased age, children mention significantly more referents and they use more indefinite forms to introduce them. They also introduce more referents with structurally anomalous stories and with high cohesion anomalies, particularly in the older children’s narratives. Indefinite forms are more frequent with canonical stories than with anomalous ones, while additional devices (such as *another*, *another day*, etc.) occur most frequently with structural and cohesion anomalies. Further analyses (Hickmann and Schneider 2002) show that children’s narrative strategies are determined by both coherence and cohesion. For example, their reliance on double episodes is related to introductions such as (4.16) and is high with both types of anomalies. Therefore, although children are guided by an internal narrative schema, they also heavily rely on linguistic cues which follow rules governing information status, and these two aspects of discourse organisation interact during the course of development.

4.2 Emergence of the textual function

We now briefly consider some evidence based on early child language concerning the emergence of coherence and cohesion. Typically based on the longitudinal analyses of early conversational data and on narratives of personal experience, this research has led to two diverging conclusions. Some of the evidence suggests precocious discourse skills (Section 4.2.1), while other types of evidence show more gradual developmental progressions in children’s ability to *displace reference* (Section 4.2.2). In the latter case, development is typically taken to reflect a gradual *decentring* process, whereby children become able to *decontextualise* information in communication, particularly in the absence of immediate mutual knowledge among the interlocutors in the speech situation.

4.2.1 Early conversational skills

A number of studies show that children as young as two years display the ability to perform a variety of speech acts, to sustain conversation, to participate

in successful joint referential activities, and to mark links across speaker turns in various ways, for example by repetition, juxtaposition, or sequencing (Bruner 1983; Dore 1974, 1979; Keenan 1974, 1977; Keenan and Klein 1975; Keenan and Schieffelin 1976; Kernan 1977; Ochs *et al.* 1979; Sachs 1979, 1983). Some of these studies also show precursors for some of the patterns to be discussed later on in this book (Chapter 5), particularly pragmatic principles accounting for phenomena linked to presupposition and focus (e.g. Greenfield and Smith 1976). For example, Keenan and Schieffelin (1976) argue that in early child language adult-child conversations reflect a specific pattern, whereby the different components necessary to make up a proposition are distributed across speaking turns. This pattern can be sketched along the following four steps: (1) the speaker shows that he or she has noticed a referent; (2) he or she gets the interlocutor to notice the referent; (3) the interlocutor shows that he or she has noticed the referent; (4) one of the two interlocutors asserts or asks something about the referent. Note that after the third step, the existence and identity of the referent are mutually known and can therefore be presupposed. As illustrated in (4.17), one of the interlocutors initiates a conversation about a referent, establishing mutual knowledge about its existence and identity, then the other interlocutor predicates something about it.

- (4.17) Adult: What does Mommy have?
Child: Cookie.
Adult: Cookie! Ok, here's a cookie for you.

Greenfield and Smith (1976) also show that omissions during the one-word stage can be explained by an analysis of what the child takes or does not take for granted in the speech situation. As illustrated in (4.18), children merely predicate some property or activity about referents that are in their possession (e.g. *bye bye*, *beep beep*), but mention referents if they are outside of their grasp (e.g. *car!*).

- (4.18) Child: (pointing to car, whining) Car. Car.
Adult: You want your car?
Child: (about to push car) Bye bye.
Child: (pushing car) Bye bye.
Child: (makes a car sound) Hmmm.
Child: (patting his car) Beep beep. [...]
Child: (whining, looking for his car
which has fallen down) Car.

Finally, social interactive processes are a central part of how children begin to use referential forms during early phases of child language. For example, Budwig (1990) shows that differential uses of forms for self-reference, some of which might be

otherwise considered to be 'incorrect', depend on the particular intentions expressed by children. During the early stages of language acquisition, children use one of several forms when they refer to themselves, depending on the type of discourse context in which their utterances are embedded. Although self-references in nominative, accusative, and possessive forms (*I, me, my*) all occur at the same stage, they are not used to mark case as in the adult system. Rather, these forms are linked to particular types of speech acts, forming a system of form–function relations, which evolves during the course of development. Oshima-Takane and Derat (1996) also show the influence of maternal speech on children's uses of nominals and pronominals between twenty-one and thirty-six months of age, for example as children's age increases, mothers' use of nominal references to speaker and addressee decreases and their uses of pronominal references to different types of entities evolves (decreasing with toys, but increasing with humans). Some evidence based on adult–child interactions also shows the impact of interpersonal processes on children's uses of temporal-aspectual devices. For example, Veneziano and Sinclair (1995) point to very early uses of past references in conversations that are not restricted to routinised scripts and that co-occur with the advent of particular social behaviours, particularly the production of explanations in discourse requiring a differentiation of points of views.

This line of research suggests that children's discourse is related to their socio-cognitive development. Results have been taken as evidence that young children's uses of a variety of forms are related to socio-interactive processes and that these uses reflect an early ability to appropriately participate in discourse activity at some level. This capacity is reported even as early as during the one-word stage, that is before the stage where they have acquired a number of linguistic devices available in their native language for the denotation of entities in discourse (e.g. nominal determiners, pronouns). These verbal behaviours seem to reflect children's inherently social nature, which is already apparent from earlier non-verbal behaviours (e.g. gazing), suggesting that infants of a few months of age are already sensitive to signals for mutual attention. However, some evidence discussed below also indicates that young children are unable to participate fully in communication and/or that they have to rely heavily on adult help in order to do so efficiently.

4.2.2 *Displaced reference*

Different strands of research about early child language have made the following recurrent observation: after an initial period during which children mostly talk about the *here-and-now*, they begin to *displace reference* to the *there-and-then* from about two years on, displaying the clear desire to talk about other things, particularly as they recall, report, and discuss past events (e.g. Eisenberg 1985; Fivush *et al.* 1987; French and Nelson 1985; Kemper 1984; McCabe and

Peterson 1991; McCartney and Nelson 1981; Menig-Peterson 1975; Menig-Peterson and McCabe 1978; Miller and Sperry 1988; Nelson 1986; Nelson and Gruendel 1979, 1981; Peterson 1990, 1993; Peterson and Dodsworth 1991; Peterson and McCabe 1983; Preece 1987; Sachs 1979, 1983; Todd and Perlmutter 1980; Umiker-Sebeok 1979). In general, although displaced reference is at first unsuccessful in many respects, most researchers agree that it is accompanied by the emergence of specific linguistic devices in children's spontaneous productions, providing the locus for the uses of temporal-aspectual markings (connectives, adverbials, past verbal inflections) and of devices denoting entities (nominal determiners, pronouns) that show some concern for discourse organisation.

Observations show a number of subsequent developments. Displaced reference is at first limited and achieved with great difficulty without some scaffolding help from adults, then becomes more efficient during later phases. For example, Sachs (1983) finds that under three years displaced reference has at first the following properties: conversations are brief, not always successful and/or focused, dependent on adult initiation or scaffolding, and they lack the linguistic devices necessary to link utterances together in cohesive discourse. Early displaced reference is also first highly focused on familiar events or routines, that is children first talk about (or are asked to talk about) the situation types they most frequently encounter. After about twenty-nine months they spontaneously initiate less general and longer stretches of speech, but these stretches are still relatively disorganised and simple. There is a general increase in narrative complexity from three to five years, as measured by length, spatio-temporal *remoteness*, frequencies, and compression of different narrative units (e.g. Umiker-Sebeok 1979). In contrast to four- and five-year-olds, three-year-olds produce mostly a *complication* in *dangling* narratives, which abruptly begin in the middle of conversations, have no relation to topics established during the previous turns, and end without any expectation of a response on the part of the interlocutor. These young children, then, have not yet understood the topic-comment structure of discourse and the rules necessary to become an integral part of interpersonal exchanges. Young children also fail to produce particular types of information and/or to use linguistic devices accordingly. In particular, they do not introduce the initial parameters in narratives: one finds some spatial orientation with events that took place away from home, but practically no orientation concerning the participants or time (e.g. Eisenberg 1985; Fayol 1985; French and Nelson 1985; Gopnik 1989; Menig-Peterson and McCabe 1978; Peterson 1990, 1993; Sachs 1983). Thus, Peterson (1993) finds that, despite the presence of various intersentential cohesive links from two years on and despite a decrease in noun phrase errors between two and nine years, the introduction of new referents remains problematic for all age groups.

Progressions occur, suggesting that displaced reference is characterised by a gradual increase in both the coherence and cohesion of discourse. The emergence of intersentential links has been reported to emerge at two to three years (e.g. Peterson 1993; Peterson and Dodsworth 1991). Children's utterances contain relatively few ties at first, the most common one being lexical cohesion (talking about the same thing), although pronouns and connectives are also used and increase with age. Pellegrini (1984) reports that children from six years on use endophora in some situation types (absence of mutual knowledge, dramatic play), exophora in others (discussion, drawing). More detailed analyses of early spontaneous discourse show that children's uses of linguistic devices evolve gradually. Pronouns emerge at around two years, then develop gradually through longer cohesive chains, through function shifts (e.g. from verb phrase to subject), and more generally through the child's ability to grasp formal contrasts in prior discourse (e.g. Bennett-Kastor 1983; Levy 1989; Nelson and Levy 1987). Temporal terms also evolve gradually in discourse: adverbials (Levy and Nelson 1994), connectives (e.g. Bennett-Kastor 1986; Jisa 1984–5, 1987), and verbal inflections (e.g. Fletcher 1979, 1981).

As will be shown later on (Chapters 5 and 6), it has been argued more recently that children do not master adult functional properties of these devices until very late, particularly for the construction of discourse cohesion, despite their frequent early uses of forms that are seemingly correct from a formal point of view. In this respect, some of the results based on conversational analyses raise multiple methodological problems (see Chapter 7). Such analyses provide rich information about individual children, which might serve as the basis for interesting hypotheses, but they lack adequate control of a number of variables, preventing us from reaching definite conclusions about development.

4.3 Summary

In summary, studies examining children's discourse organisation in the available developmental literature have focused on different aspects of discourse, which are presently in great need of being related. Depending on their theoretical framework, studies typically explain narrative development by focusing on one of two aspects of children's discourse organisation: either *discourse-structural* aspects of narratives, which are linked to coherence, or *discourse-cohesive* aspects, which are more directly tied to the ability to use linguistic devices according to functional pragmatic principles of linguistic organisation across clauses. Most of the studies reviewed above within the former type of approach seem to show that children are sensitive to macrostructures (scripts, story grammars) at a very early age. Similarly, most of the studies focusing on the emergence of discourse skills within the latter type of approach also seem to show children's early ability to engage in

verbal interaction with others from the emergence of productive language on and subsequent developments in children's language thereafter.

However, neither approach has systematically examined progressions in children's uses of linguistic devices and the impact of these progressions on how they construct either story structure or conversation. In addition, more research is clearly needed to differentiate and especially to relate coherence and cohesion. Studies within discourse-cohesive approaches have provided interesting anecdotal evidence concerning children's uses of linguistic devices, but they have typically not distinguished the different functions that these devices might serve in discourse. Studies within discourse-structural approaches have frequently not separated the potential impact of story structure and of discourse cohesion on children's productions. The evidence reported at least suggests that there are linguistic indices to story structure, but it does not fully address the issue of how two types of knowledge are related during discourse development: knowledge of the rules underlying well-formed story structure (coherence) and knowledge of the rules governing the flow of information across utterances in discourse (cohesion). Other reviewed evidence also shows that both coherence and cohesion are important aspects of children's narrative competence and that they interact during the course of development.

As noted previously (Chapter 2), psychologists focusing on cognitive development have interpreted displaced reference as part of a larger developmental process whereby children learn to gradually decontextualise their representations from immediate perception. Before this point, young children's speech is *egocentric*, displaying two main characteristics: it either does not serve any communicative function, merely accompanying children's own actions independently of the actions of others; or it is addressed to others, but children's uses of linguistic devices, such as pronouns or spatio-temporal devices, show that they have difficulties taking into account others' perspectives. As a result, young children's speech is often incomprehensible, for example for an interlocutor attempting to reconstruct the denoted event sequences when he or she has not witnessed these events. We saw that different interpretations have been proposed to account for this phenomenon. Some have interpreted egocentric speech as part of a process of decentering accounting for child development across several domains (Piaget 1923) or as an intermediary phase during which children use language to regulate their own actions, before they have learned to differentiate the cognitive and communicative functions of language (Vygotsky 1962). I will argue subsequently that this process of decontextualisation should be best characterised as a process of *recontextualisation*, whereby children learn to use language and its *own* context.

I take up some of these points in subsequent chapters, when I examine the available evidence concerning children's acquisition of the devices necessary for the marking of information status in discourse (Chapter 5) and their acquisition

of spatio-temporal devices (Chapter 6). As will become clear from this review, discourse-cohesive uses of linguistic devices are a rather late development, stemming from earlier deictic uses anchored in the immediate situation. Thus, despite early uses of some linguistic forms, the complex interplay of syntactic, semantic, and pragmatic functions of these forms is not mastered until much later during the course of development. Furthermore, cross-linguistic studies focusing on how children regulate the flow of information across utterances in discourse show the need to differentiate the contribution of linguistic devices to two levels of linguistic organisation, the sentence and discourse. The study of discourse development, then, requires an account of how all of these different forms of organisation are related, with particular attention to the multiple factors that might determine the acquisition of various subsystems in language. As will become clear by the end of Part I, the study of discourse organisation requires an account of how linguistic subsystems are acquired, with particular attention to the multiple factors that determine the acquisition process.

5 *Children's marking of information status: referring expressions and clause structure*

We now examine the questions raised by the preceding chapters in the light of the available research pertaining to children's acquisition of a variety of linguistic devices across several domains. The present chapter focuses on children's uses of referring expressions and of clause structure when denoting entities in discourse. Studies concerning referring expressions (Section 5.1) have focused on different syntactic, semantic, and pragmatic aspects of these devices, reaching strikingly divergent conclusions about the rhythm, course, and determinants of acquisition in this domain of child language. A review of this evidence suggests that, despite some early uses of different types of referring expressions, the discourse-internal cohesive functions of these devices constitute a late development. In addition, some scattered developmental evidence shows variable uses of clause structure across languages (Section 5.2), but little is still known about the functions of such linguistic devices in children's discourse development. In summary (Section 5.3), the proposed synthesis of this literature argues for the need to bring together different lines of research in order to determine the impact of sentence and discourse factors on development within a cross-linguistic perspective.

5.1 Referring expressions

A great number of studies have examined children's comprehension and production of referring expressions (nominal determiners, overt pronouns, null elements). A review of this literature shows a striking divergence in the conclusions reached by different authors with respect to the rhythm of development. Some authors claim that the nominal/pronominal system is mastered very early (by three years), while others conclude that it is acquired only very gradually and that it is not mastered until a very late age (after seven or even ten years). Although such a wide age range may seem rather surprising at first sight, the synthesis below shows that it stems from two main causes: methodological heterogeneity (to which we return in Chapter 7) and different theoretical foci, mainly discussed in the present chapter. Researchers have examined different properties of these devices and have drawn different conclusions concerning the factors that might determine the developmental

process. For example, pronouns have been the locus of much research and discussion because they raise deep theoretical controversies about the nature of language and about the process of language acquisition. Despite some variability and controversies across studies, proponents of Universal Grammar tend to show early mastery, taken to support the central claim that grammatical knowledge is innate. Studies focusing on semantic and/or pragmatic properties of referring expressions are more heterogeneous in this respect. In general, and notwithstanding pervasive methodological problems, studies claiming relatively late mastery are typically framed within a particular type of functional perspective, one that places emphasis on those properties of referring expressions that contribute to the construction of discourse-internal cohesion. This section summarises these findings, divided for ease of presentation into two main groups, depending on whether they mainly concern the syntactic properties of referring expressions (Section 5.1.1) or their semantic and pragmatic properties (Section 5.1.2).

5.1.1 *Syntactic aspects: formal accounts*

An extensive literature has focused on the syntactic knowledge that might be displayed by children's uses and interpretations of pronouns. This research has aimed at providing evidence that bears on crucial assumptions underlying Chomsky's (1981) theory of Government and Binding. In particular, Chomsky postulates an innate linguistic competence, which is domain-specific and comprises the following: knowledge of universal grammatical principles, such as the principles that define binding conditions for different types of NPs; and knowledge of parameters, accounting for cross-linguistic variations, such as the different properties exhibited by languages with respect to null elements or branching direction. I illustrate this research below with several types of studies, focusing on children's comprehension of reflexive pronouns and on their knowledge of parameters concerning the directionality of coreference assignment and the use of null subjects.¹

5.1.1.1 *Reflexives*

As previously noted (see (5.1) reproduced from Chapter 3), Chomsky's (1981) theory of Government and Binding postulates the existence of universal Principles A to C, in order to account for uses of different types of NPs: *anaphors* (such as reflexive pronouns), *pronominals* (overt non-reflexive pronouns), and *referring expressions* (lexical NPs).

- (5.1) A. An anaphor must be bound in its governing category.
 B. A pronominal must be free in its governing category.
 C. An R-expression must be free.

This approach makes the strong assumption that knowledge of these principles is innate and predicts that this knowledge should be manifest quite early. Indeed, a recurring result across several languages is that, despite young children's errors with different types of pronouns (both reflexive and non-reflexive) in stimuli such as (5.2) to (5.4) and, notwithstanding variations across experiments, errors with reflexives are less frequent from three years on and disappear sooner than with non-reflexives (e.g. among others, Chien and Wexler 1990; Deutsch and Koster 1982; Deutsch *et al.* 1986; Grimshaw and Rosen 1990a, 1990b; Jakubowicz 1991, 1994; Stevenson 1990, 1992; Stevenson and Pickering 1987). Children typically interpret non-reflexives as reflexives, assigning coreference within the sentence against Principle B. Other findings indicate that young children have few difficulties with sentence-bound variables such as (5.5) (Chien and Wexler 1990). Furthermore, discourse and semantic variables affect the responses of five to six-year-olds to non-reflexives, but not to reflexives (Stevenson and Pickering 1987). Thus, despite an imperfect grasp of the system, Principle A is processed relatively early and autonomously, and Principle B may even operate before discourse co-indexing (see discussion in Goodluck 1990). As discussed below, such findings have been subject to a variety of interpretations.

- (5.2) John's brother washes him/himself.
- (5.3) John said that Peter washed himself/him.
- (5.4) Snoopy wants Adam to point to him/himself.
- (5.5) This is Goldilocks, these are the bears. Is every bear touching her?

Research with children described as 'grammatically specifically language-impaired' (van der Lely 1997; van der Lely and Stollwerck 1997) brings some support to the hypothesis that the capacity to resolve coreference with reflexives is modular. When interpreting stimuli such as (5.6) and (5.7), these children are unable to rely exclusively on syntactic information in order to rule out inappropriate coreference. However, they are able to use a combination of conceptual-lexical and pragmatic knowledge to assign reference to anaphors and pronouns when particular markings are provided (e.g. gender). Furthermore, they do not seem to have difficulties using pronouns to establish cohesion when asked to produce narratives.

- (5.6) This is Peter Pan; this is Wendy. Is Peter Pan touching himself/her?
- (5.7) This is Mowgli; this is Baloo Bear.
 - a. Is Mowgli tickling him/himself?
 - b. Is every monkey tickling him/himself/Mowgli?
 - c. Are all the monkeys tickling Mowgli?
 - d. Baloo Bear says Mowgli is tickling him/himself.
 - e. Mowgli says every monkey is tickling him/himself.
 - f. Every monkey says Mowgli is tickling himself.

5.1.1.2 Parameters

In contrast to knowledge of universal principles such as Principles A to C above, parameters account for cross-linguistic variation, providing the potential locus for learning processes during language acquisition. Consider first experiments focusing on the *directionality of coreference*. Despite considerable variations across stimuli and tasks, English-speaking children find coreference assignment easier with forward pronominal reduction than with backward reduction. Such a result has been reported across a large range of anaphor types and structures, including subordinate structures such as (5.8) to (5.16) and co-ordinate ones such as (5.17) to (5.20) (among others, Carden 1986; Chomsky 1969; Ingram and Shaw 1988; Lust 1986; Solan 1983, 1987; Tavakolian 1978, 1981). Different interpretations have been proposed to account for these findings, some of which argue for children's early knowledge of structure-dependent principles (see also discussions in Lust 1986). However, preference for backward reduction can also be observed (but to variable extents, see below) in left-branching languages of different word orders (Chinese, Japanese), suggesting that *branching direction* constrains the acquisition of anaphora (Lust and Mangione 1983, 1986; Lust and Chien 1984).

- (5.8) Before he went out, Pluto took a nap.
- (5.9) Mickey yawned when he sat down.
- (5.10) When Mickey was sick, he ate lunch early.
- (5.11) Pluto thinks he knows everything.
- (5.12) He found out that Mickey won the race.
- (5.13) Johnny washed the table, when 0 drinking juice.
- (5.14) When 0 drinking juice, Johnny washed the table.
- (5.15) The sheep tells the duck (for him) to jump over the horse.
- (5.16) (For him) to kiss the lion would make the duck happy.
- (5.17) The teddy bear walks and 0 sleeps.
- (5.18) The kitties 0 and the dogs hide.
- (5.19) Eat the crackers and 0 the cake.
- (5.20) Push 0 and hug the kitty cat.

A large number of studies have also examined how children discover whether their language allows for null subjects in independent finite clauses (see Chapters 2 and 3). Most of these studies are based on early spontaneous productions across parametrically different languages (e.g. among others, Bloom 1990, 1993, 1996; Clahsen 1990; Hamann 1996; Hyams 1986, 1987, 1989, 1992a; Hyams and Wexler 1993; Jakubowicz *et al.* 1996; Jakubowicz and Rigaut 1997; Radford 1992; Rizzi 1994; Sano and Hyams 1994; Valian 1990, 1991, 1993; Weissenborn 1992). Some evidence also involves experimental imitation data (e.g. Valian *et al.* 1996). Among

other facts to be explained are the following results. First, differential frequencies of null subjects can be observed across early child languages, for example null subjects are more frequent in Italian than in English. Second, the data seem to show some asymmetries, such that null subjects are more frequent than null objects (but see below for some counter-evidence in this respect). Third, the data also show expected co-occurrences among various phenomena, for example between overt/null subjects and finiteness or between English auxiliaries/modals and non-referential pronouns. In order to account for these diverse observations, different proposals have been made, which vary in at least three ways: the particular parametric value with which all children are assumed to be initially endowed; the properties of the input assumed to trigger children's discovery of the correct value in their language; and the processes whereby they are assumed to go about setting (or resetting) this value.

The most influential proposal (Hyams 1986) postulates that children all begin with the assumption that their language allows null subjects (initial [+pro-drop] value). Children acquiring languages that do not allow null subjects ([–pro-drop] languages) would then have to reset this parametric value. Depending on the theoretical variant, such a resetting might occur when children are confronted with relevant input 'triggers', such as non-referential pronouns (e.g. the *expletive* pronoun *it* in *it's raining*) and/or when they acquire the properties of the language that provide *licensing* (agreement, tense) (e.g. Hyams 1986, 1989, 1992a). However, some evidence based on French and German corpora (Weissenborn 1992) shows that children seem to go through a phase during which they do not use subjects like adults, despite the fact that they have acquired inflections, for example producing utterances such as (5.21) (correct value) and (5.22) (incorrect value). In both languages performance is nonetheless errorless (no null subjects) in embedded clauses with complementisers (5.23) and WH-questions (5.24) (also see Valian 1991 on English). These results suggest that children's discovery of the correct null-subject value in their language involves interactions among several properties of their input language (pro-drop, zero topic, subordination, WH-elements, verb-movement) and might be uniquely triggered by subordinate clauses (see discussions in Lillo-Martin 1992; Roeper and Weissenborn 1990).

(5.21) Je veux ça. ('I want that.')

(5.22) Veux pas. ('Want not.')

(5.23) Parce qu'elle est froide. ('Because she is cold.')

(5.24) Où elle est la porte? ('Where it is the door?')

5.1.1.3 *Some problems*

These analyses raise a number of problems. Some arise in relation to various assumptions concerning children's initial state and discovery procedures

relevant to null subjects (e.g. Bloom 1990, 1993, 1996; Hyams 1986, 1987, 1989, 1992a; Hyams and Wexler 1993; Kim 1993; Lillo-Martin 1992; Rizzi 1994; Sano and Hyams 1994; Valian 1990, 1991, 1993). For example, a large debate concerning initial states has yielded a number of proposals, each of which provides different types of justifications for the following hypotheses: all children should start out with a [+pro-drop] value, with a [-pro-drop] value, with no particular value, or with both values. Many specific questions here remain to be addressed on the basis of empirical evidence. Taken as a whole, such a controversy raises the more general question of whether the grammar can provide a principled answer with respect to the nature of initial states. In addition, the very nature of null-subject parametric values has been questioned or revised for particular languages. Thus, there is still some unclarity as to whether early child English should be analysed as a pro-drop or a zero-topic language, whether French might have a topic-comment structure akin to Chinese (Lambrecht 1981, 1987), whether child French is a null-subject language (Pierce 1994), and whether German should be characterised as a zero-topic language (like Chinese), given its clear subject-orientation (see discussion in Lillo-Martin 1992; see also some interesting facts about child German in Hamann 1996).

Unresolved questions also remain concerning which particular cues in the input should trigger children's discovery of correct parametric values and/or concerning which aspects of their language should best reflect their syntactic knowledge. Previous claims that expletive pronouns partially substantiate the discovery of a correct [-pro-drop] value have not held against quantitative analyses showing that expletives are sparse and not related to developmental phase, for example in child English (Valian 1991) or in child French (Jakubowicz and Rigaut 1997). This observation may be artifactual, since it could merely result from insufficient sampling and/or from the fact that the relevant events that would necessitate such structures simply do not occur in natural situations. However, controlled imitation data in an experimental situation show that children tend to omit expletives more frequently than thematic pronouns, regardless of developmental phase (Valian *et al.* 1996).

Variations in the reported facts across corpora also occur with respect to crucial indices across early child languages, for example the length/complexity of utterances, the use of subordination and explicit complementisers, determiners, pronominal systems, subject/object asymmetries, finite vs. non-finite verbal forms (Bloom 1990; Hyams 1992a, 1992b; Pine and Martindale 1996; Pizzuto and Caselli 1992; Radford 1992; Sano and Hyams 1994; Weissenborn 1992). For example, the existence of a developmental phase characterised by bare infinitives in languages such as French, English, or German seems to be controversial. Pierce's (1994) evidence based on early French longitudinal data is compatible with some of

Hyams' original predictions (initial [+pro-drop] value), showing an initial stage with frequent bare infinitives and (incorrect) null subjects, followed by the simultaneous emergence of verbal morphology and the proper setting of the null parameter. However, French bare infinitives are rare in other corpora (see Jakobowicz and Rigaut 1997) and/or they do not systematically coincide with null subjects (Weissenborn 1992; Sano and Hyams 1994).

Such divergences perhaps merely result from methodological difficulties, showing the need for a more detailed and standardised empirical basis across languages and individual children. For example, divergent results concerning frequencies of French non-finite forms may result from frequent ambiguities between the different possible readings for phonologically identical forms, such as infinitival vs. past participial forms of verbs ending in *-er* (e.g. *manger* 'to eat' and *mangé* 'eaten', *casser* 'to break' and *cassé* 'broken'), which occur massively in adult and child language (see Chapter 3). Larger methodological questions concern how much input is necessary to constitute a potential trigger, how much output is sufficient to claim acquisition, and what constitutes relevant information. For example, prosody or immediate non-linguistic and discourse context may be essential to analyse null subjects since they contribute to differentiating independent or matrix declarative clauses from other clause types, determining the functional value of utterances as descriptions or as requests, or evaluating the appropriateness of pronominalisation as a function of mutual knowledge.

Whatever the case may be, empirical divergences have led to some very different theoretical proposals. For example, depending on the corpus examined, the so-called 'bare infinitives' have been subject to other interpretations, for example as elements that mark resultativity (e.g. French *cassé* 'broken') or partake in implicit modal contexts (e.g. French *manger* glossed as *je veux manger* 'I want to eat') (see discussions in Champaud 1994, 1996a; Köhler and Bruyère 1995–6; Poeppel and Wexler 1993). Similarly, in the absence of subject/object asymmetries in early child English, which are predicted to occur by Hyams' model, Radford (1992) proposes a lexical analysis of child grammar that accounts for so-called 'missing arguments' by postulating that predicates at the one-word stage are lexically *saturated* and therefore constitute unprojected implicit arguments, rather than syntactically projected empty categories. Radford (1994) further interprets the omission of tense/agreement inflections in early child English by assuming that they show the absence of any syntactic projection of tense (tense properties being discourse-identified), which can be attributed to an under-specified agreement-constituent in the child's grammar.

Furthermore, despite the importance attributed to systemic input triggers, quantitative analyses of the language spoken to children have been neglected. Variability in

the input presents a logical problem for parameter theory, leading some to postulate performance factors or general hypothesis-testing discovery procedures, rather than automatically triggered deductive processes (Bloom 1990, 1993, 1996; Valian 1990, 1991). Less drastically, it has led others to postulate interactions among interrelated parameters or properties, thereby accounting for otherwise unexplained variations in the timing of children's discovery of correct null-subject values across related languages (Roeper and Weissenborn 1990; Weissenborn 1992). It would be useful to determine how adult speakers actually use overt vs. null (expletive and thematic) subjects, as well as a variety of relevant structures (e.g. subordinate clauses), for example through analyses of adult speech surrounding children.² In this respect, only occasional anecdotal results are reported (e.g. null subjects in German input, Weissenborn 1992) or only limited and indirect evidence is available (e.g. results from experimental imitation studies, Valian *et al.* 1996).

A more general question here concerns the type of evidence that is necessary to demonstrate innateness or modularity. In their search for evidence showing the earliest manifestations of children's (presumably innate) knowledge of Universal Grammar, researchers have also acknowledged that this knowledge need not be extremely precocious, effortless, or instantaneous, and that it need not involve automatically triggered acquisition processes. Similarly, in their search for evidence showing the modularity of syntactic knowledge, they have also acknowledged the possibility of other (processing, semantic, pragmatic) determinants of acquisition. Clearly, however, if many findings were to show late developments, interactions among different parameters within the Grammar, or interactions among different types of factors (including some that are external to the Grammar), crucial assumptions of innateness and of modularity would be at best seriously weakened. At this point, the question simply remains open in the absence of sufficient empirical evidence.

Finally, syntactic approaches focus on grammatical factors determining use, ignoring other factors or treating them as merely peripheral. These other factors are of three types: cognitive factors, such as those that are linked to the immaturity of the child's cognitive system (e.g. memory limitations); semantic factors operating within the sentence, for example to constrain coreference; and contextual factors operating beyond the sentence, such as the presence of antecedents for coreference relations across sentences in discourse. Thus, in the principles A to C shown in (5.1) above, the conditions for non-reflexive pronouns (Principle B) and for full expressions (Principle C) are defined negatively: the grammar only specifies the antecedents with which these elements *cannot* corefer, given that the formulation of these principles was meant to specify the domain in which co-indexing is not allowed. Some reformulation or some other approach is therefore necessary to

specify the factors (external to the grammar in syntactic approaches) that determine the discourse antecedents with which these elements can or must corefer. A proposed reformulation (Gordon and Hendrick 1997), for example, includes additional operations, distinct from the grammatical core, in order to account for the mapping of syntactic structures onto discourse representation structures.

The necessity of invoking external factors to account for child language can be illustrated by the evidence discussed above concerning the later mastery of non-reflexive pronouns as compared to reflexive pronouns. Although the rare available evidence concerning the production of reflexives shows some correct uses from three years on (e.g. Jakubowicz 1994), it remains unclear why these forms are so rare in early spontaneous child language. This observation may simply reflect ellipsis linked to deictic reliance on the immediate context, but this hypothesis is inconsistent with the fact that other overt pronouns are frequently used deictically rather than omitted in all languages (first/second and third persons), notwithstanding cross-linguistic variability in this respect. Most importantly, different accounts have been proposed for children's differential performance with reflexives vs. non-reflexives: children know Principles A/B, but not other semantic/pragmatic rules; they do not obey Principle B because of pragmatic or performance factors, such as the absence of possible antecedents in the stimuli, the greater difficulty of discontinuity as compared to coreference, a bias towards positive responses, or pragmatic violations in the stimuli (among others, Chien and Wexler 1990; Grimshaw and Rosen 1990a, 1990b; Foster-Cohen 1994; Stevenson 1992). Detailed discussions of these problems show the difficulties in establishing some clear boundaries between syntactic and pragmatic competence (Grodzinsky and Reinhart 1993; Reinhart 1983, 1986; see also Foster-Cohen 1994, 1996, with appeals to Gricean principles and to Sperber and Wilson's Relevance theory (1986)). According to Reinhart, bound-variable anaphora is the central sentence-level type of anaphora, while other types must be captured by principles that do not belong to the grammar, for example the pragmatic principle reproduced in (5.25) below (Reinhart 1986: 143):

- (5.25) When a syntactic structure you are using allows bound-anaphora interpretation, then use it if you intend your expressions to corefer, unless you have some reasons to avoid bound-anaphora.

Directionality further illustrates the difficulties in disentangling the pragmatic and syntactic factors determining children's coreference assignment (see also discussions in Lust 1986). Most authors, even within syntactic approaches, acknowledge the (possible or attested) impact of pragmatic factors in accounting for the developmental results. With respect to cross-linguistic variation, children's preference for backward reduction in a left-branching language such as Chinese is only attested

with some structures (VO), but not with others (SV), and it is the pragmatic factor of linear order that seems to best account for forward assignment in the case of pragmatic coreference across all languages, despite postulated parametric differences among them (see Reinhart 1986). Thorough studies examining the relative impact of sentence vs. discourse context on children's coreference assignment still remain to be undertaken. Only minimal pragmatic leads or discourse contexts are typically used in various experiments, for example single-clause sentences (e.g. Lust 1986; Stevenson and Pickering 1987), sometimes used deictically (e.g. Valian *et al.* 1996). Such contexts are clearly insufficient to determine the impact of discourse context, its extent, its precise nature, and its implications. For example, as shown below (Section 5.1.2) and as further documented later on (Chapter 8), during particular phases of development children are sensitive to discourse contexts that provide global constraints such as a clear discourse theme (Karmiloff-Smith 1981) or a variety of local constraints such as *topics* or *topic switches* across adjacent clauses (Bamberg 1987) and different types of coreferential relations in discourse (Hickmann and Hendriks 1999).

A number of system-external factors might partially motivate some developments assumed to depend on grammatical knowledge. As noted below, performance factors, information status, and/or discourse binding (if reasonably defined), all of which are external to the Grammar, might motivate various subject/object asymmetries in early productions (when they are observed) and in later productions (e.g. Bloom, 1990, 1993, 1996; Hickmann and Hendriks 1999; Jakubowicz *et al.* 1996). In addition, in contrast to pragmatic approaches, syntactic approaches are not concerned with – and cannot account for – why particular forms (e.g. null elements, overt pronouns, nominals) might be chosen within a language on a particular occurrence at any stage. Such an account requires analyses of discourse pragmatic factors, particularly in independent or co-ordinated clauses (by far the most frequent in early speech), which provide the child with a complex mixed input, including exceptions (e.g. null expletives), as well as masses of pragmatically determined uses and non-uses of null subjects (e.g. Weissenborn 1992). Discourse factors also presumably motivate the emergence of some expletives, for example existential structures (*there*-expletives in English) serving to mark discourse status. In this respect, conclusions concerning English expletive pronouns are based on counts of *it*-expletives in spontaneous productions (e.g. Valian 1991), rather than on the highly pragmatically motivated *there*-expletives (but see Valian *et al.* 1996).³ The evidence discussed below indeed indicates that the development of these structures is probably linked to earlier deictic uses of thematic pronouns, such as personal or demonstrative pronouns in predicating constructions labelling referents and/or drawing attention to them.

Semantic and discourse factors may also be essential in the acquisition of morphology, which is taken to be central to the account of parametric development within syntactic approaches. Thus, counter-examples to the prediction that null subjects should co-occur with non-finite forms in English require additional assumptions and appeals to semantic/pragmatic factors, such as the assumption that verbal morphology does not mark tense, but rather aspect in early child English (see Sano and Hyams 1994). Such assumptions must be further tested on a cross-linguistic basis, given current controversies in this domain. The review of the available literature (Chapter 6), as well as some results to be presented later on (Chapter 10), show that tense/aspect morphology is indeed partly tied to predicate semantics, particularly at early stages. However, some evidence also shows cross-linguistic variations in this respect, as well as the impact of discourse pragmatic determinants on the acquisition of tense/aspect markings, none of which can be taken into account within syntactic approaches (e.g. Weist 1986; Berman and Slobin 1994; Hickmann 1995, 1996).

5.1.2 Semantic and functional pragmatic aspects

A great number of studies have focused on other aspects of referring expressions in child language. In general, the findings suggest early uses of determiners and pronouns in deictic contexts, some functional differentiation in relation to speech acts, as well as early uses of determiners for non-specific reference. However, the results concerning referent introductions and reference maintenance within discourse are more controversial, showing early mastery of these devices in some studies, but late mastery in others. As shown below (see also further discussion in Chapter 7), numerous problems arise when we examine the bulk of these studies, which rely on heterogeneous methodologies. Given adequate control of contextual constraints, however, discourse-internal uses of these devices for the marking of information status seem to be a relatively late development.

5.1.2.1 Specific and non-specific reference, given and new information, deixis and anaphora

In general, studies focusing on children's uses of nominal determiners report relatively early appropriate uses of indefinite/definite forms to mark the distinction between specific and non-specific reference (e.g. Brown 1973; Maratsos 1974, 1976; Karmiloff-Smith 1979). Thus, on the basis of longitudinal analyses of spontaneous productions, Brown's (1973) pioneering findings show correct uses of indefinite forms for non-specific reference such as (5.26) and (5.27) at three years. In comparison, uses of definite forms in examples such as (5.28) are frequently incorrect. Other uses of indefinite forms occur at around four years, such as the referent introductions in (5.29) and (5.30). Note that the indefinite forms used in

these last two examples are part of predicating constructions labelling the denoted referents. We return to this point below in a more extensive discussion concerning such uses.

- (5.26) Put a Band-Aid on it.
- (5.27) I need a clothes pin.
- (5.28) C: The cat's dead.
A: What cat?
- (5.29) That a jeep. I put some in the jeep.
- (5.30) This was a big rabbit. And scared the rabbit.

Maratsos (1974, 1976) concludes that children master two distinctions by three/four years: specific vs. non-specific reference and given vs. new information. This conclusion is based on a variety of experimental situations, involving the comprehension, imitation, and production of nominal determiners. For example, in production experiments children were presented with a context followed by a question, as illustrated in (5.31) and (5.32): (5.31) contrasts the introduction of specific referents (a) vs. non-specific uses (b), while (5.32) mentions a specific referent (a) vs. a group of referents from which to extract one member (b). In both cases, young children provide correct answers (definite forms for versions (a), indefinite ones for versions (b)). As will be discussed later on (Chapter 7), however, these results must be interpreted with care, given that children produced isolated referring expressions in answer to adult questions.

- (5.31) I know a little boy and he is very happy. Do you know why?
 - (a) Well, he's got a dog and a cat.
 - (b) Well, he doesn't have a dog or a cat.Which does he like more?
- (5.32) [Story about a lonely man in the jungle, who wants to play with someone]
 - (a) He saw two animals. He saw a monkey and a pig.
 - (b) He saw some animals. He saw some monkeys and some pigs.[...] Who came to the man?

Extrapolating from such evidence concerning determiner use by children in comparison to related facts concerning adults learning a second language, some authors (e.g. Cziko 1986b; Thomas 1989) have argued that children and adult learners initially associate the distinction between indefinite and definite forms with specific vs. non-specific reference, first extending definite forms to new specific referents and only later using the distinction to organise discourse. This view goes against the idea that young children fail to use indefinite forms appropriately because of

their cognitive immaturity and even puts forth the existence of an innate language *bioprogram* (Bickerton 1984). Other comparisons between first and second language learners (Hendriks and Hickmann 1998) show the early mastery of indefinite forms for referent introductions by adult learners (Chinese speakers learning German), despite typological differences across the source and target languages, as compared to the late mastery of this discourse-internal function by children in different language groups, suggesting the impact of cognitive factors during first language acquisition.

As noted in Chapter 4, early analyses of conversational data (e.g. Keenan and Klein 1975; Keenan and Schieffelin 1976) also suggest that very young children (of two to three years) show considerable concern for the marking of information status, as illustrated in (5.33) and (5.34): they get their interlocutor to pay attention to new referents in discourse, through devices such as direct ostension and repetition of referring expressions, including indefinite determiners; they then refer to these entities in subsequent discourse by means of definite forms, including pronouns. Such observations have been interpreted as showing that children are able to establish new topics in discourse and to use anaphoric pronouns with presuppositions similar to those of adults. However, topics are much more rapidly exhausted than in adult conversation, the denoted entities are typically present in the speech situation, and indefinite determiners in examples such as (5.34) predicate class-membership of these entities (see also (5.29) and (5.30) above). It is therefore not clear whether we may attribute to the children the ability to introduce referents and to maintain reference to them within discourse. Such examples do show, however, that children show concern for drawing their interlocutor's attention to referents, even if they do so by means of primitive means that are still deictically anchored in non-linguistic context. These early uses precede later uses of the same forms in situations where entities are not present in non-linguistic context and discourse structure is not shared across speakers.

(5.33) C1: Tree, tree, see got grass.

C2: Yes, I see it, I see it.

(5.34) C1: A battery, this is battery, look I find battery.

C2: Oh no no, that David's.

Recurrent observations concerning pronoun acquisition during the last thirty years show that young children have difficulties with some types of person shifts and that third person pronouns present more difficulties than first/second person pronouns (e.g. Charney 1978; Streri 1979, 1980; Tanz 1980). However, the results diverge with respect to how early children master the anaphoric function of pronouns. Among the earliest studies, Huxley (1970) was among the first to report precocious *anaphoric* uses of pronouns, illustrated in (5.35) and (5.36), including

sentential anaphors of animate forms used from three years on to refer to persons previously mentioned in discourse, for example (5.37) and (5.38). Note that such pronouns denote referents that are mutually known from non-linguistic context (as well as labelled in (5.35)) and that their antecedents frequently include proper names or other pronouns, also indicating shared knowledge. Although these data might show some precursors of anaphoric pronominal use, they do not unambiguously show a distinct discourse-internal function at this stage.

(5.35) It's a jigsaw.

(5.36) Cut it.

(5.37) He's a clever pilot, he can fly upside down.

(5.38) He can go in the lorry too, but not Peter Rabbit 'cos he is naughty, he went right into Mr McGregor's garden.

Similarly, in various comprehension tests (e.g. responses to questions such as (5.39)), Charney (1978) shows that first/second persons are comprehended before third persons. Spontaneous productions from the same children, however, show that third person pronouns are correctly produced before they are correctly comprehended, whereas the reverse is true for first/second person pronouns. Furthermore, singular forms denoting people included *anaphoric* uses, such as the third person pronoun *she* in (5.40). Note that coreference in such cases does not guarantee that pronouns have a distinct anaphoric function. These devices are presumably used deictically to denote the self and they are at best potentially anaphoric, but by no means necessarily and distinctly so.

(5.39) Where is my/your/her picture?

(5.40) C. [Child's name] ate orange juice and she read a book.

In contrast to these studies, evidence for late discourse-internal uses of referring expressions is provided by the pioneering work of Karmiloff-Smith (1977, 1979, 1981, 1985, 1987, 1992). Experiments testing (French- and English-speaking) children's comprehension and production of determiners show that only children after six years make intralinguistic uses of these devices. For example, when asked to act out sentences containing indefinite and complex definite determiners such as (5.41), younger children use two different toys to act out the two clauses. In contrast, older children use one and the same toy car, thereby interpreting the definite expression *la même voiture* ('the same car') as referring to the entity previously introduced with the indefinite form *une voiture* ('a car').

(5.41) Le garçon pousse une voiture et la fille pousse la même voiture.
(‘The boy pushes a car and the girl pushes the same car.’)

In addition, Karmiloff-Smith's analyses of narratives elicited with picture sequences show late discourse-internal strategies with respect to pronominal use. In particular, in stories that contain a main character, children from six years on rely on a *thematic subject strategy*, whereby they organise discourse rather rigidly around subject pronouns denoting this character, as illustrated in (5.42). According to Karmiloff-Smith, the late emergence of this strategy coincides with children's discovery of *top-down* cognitive processes, after an earlier phase during which they rely on *bottom-up* processes and do not link utterances together in discourse, as illustrated in (5.43). During a third later phase, children combine both types of processes, showing a more flexible use of linguistic devices for reference maintenance.

- (5.42) A little boy is walking along. He sees a balloon-seller. He wants a green balloon. He gets one. He walks off in the sunshine. He lets go of the balloon and then he starts crying.
- (5.43) He's walking along . . . and he sees a balloon-man . . . and he gives him a green one . . . and he walks off home . . . and it flies away into the sky. So he cries.

Children's reliance on the thematic subject strategy has been reported in several studies (e.g. Bamberg 1986, 1987; Clancy 1992; Orsolini *et al.* 1996; Wigglesworth 1990, 1993), although not all authors agree that such a strategy only emerges late and not all agree on how to interpret the observed facts. For example, Bamberg (1987) finds evidence for a much earlier reliance on this strategy at around three to four years in German. As discussed later on (Chapter 7), one possible reason for this discrepancy might be methodological. Bamberg also reports the later differential use of *reference maintenance* and *switch reference* strategies, whereby children use pronominals when there is local coreference but nominals otherwise, as illustrated in (5.44) (relevant nominal and pronominal forms are in bold).

- (5.44) **D' Junge** läuft schnell um's Haus herum.
(**'The boy** runs quickly around the house.')
- Und (**0**) nimmt **den Hund** auffem Arm.
(**'And (0)** takes **the dog** onto the arm.')
- Ihm** ist nichts passiert.
(**'To him** has nothing happened.')
- Der Hund** leckt **dem Jungen** das Gesicht.
(**'The dog** licks **the boy** the face.')

Related results (Clancy 1992) are reported in a study of narratives produced by Japanese children (three to ten years), although differences also occur as a function of the type of narrative elicited (picture-based vs. video-based). Even the youngest

children made differential use of more or less explicit referential devices as a function of discourse context (same subjects > switch subjects > introductions). Clancy notes that switch-subject contexts present some difficulties to young children, but not same-subject contexts, which merely require that they monitor local immediate coreference, rather than the global narrative structure. Other related results can be found in a study (Orsolini *et al.* 1996) focusing on how Italian children (four to ten years) reintroduce referents in non-coreferential contexts. Full nouns are most frequently used in this case, whereas null forms are most frequent in reference maintenance (given that Italian is a pro-drop language, see Chapters 2 and 3). Null forms are nonetheless used for reintroductions even at ten years in contexts where reference is highly predictable (e.g. because of verb semantics) and they are more frequently used by the younger children for the main character. The authors argue that the results need not show that young children rely on a macrostructure and that they might be driven by the saliency or visual availability of the referent, rather than by an attempt to disambiguate reference for their listener.

With respect to referent introductions, Bamberg (1986, 1987) and Bamberg and Marchman (1994) report that (German- and English-speaking) children's uses of indefinite determiners appear at five years, but are rare even at ten years. Wigglesworth (1990) also reports frequent uses of both definite nominals and pronouns in English for the first mentions of referents in a similar situation. As discussed subsequently (Chapter 7), the infrequent use of indefinite forms for referent introductions may result from the experimental situation in these studies, since the child and his/her interlocutor were looking at a picture book together. In such a situation, knowledge is mutual and the child need not mark new information status. In contrast, others have examined uses of referring expressions in the absence of mutual knowledge (e.g. Clancy 1992; de Weck 1991; Emslie and Stevenson 1981; Hickmann and Hendriks 1999; Hickmann, Kail and Roland, 1995; Hickmann *et al.* 1989; Hickmann *et al.* 1996; Kail 1998; Kail and Hickmann 1992; Kail and Sanchez y Lopez 1997; Power and Dal Martello 1986; Warden 1976, 1981). Generally, these studies report that children do not master referring expressions for the marking of information status until a late age (not before seven or even ten years). Although Emslie and Stevenson (1981) find some indefinite referent introductions from two years on, they argue that these devices have a nominative function (typically in labelling), rather than an identifying one. Power and Dal Martello (1986) asked young children to tell the same story twice for two different naive interlocutors. They report that children use definite determiners rather than indefinite ones in their second narrative and interpret these referent introductions as being egocentric. Warden (1981) elicited narratives with films in several conditions: children told the story either during or after the projection of the films; their interlocutor (another child) either listened to the story on a telephone in another room, or he or she was in the same room but

could not see the screen. Despite some uses of indefinite determiners between five and eight years, children do not use them systematically in any condition. Other studies (Clancy 1992; de Weck 1991; Hickmann 1980, 1982, 1987a, 1995; Warden 1976) reach similar conclusions on the basis of narratives elicited with picture sequences or films in the absence of mutual knowledge. Until about seven years, children either do not use systematically appropriate markers to introduce new referents for their listener in such situations or, if they do use them, these uses are at first deictic, rather than discourse-internal.

The importance of such contextual constraints is further shown in studies (Hickmann *et al.* 1995; Kail 1998; Kail and Hickmann 1992; Kail and Sanchez y Lopez 1997) that directly compare how children denote entities in narratives elicited with a picture book in two different narrative situations: in one situation (hereafter 'mutual knowledge') children and their interlocutor were looking at the picture book together; in the other situation (hereafter 'absence of mutual knowledge') they told the story on the basis of the same picture book to a naive blindfolded interlocutor, who had never seen the book. In neither situation had the children seen the picture book nor heard the story told before the experimental session. Mutual knowledge has a massive impact on children's productions. With respect to referent introductions, Kail and Hickmann (1992) show that French children of six to eleven years use more indefinite forms in the absence of mutual knowledge than when knowledge is mutual. This result, however, only holds for the main characters in the story, while the secondary ones were frequently denoted with indefinite forms on first mention regardless of age and situation. In addition, uses of different forms to introduce the main characters show a clear developmental progression. At nine years children maximally differentiate the two situations, almost always using definite forms when there is mutual knowledge and indefinite ones in the absence of mutual knowledge. In contrast, younger children still use many definite forms in the absence of mutual knowledge and, inversely, older children generalise indefinite forms to both situations. A similar pattern of results has been observed with Spanish children (Kail 1998; Kail and Sanchez y Lopez 1997), despite some cross-linguistic differences concerning clause structure (to be discussed in Section 5.2 below).

Analyses of reference maintenance (Hickmann *et al.* 1995) also show that several factors affect French children's differential use of nominals and pronominals. First, children of all ages use mostly pronominals to denote the main character when there is immediate coreference across clauses, except when they reach *boundaries* across successive episodes and across the successive pictures of the story book. In both cases children use fuller forms to denote the main character, regardless of whether or not this referent has just been mentioned. As briefly previously noted (Chapter 4), these results show the simultaneous impact of factors affecting both cohesion and coherence. Children are sensitive to referential continuity in cohesion,

showing knowledge of the principle that speakers should presuppose the identity of referents when it is highly recoverable and unambiguous. They are also sensitive to two features of story structure: *internal* structure (its organisation into episodes and scenes) and *external* structure (its organisation into pictorial frames). Significant changes also occur with increasing age, but *only* in the absence of mutual knowledge. In this situation, older children use more pronominals to denote main characters than younger ones. Furthermore, when denoting the most central (human) character, they provide fewer markings of picture boundaries from nine years on, as well as fewer markings of episodic boundaries at eleven years. Thus, eleven-year-olds differ from younger children in that they rely maximally on discourse-internal coreference when maintaining reference to the main character. Referential continuity becomes the predominant organisational principle at this age in the absence of mutual knowledge, overriding other factors that play an important role at all ages when knowledge is mutual.

The above studies, then, converge in showing the late mastery of the linguistic devices necessary for the discourse-internal marking of information status. However, there remains some uncertainty with respect to the nature and rate of such discourse skills, partly because of heterogeneous methodologies. We return to this point in Chapter 7. Furthermore, the available studies leave a number of questions unanswered, among which are the following three.⁴ First, although the analyses above have mainly focused on the forms of referential devices used by children, a number of communicative factors are also relevant. For example, using a different experimental paradigm, a study (Anderson *et al.* 1991) shows developmental changes in the types of utterances used by children to introduce referents within conversations. In this study children engaged in a conversation with a peer in order to provide route directions about a map in such a way as to determine whether their partner had the same map and to get him or her to follow a particular route. In this situation, although children of all age groups (seven to thirteen years) used indefinite determiners for referent introductions, these uses were more frequent in questions (e.g. *Have you some mountains in the middle?*) than in statements (*There's a bridge over there*). In addition, only the older children were successful at the task for two related reasons: as speakers they relied more frequently on questions for referent introductions to check on their listener's knowledge as compared to younger speakers, who also did not respond reliably to statements as listeners. The forms of introductions, then, are embedded in larger conversational acts and constitute but one aspect of the knowledge that is necessary for children to engage in successful communication in the absence of mutual knowledge.

A second set of unanswered questions concern the particular properties of the discourse contexts that may or may not increase the likelihood of pronominalisation. There is still some unclarity concerning the different factors that may contribute

to children's reliance on one or another strategy in different types of stories that include a main character or not (see McGann and Schwarz 1988), such as the density of coreference, verb-argument structures, and the syntactic or semantic roles of noun phrases that enter in coreference relations. Previous production and comprehension studies suggest that children might follow a *parallel role* strategy, using pronouns when corefering expressions are in the same role (Sheldon 1977, see discussions in Bronckart *et al.* 1983; Hickmann 1982). Other studies also show that English-speaking adults are most likely to pronominalise agent and/or subject NPs as compared to object NPs (Crawley and Stevenson 1990; Stevenson *et al.* 1990). Similarly, comprehension studies (e.g. Farioli 1979; Kail 1976; Kail and Léveillé 1977) show that, when asked to identify the referent of pronouns, French children from four years on tend to assign coreference between pronouns and the subject and/or agent NP of the previous clause, even at the expense of violating gender agreement, suggesting the role of topicality in the assignment of coreference across clauses. Another experiment (Hupet and Kreit 1983) shows that, when presented with pictures in different agent vs. patient contexts (as established by a prior narrative focusing on one of two referents in these roles), children between four and twelve years are able to differentiate new information (indefinite determiners) and given information (pronouns, definite determiners). However, they show developmental progressions in their ability to linearise information as a function of information status in discourse (new in relation to given). Yet other experiments (Berkovits and Wigodsky 1979; Sauvaire and Vion 1989; Vion *et al.* 1989) show the impact of several factors on children's uses of reference-maintaining devices, for example the nature of the linguistic or non-linguistic context, the oral vs. written modality, the extent and type of mutual knowledge, the semantic role of the NP. Generally, these studies show late developmental progressions in children's ability to use different types of referring expressions in order to mark information status as a function of contextual factors.

Third, with few exceptions, very little cross-linguistic evidence is available concerning children's ability to mark information status in discourse. One of the first studies to address this question (MacWhinney and Bates 1978) compared children's productions in three languages (English, Italian, Hungarian), varying with respect to the degree to which they rely on local markings of information status: English and Italian provide obligatory nominal determiners with a definite/indefinite opposition differentiating given/new information, whereas determiners are entirely optional in Hungarian. Children of three to six years of age were asked to describe sequences of three pictures in which some information varied from picture to picture (e.g. the same agent performing three different actions or the same action performed by three different agents). The results show more frequent uses of indefinite nominal determiners for referent introductions in English and Italian, as

compared to Hungarian. Such uses are observed from three years on and they are seemingly mastered by five years. However, note that children merely described pictures that were available to their interlocutor. As a result, they may have labelled the referents in predicating utterances that are deictically anchored in the non-linguistic context. In fact, a replication study carried out in French (Vion and Colas 1987) finds that children frequently used all types of (definite and indefinite) referring expressions deictically, concluding that these uses are therefore not discourse-internal until a later age (see also further discussion in Section 5.2 below and in Chapter 7).

5.1.2.2 *Text processing and levels of control*

Referring expressions are also central to studies concerning how children process connected texts. First, some studies have examined the cues used by children when resolving anaphors in on-line text comprehension (e.g. Tyler 1981, 1983, 1984; Tyler and Marslen-Wilson 1978a, 1978b). For example, Tyler and Marslen Wilson (1978a, b) asked five- to ten-year-old children to listen to stories interrupted by signals and to repeat verbatim the last sentence they heard before each signal. At all ages children produce repetition errors showing that they make use of linguistic context to integrate incoming information with preceding clauses, despite the fact that the five-year-olds have a lower processing and memory capacity. Using a monitoring task, Tyler (1983) further demonstrates that such integrative processes play a central role in how young children interpret anaphors, despite the fact that they use different cues in comparison to older children. In particular, although five-year-olds are all able to interpret anaphors (definite nominals and pronouns), they rely more on thematic subjects and on pragmatic plausibility.

Other studies indicate that anaphors are a major source of difficulty for children with comprehension problems (e.g. Ehrlich 1994, 1999; Ehrlich *et al.* 1999; Oakhill and Garnham 1988; Oakhill and Yuill 1986; Yuill and Joscelyne 1988; Yuill and Oakhill 1988). Some of this evidence further suggests that referring expressions contribute significantly to children's recall of stories. For example, Garnham *et al.* (1982) asked adults and two groups of eight-year-olds (diagnosed independently as being *good vs. bad* comprehenders) to read and retell three types of stories: *well-formed* versions; *randomised* versions, in which the same sentences occurred but in random order; and *restored randomised* versions, in which referring expressions were changed to restore the referential continuity of the randomised versions (e.g. pronouns replaced by nominals). Although recall was better for all subjects with the well-formed versions, the adults and the group of children diagnosed as good comprehenders recalled the well-formed and the restored randomised versions significantly better than the (non-restored) randomised ones. These results suggest that cohesive devices facilitate children's processing of stories by seven years.

However, note that randomisation results in rather drastic textual anomalies, so that subjects may have had to rely on cohesive devices more than normally in order to process the stimuli. In addition, processing written texts may involve operations that play less of a role in the oral channel, such as checking back and forth for potential links between pronouns and nouns across utterances.

Another set of questions concerns the levels of control that may be necessary for children to use cohesive devices in various tasks. A number of studies have examined children's detection and awareness of various problems in communication. Some have focused on their judgements concerning message adequacy in referential communication (e.g. Robinson 1981a, 1981b; Robinson and Robinson 1976, 1977a, 1977b, 1978, 1980). Others have focused on various textual properties more specific to narratives, showing that awareness plays an important role in children's processing of texts (e.g. Ackerman 1988; Ackerman and Jackson 1991; Ackerman, Jackson, and Sherrill 1991; Ackerman and McGraw 1991; Ackerman, Paine, and Silver 1991; Beal 1990; Brown 1978; Brown and DeLoache 1978; Brown and Smiley 1977; Harris *et al.* 1981; Markman 1977, 1979, 1981; Vosniadou *et al.* 1988; Zabrocky and Ratner 1986). As discussed in Chapter 4, however, these studies have not focused on how children handle discourse cohesion *per se*, but rather on their awareness of various other textual properties related to story structure and/or content. Some of this evidence does suggest indirectly that cohesion might interact with other properties of narratives during children's comprehension process. For example, Ackerman 1988 and Ackerman *et al.* 1991 show that children are better able to judge the adequacy of stories containing inconsistencies (e.g. between premise and outcome) when these inconsistencies are thematically prominent (e.g. by means of context sentence and title).

Despite some seminal writings on children's metalinguistic abilities (e.g. Gleitman *et al.* 1972; de Villiers and de Villiers 1979) and despite a variety of studies concerning syntactic, semantic, or pragmatic aspects of these abilities (e.g. see Baroni and Axia 1989; Clark 1978a; Gombert 1990; Hakes 1980; Hickmann 1982, 1993; Karmiloff-Smith 1986, 1992; Tunmer *et al.* 1984), surprisingly little is known about children's ability to restore cohesion when confronted with textual anomalies involving specific linguistic devices such as pronouns. A few studies (Hickmann and Schneider 1993; Karmiloff-Smith 1979, 1986; Karmiloff-Smith *et al.* 1993; Schneider *et al.* 1997) have examined how children react to definite and indefinite NPs that are used inappropriately and/or repaired in discourse. The results show that children can handle discourse anomalies rather early, but that they do so at different levels of awareness during the course of development. For example, in some studies (Karmiloff-Smith 1979, 1986) children heard stories containing a singular definite nominal with no indefinite antecedent (*the apple, the biscuit*) and they were asked how many referents were involved, producing responses such as (5.45) and

(5.46) (bold indicates relevant expressions, capitals stress). Although such comments occurred from six years on, they were rare until nine years. Nonetheless, young children of four to six years spontaneously produce self-repairs concerning determiners in various situations, for example (5.47) and (5.48).

- (5.45) I knew there was one apple because you said '**THE apple**'. (8;8 years)
 (5.46) You said '**THE biscuit**'; if there had been a lot you would have said He took '**A biscuit**' or '**one of the biscuits**'. (9;10 years)
 (5.47) You put **the rabbit** . . . (pause) **a rabbit** into the box. (4;7 years)
 [context: another rabbit was already in the box]
 (5.48) You took **a blo** . . . (pause) **the block**. (6;2 years)
 [context: only one block was present]

Karmiloff-Smith (1986, 1992) interprets this developmental gap, along with her results concerning narrative strategies (illustrated in examples (5.42) and (5.43) above), as providing evidence for a recursive three-phase developmental progression. The first phase is characterised by *implicit knowledge*, consisting of juxtaposed representations that are not accessible to consciousness. During this phase children establish one-to-one correspondences between forms and functions, holding different representations independently in memory. During the second phase children are able to organise representations, constructing *primary explicit knowledge*, but these representations are not yet accessible to consciousness. During the third phase, two types of reflective abilities emerge: *secondary explicit representations*, which are accessible to consciousness, and *tertiary explicit representations*, which are furthermore verbalisable. To these three stages, Gombert (1990) adds a fourth one, during which metaprocesses become automatised and therefore do not require conscious reflection, while nonetheless being accessible to consciousness.

Other types of measures are clearly necessary to relate children's ability to produce cohesive devices, to restore discourse cohesion, and to explicitly reflect on textual anomalies. Although self-repairs reveal what problems children are ready to perceive and solve spontaneously in their own productions, metalinguistic verbalisations are rarely spontaneous and more difficult to elicit. In addition, they may focus on different problems depending on the method used, for example requesting children's comments about their own speech, the speech of their interlocutor, or experimental stimuli which may present different properties. A few studies provide some additional information in this respect. Karmiloff-Smith *et al.* (1993) presented adults and children (seven to eleven years) with stories containing three types of self-repairs varying with respect to the particular type of information that was repaired: lexical repairs (e.g. *the girl bought a red/a green balloon*), referential repairs (e.g. *then they/then she walks on*), and discourse repairs (e.g. *then the girl/then she*

Table 5.1 Example of canonical story (Hickmann and Schneider, 1993)^a

Setting	Once a rabbit lived near a school and he was very small.
Initiating Event	One day he was walking around and he saw a bicycle ^a on the ground.
Internal Response	He had nothing to do and he wanted to ride the bicycle .
Attempt	So he hopped over and he climbed on it .
Consequence	But he was too small and he fell off of it .
Reaction	He was afraid but he decided to ride it again and finally he succeeded.

^a Target expressions are shown in bold. In other canonical versions the expression in the Internal Response was indefinite (*a bicycle*) and had a most likely non-specific reading (see text).

Table 5.2 Summary of all experimental conditions (Hickmann and Schneider, 1993)^a

	Initiating Event	Internal Response	Attempt
Cohesive versions			
Specific	a N	the N	it
Non-specific	a N	<i>aN</i>	the N
Low-disruption versions			
Specific	the N*	it	a N*
Non-specific	the N*	<i>aN</i>	it
High-disruption versions			
Specific	it*	the N	a N*
Non-specific	it*	<i>aN</i>	the N

^a Italics indicate non-specific uses (e.g. *he wanted to ride a bicycle*). Stars indicate all the forms that were inappropriate in their position.

walks on, he's got/the man's got balloons). Children had to first detect the repairs in an on-line reaction-time experiment and they were then asked questions about them in a subsequent interview. Although subjects of all ages could detect all types of repairs in the first task, they were only able to provide metalinguistic verbalisations about lexical and referential repairs in the subsequent interview, performing poorly with discourse repairs. The authors interpret this result by invoking the greater functional complexity of discourse markings as compared to other markings.

Hickmann and Schneider (1993) compared children's performance in different tasks, all of which required them to process stories containing target indefinite and definite NPs that were either appropriate or inappropriate, depending on whether they corresponded to the first mention of a specific referent, to a subsequent mention of this referent, or to a non-specific use.⁵ Table 5.1 illustrates one type of cohesive version used as stimulus and Table 5.2 summarises the critical properties of all target

NPs in all stimuli. In comparison to Table 5.1, the excerpts in (5.49) and (5.50) show anomalous story versions that contained an inappropriate first mention (*the bicycle, it*) and subsequent expression (*a bicycle*). The excerpt in (5.51) also illustrates a cohesive version that contained a non-specific (and therefore appropriate) use of the indefinite NP *a bicycle* after the first mention of the target referent in the preceding unit.

- (5.49) Initiating Event [...] he saw **the bicycle** on the ground.
 Internal Response [...] he wanted to ride **it**.
 Attempt [...] he climbed on **a bicycle**.
- (5.50) Initiating Event [...] he saw **it** on the ground.
 Internal Response [...] he wanted to ride **the bicycle**.
 Attempt [...] he climbed on **a bicycle**.
- (5.51) Initiating Event [...] he saw **a bicycle** on the ground.
 Internal Response [...] he wanted to ride **a bicycle**.
 Attempt [...] he climbed on **the bicycle**.

Children performed three different tasks involving these stimuli: a *Retelling* task, in which they were asked to retell each story to a naive listener; a *Repetition* task, in which they repeated verbatim the last clause they heard whenever a signal occurred during story presentation; and a *Judgement* task, in which they had to interrupt each story whenever they heard anomalies and to provide judgements about them. Although these three tasks all tap children's ability to restore discourse cohesion, the Retelling task requires low-level awareness and off-line responses, the Repetition task low-level awareness and on-line responses, and the Judgement task high-level awareness and on-line responses. The results show that children are able to repair discourse anomalies surprisingly early in the Retell and Repetition tasks (five years), replacing anomalous definite first mentions of the target referent by appropriate indefinite ones in both tasks. However, a developmental progression can also be observed in the Repetition task. When presented with appropriate (non-specific) indefinite forms that occur after first mentions, young children repeat these expressions verbatim, while older children show a strong tendency to transform them into definite ones, interpreting them as subsequent mentions of the specific entity previously introduced. Yet a more obvious developmental progression can be observed in the Judgement task, where only ten-year-olds are able to detect these anomalies and to produce explicit metalinguistic judgements about them, illustrated in (5.52) and (5.53) (bold indicates relevant expressions, capitals stress). Before this age, children are either unable to detect the anomalies or, if they do detect them, they are unable to explicitly refer to them in their verbalisations, as illustrated in (5.54). These results show some early level of reflective capacity, allowing children

to construct a linguistic subsystem of form–function relations and to use it when they organise discourse, before they can take this system as the object of their verbal representations.

- (5.52) [Target sentence: *and he saw **it** on the ground.*] (10 years)
You shouldn't say like 'He saw **IT** on the ground', you should say like 'He saw **a stone** on the ground' or something like that. [...] Because if you say **IT**, you can't understand it, you could be talking about anything.
- (5.53) [Target sentence: *and he saw **the bicycle** on the ground.*] (10 years)
'**THE** bicycle'. What bicycle? [...] It could only say '**A** bicycle on the ground', not **THE** bicycle.
- (5.54) [Target sentence: *and he saw **it** on the ground.*] (7 years)
C: Saw what?
A: What do you think?
C: What did he see?
A: What do you think?
C: I don't know.
A: Do you think that's wrong? (Yeah.) What would you say?
C: He saw a . . . ball.
A: Why is it wrong to say 'He saw it on the ground?'
C: Because . . . what did he see?

5.1.2.3 *Some problems*

As noted previously (Chapter 2), a major problem with functional approaches is their difficulty in providing a single formalism encompassing the numerous and heterogeneous phenomena to be explained in order to account for children's linguistic knowledge from this perspective. Criticisms of such approaches are therefore easy to formulate on such general grounds and they are partially justified, given the present state of the field. I highlight below some more specific points towards a more constructive critique. The first one concerns the difficulty in specifying the boundaries between the syntax, semantics, and pragmatics of referring expressions. A particular boundary problem for functional approaches has been to determine the extent to which sentence-internal factors should be examined at all or whether they fall outside of the scope of discourse analysis. Although semantic factors relevant to pronominalisation have been examined by some functional approaches, the range of factors studied is rather restricted and the interplay among different factors has been insufficiently examined. Despite some available evidence with both children and adults in this area (see Hickmann 1995 for review), much research is still necessary to determine the ways in which both contextual factors

(e.g. presupposition and focus, local discourse-internal coreference, global or general discourse constraints) and sentence-internal semantic factors (e.g. predicate types, lexical content, propositional roles) may affect uses and interpretations of pronouns. Such research, which is situated at the boundary between semantics and pragmatics, is an essential part of any account of pronominalisation phenomena in adult and child language, both within and across different languages. Furthermore, and most importantly, grammatical factors have been most often neglected. In this respect, functional approaches must face some of the evidence discussed above (see Section 5.1.1) concerning syntactic aspects of pronominalisation. Depending on the particular approach, this evidence is either not examined at all or considered to be secondary and insufficiently treated for a satisfactory account.

A major problem here is that, given their different theoretical aims, the type of evidence that is considered to be most revealing by formal and functional approaches differs a great deal. Whereas formal approaches search for relevant evidence in specific linguistic environments that are highly constrained grammatically (e.g. the binding of reflexive pronouns within the clause), functional approaches on the contrary search for relevant evidence in discourse contexts, where pragmatic factors play a predominant role (e.g. non-reflexive pronouns in relation to other NPs across utterances in discourse). In particular, it is precisely in contexts that are not highly constrained grammatically that speakers (children or adults) have some degrees of freedom in choosing among different possible forms of denotation in discourse. Obvious examples of pronominalisation phenomena that are highly constrained by the grammar and therefore pose problems to pragmatic approaches are sentence-internal pronominalisation phenomena, such as reflexives, reciprocals, or some aspects of possessives. As such, pragmatic concepts related to presupposition and focus are insufficient to provide a full account of sentence-bound anaphora, since recourse to additional grammatical factors and to some notion of structure dependence in acquisition is necessary.

Analyses of thematic null elements and non-reflexive pronouns provide a more complex example of the problems that are yet to be addressed by functional approaches. As suggested above, and despite some (unfair) descriptions that have been made of these approaches, some versions are capable of making predictions concerning various results, such as children's differential uses of overt pronouns vs. null elements within a given language, as a function of various factors, including those that govern the regulation of information in discourse. However, more detailed analyses examining pragmatic factors still remain to be carried out, particularly in very early child language, in order to determine the relative impact of such factors and their interactions with other factors (syntactic, semantic, cognitive processing constraints). Some aspects of cross-linguistic variation also pose problems to functional approaches. Pragmatic factors alone cannot provide a full account for why

children should use more null elements in some languages (Italian) as compared to others (English), assuming that all other aspects of the pragmatic environment are equal. Furthermore, it is unclear whether pragmatic factors are sufficient to account for why children acquiring languages described as [-pro-drop] should display errorless performance in some syntactically well-defined contexts, for example why they never drop subjects in subordinate clauses or questions (Roeper and Weissenborn 1990; Valian 1991; Weissenborn 1992). At best, only general predictions can be proposed within this approach concerning overall frequencies of null elements across languages based on the input. More generally, pragmatic analysis can show the conditions under which adults and children choose to exercise the option of omitting subjects, but only a combination of discourse (pragmatic) and sentence-internal (semantic, syntactic) factors can define the conditions under which this option is at all possible in a given language.

Finally, some pragmatic approaches have postulated mechanisms in order to account for developmental change from early to later phases. A number of assumptions need to be more clearly spelled out and tested for an account of how children ultimately encode both semantic and pragmatic principles of organisation in grammatical form, for example some of the assumptions discussed in Chapter 2 concerning initial states or predispositions, continuity vs. discontinuity, qualitative vs. quantitative change, competence vs. performance (e.g., among others, discussions in Bloom 1993, 1996; Stevenson 1992). Some general models of language development have relied on cognitive and perceptual factors to account for the emergence of grammaticalisation across languages (e.g. Slobin 1985a) and/or for processes of sentence comprehension during later phases (e.g. MacWhinney and Bates 1989), but few have examined cross-linguistic variation in discourse organisation. A growing number of findings (e.g. Berman and Slobin 1994) have begun to show the many striking consequences of language-specific properties on how information is organised across several referential domains of discourse (particularly temporal and spatial reference, to be discussed in Chapter 6). However, relatively little is still known about the impact of pragmatics on the emergence of pronominalisation phenomena across child languages and more cross-linguistic research is clearly necessary to address this question within this approach.

5.2 Clause structure in discourse

In contrast to the abundant developmental literature concerning referring expressions summarised so far, little is known about children's use of clause structure for the marking of information status in discourse. As discussed previously (Chapters 2 and 3), languages tend to follow two complementary principles: the *new-last* principle, according to which new information is placed towards

the end of utterances; the *given-first* principle, whereby the beginning position is reserved for given information. Although this pattern plays less of a role in some languages, it constitutes a strong tendency or even an obligatory rule in many languages, where the encoding of information status is partially grammaticalised by word order. For example, new information must be postverbal in Chinese and it is strongly preferred in this position in spoken French. In addition, clitic pronouns that mark given information must be preverbal in a number of languages such as French. From a developmental point of view, these regularities raise the question of when children become sensitive to such principles and make use of the linguistic devices of their language accordingly.

Some recurrent results based on longitudinal analyses in a large number of languages indicate that young children (from the two-word stage on) tend to place new information at the beginning of their utterances (see reviews in Bates 1976; Slobin 1985a). Such a finding may seem surprising, given that the opposite pattern is observed in adults' speech. One possible reason for this difference between young children and adults may simply be the heavy impact of extralinguistic context during early phases of development. In particular, young children typically talk about entities and events that are immediately present, mentioning first what is most salient to them ('new' information) and it is only with the gradual development of discourse-internal functions of linguistic devices that the adult pattern emerges. In this respect, given the wide cross-linguistic variations in how languages mark information status, we should expect some variation in the rate and course with which the discourse functions of clause structure develop. In particular, at least two hypotheses can be put forth.

The first hypothesis is that children should first acquire the newness markings that are obligatory in their language. Obligatoriness implies that children will always encounter appropriate devices when they are necessary (notwithstanding exceptions). Consequently, it should be easier for them to establish a relation between form and function with obligatory markings than with optional ones. Little cross-linguistic evidence is available in this respect, although indirect evidence can be found in comparative studies of narratives (Berman and Slobin 1994) focusing on other domains. Such studies show that children first use the morphosyntactic devices that are obligatory in their language when they begin to mark spatio-temporal distinctions in discourse (see further discussion in Chapter 6). An extension of this conclusion to the domain at hand leads to the following predictions. In contexts where new singular entities are introduced, children acquiring languages such as English, French, and German will always encounter indefinite determiners (but not always in postverbal position), whereas Chinese children will always encounter referent introductions in postverbal position (but not always marked by numerals and/or classifiers). Therefore, children acquiring English, French, or German should first

mark newness by means of indefinite determiners, whereas Chinese children should do so by means of postverbal position.

However, obligatoriness does not imply a one-to-one match between form and function, since the devices available to mark newness have other functions. For example, we saw that, depending on the language, indefinite determiners may occur in contexts of non-specific reference (English, French, German) and in numerical contexts (French, German), while postverbal position frequently coincides with given information in some verb-argument structures (e.g. postverbal definite objects of transitive verbs). In this respect, global newness markings should present additional difficulties, requiring that children disentangle the discourse and grammatical functions of clause structure. It can therefore be hypothesised that these discourse markings might be quite difficult to learn, particularly in languages that provide little morphology and therefore rely heavily on word order for the grammatical organisation of the sentence. According to this hypothesis, then, young Chinese children should have more difficulties learning to use the obligatory newness markings available in their language (clause structure), as compared to children acquiring languages such as English, French, or German (where local determiners constitute obligatory markings of information status).

The available research does not allow us to test these hypotheses directly for several reasons. As noted above, the research concerning the acquisition of determiners leaves some questions unanswered concerning when children use the opposition between definite and indefinite forms to mark information status within discourse. Above and beyond the methodological heterogeneity that plagues this research (see Chapter 7), an important problem stems from an insufficient sampling of languages. The acquisition of linguistic devices necessary for the marking of information status has been studied in a relatively small number of languages, typically English and to a lesser extent a few Indo-European languages (such as French, Spanish, Italian, and German). Other languages that present interesting contrasts to these Indo-European languages have not been sufficiently studied. Thus, little is known about Chinese children's uses of any (local or global) markings for information status. The only available evidence based on longitudinal analyses suggests that they do not seem to mark newness with numeral determiners, specific classifiers, or postverbal position before three years (Erbaugh 1986; Chang 1992; Min 1994). Evidence from Turkish (Aksu-Koç 1994; Akinci 1999), Polish (Smoczyńska 1992), or Hungarian (MacWhinney and Bates 1978) also suggests that children and adults do not rely much on either determiners or position in the clause to mark information status in narratives. In general, however, most of the relevant studies have mainly focused on children's uses of local markings in discourse, paying little attention, if any, to children's discourse uses of global markings. Clearly, the

issue of how these two types of discourse markings are related in development is central within a cross-linguistic perspective. Despite some increasing but still scattered evidence concerning children's uses of clause structure for discourse purposes, no extensive studies directly examine both local and global discourse markings across typologically contrasted languages.

Nonetheless, two types of studies bear on the two hypotheses put forth above. First, indirect evidence comes from studies focusing on sentence comprehension (Ammon and Slobin 1979; Slobin 1982, 1985a; Slobin and Bever 1982) showing that local markings are easier to process than global ones. For example, children have less comprehension difficulty in languages that provide a rich morphology (e.g. Turkish) than in those that rely more on word order (e.g. English). Other results (MacWhinney and Bates 1989) show that adults and children rely on those cues that are the most available and reliable in a given language. For example, when they are asked to identify the agent in sentences that combine two nouns and a verb (NVN, NNV, VNN) with conflicting indices (position, animacy, verb agreement, case), English-speaking speakers rely on word order (choosing the first noun), Italian ones on lexical or verbal cues (choosing the animate noun or the one that agrees with the verb). More complex results have been reported in some languages, for example German (MacWhinney *et al.* 1984), French (Charvillat and Kail 1991; Kail and Charvillat 1988), and Chinese (Chang 1992; Li *et al.* 1991; Miao and Zhu 1992). Interestingly, some of the results concerning Chinese (in Li *et al.* 1991) show that local newness markers (numeral + classifier) affect processing time, which is longer when they occur on preverbal nouns (where they are unacceptable) than on postverbal ones (where they are expected).

Second, a few scattered findings concerning children's discourse uses of clause structure are available. Some studies suggest that children may not rely on clause structure for discourse purposes at all. Such a result is reported in MacWhinney and Bates' study (1978) concerning English, Italian, and Hungarian (discussed above in Section 5.1). In English and Italian, determiners are obligatory and clause structure optional for the marking of information status. However, English presents a relatively fixed SVO order, while Italian allows more structural flexibility (a property that has been linked to its greater morphological complexity, see Chapter 3). Furthermore, Hungarian presents a pattern that is similar to the one found in Chinese: numeral determiners can be used to mark new information, but they are entirely optional and clause structure is a sufficient marking of information status (but an optional one, in contrast to Chinese, see Chapter 3). Contrary to expectation, MacWhinney and Bates find no relation between information status and word order at any age and in any language, a result that is surprising, especially for Hungarian and Italian. As already noted above, however, the methodology used in this study

may not be the most adequate to evaluate children's discourse-internal skills, since it elicited picture descriptions in a situation in which background knowledge was shared (see also Chapter 7).

Furthermore, other results do indicate that, at least in some languages, children do make heavy use of clause structure to mark information status. Analyses of very early productions in some languages show considerable differences in children's uses of clause structure (see a large sample of languages in Slobin 1985b), with more structural variations in some languages than in others. For example, French children display a heavy reliance on dislocated structures from the earliest phase on (e.g. Champaud 1996b). From three years on children use subject-verb inversions or other presentative constructions (e.g. existential relatives) to mark newness more frequently in some languages, such as French, Italian, Hebrew, and Spanish, than in other languages, such as English, German, or Turkish (e.g. Bates and Devescovi 1989; Dasinger and Toupin 1994; Hickmann *et al.* 1996; Kail 1998; Kail and Hickmann 1992; Kail and Sanchez y Lopez 1997; Vion *et al.* 1989; Sauvaire and Vion 1989). Research comparing English, German, Spanish, Turkish, and Hebrew (reported in Berman and Slobin 1994) shows differences across ages and languages in how children use clause structure to introduce animate referents and to maintain reference to them (e.g. relative clauses, subject-verb inversions, passives, agent vs. patient orientation). For example, Dasinger and Toupin (1994) observe functional changes in children's use of relative clauses with increasing age, such as their increasing and more diversified role in marking discourse status (e.g. *presenting* new main characters, *situating* other new or old referents, *re-identifying* old ones) and in presenting other types of information (e.g. *providing motives for actions*, *continuing an event chain*, *retrospection*). Differences across language groups also suggest that language-specific properties have an impact on the rhythm of discourse development. In particular, discourse functions of relative clauses appear earlier in Spanish and Hebrew than in the other languages, as a result of the more flexible and transparent syntax of these constructions in these two languages. Finally, additional developmental differences may be expected on the basis of studies of adult productions. For example, Sridhar (1989) shows that English adults are quite resistant to structural variations, using sentence-initial subject NPs to introduce new referents (like speakers of SOV languages), whereas speakers of several other SVO languages (Cantonese, Finnish, Hebrew, Slovenian, Spanish) use subject-verb inversions in this context. Such a finding is in line with the findings discussed above, which show that English-speaking subjects rely heavily on word order for the processing of grammatical relations, suggesting that young children may have some difficulties using clause structure for discourse-related purposes.

The study to be presented later on (Part II) examines some of these questions by comparing the development of discourse cohesion in English, French, German,

and Mandarin Chinese. Some analyses (Chapter 8) focus on how children mark information status across these languages, for example examining how they learn to use nominal determiners and clause structure to introduce new referents, with particular attention to whether the local/global and optional/obligatory properties of these devices affect the rate and course of development. It is hypothesised that children should first use the devices that are obligatory for newness in their language, but that they might have more difficulties acquiring these devices in Chinese (global markings) than in the other languages (local markings) (see preliminary results that bear on this hypothesis in Hickmann and Liang 1990, further discussed in Chapter 8). Variations in the uses of optional global markings are also expected among the Indo-European languages, for example least reliance on clause structure is expected in English.

5.3 Summary

Although many studies have focused on the acquisition of the devices necessary for the marking of information status (referring expressions, clause structure), many questions remain unanswered. In summary, these studies show the following main results. First, syntactic approaches focus on the structure-dependence of pronominalisation processes. Developmental studies within these approaches have concluded that children's knowledge of the principles of Universal Grammar is innate and modular, despite a delay in their performance with some aspects of these principles, taken by some authors to result from processing, semantic, or pragmatic factors external to the grammar. They also conclude that children are endowed with a variety of parameters. For example, some evidence suggests that the branching parameter constrains the direction of children's coreference assignment with non-reflexives and that parameters governing the uses of null elements constrain language acquisition from the earliest stages on. However, as we saw, this evidence is not uncontroversial, and many questions remain unanswered within this approach, including questions concerning the general nature of parameters, the particular parametric values of given languages, and the best ways to characterise initial states, subsequent states, or determinants in child language.

Second, the literature concerning semantic and pragmatic aspects of referring expressions indicates the early mastery of the distinction between specific and non-specific reference, as well as early uses of expressions in relation to non-linguistic context, for example indefinite forms used in deictic labellings, which might serve as primitive forms of introductions and therefore as precursors of later intralinguistic uses. The evidence is more complex with respect to discourse-internal uses, since many studies do not provide unambiguous evidence that would allow us to differentiate these uses from deictic uses of the same forms. A growing number of studies indicate the late development of the textual functions of determiners, as well

as late organisational strategies with respect to reference maintenance. Findings also suggest an early ability to repair some anomalies in discourse cohesion, as well as developmental progressions therein, showing a gradually generalised dependence on discourse context and a late ability to reflect explicitly on discourse anomalies. As pointed out throughout, many of these conclusions must be further explored, given frequent methodological problems and given some unanswered questions concerning the interplay among syntactic, semantic, and pragmatic determinants of acquisition.

Third, the developmental evidence concerning clause structure in child language indicates cross-linguistic differences in children's discourse uses of structural variations from very early ages on. However, this evidence is somewhat rare and scattered, providing an insufficient basis for further conclusions. Furthermore, it has not examined the relation between children's uses of clause structure and of referring expressions across languages. As we saw, these two types of markings are tightly related in all languages, although languages rely differentially on one or the other for discourse organisation. In this respect, I put forth some hypotheses within a functional and cross-linguistic perspective, weighing the relative impact of several properties of clause structure as compared to referring expressions: their obligatory vs. optional nature, their local vs. global nature, their relative functional complexity. One prediction is that, although children should first acquire obligatory markings of discourse status, clause structure should present additional difficulties, given its greater functional complexity. These hypotheses will be tested in the analyses presented in Chapter 8. More generally, as already suggested by the review of the available developmental research above, referring expressions and clause structure have many interrelated syntactic, semantic, and pragmatic properties, reflecting their multiple functions for the linguistic organisation of the sentence and of discourse. Subsequent chapters will argue for the crucial role of this multifunctionality during language development.

6 *The acquisition of spatial and temporal-aspectual devices*

We now turn to the available developmental research concerning children's acquisition of spatial and temporal-aspectual devices. With respect to spatial devices (Section 6.1), a large number of studies have invoked general (cognitive, perceptual) factors to account for recurrent developmental sequences, but recent results show that language-specific factors also affect the rate and course of development. Less is known about pragmatic determinants of acquisition in this domain, although some evidence shows that young children have difficulties anchoring spatial information and that typological factors affect how they select and organise it in discourse. With respect to temporal-aspectual devices (Section 6.2), much of the available research has focused on the cognitive determinants of the acquisition of tense-aspect morphology and connectives. A large body of studies have supported the hypothesis that children's uses of verbal inflections are determined by universal concepts of situations and that they initially mark aspect, but not tense. This claim, however, has not remained uncontroversial in the light of two types of evidence: cross-linguistic evidence suggesting that it should be strongly modified and evidence for discourse pragmatic determinants that are not taken into account by the hypothesis. It is concluded (Section 6.3) that more cross-linguistic research is necessary to determine the relative impact of semantic, discourse functional, and language-specific factors on acquisition in these domains.

6.1 Motion and location

Studies stemming from different traditions and disciplines are relevant to address current controversial questions concerning the relation among different (perceptual, motor, cognitive, linguistic) components of spatial cognition during ontogenesis. We focus here on studies that have directly examined the acquisition of spatial devices necessary for the expression of motion and/or of location, only occasionally citing other types of research in developmental psychology that have provided relevant observations concerning the development of spatial cognition more generally. The first and largest group of studies discussed below (Section 6.1.1) has focused on universal cognitive or semantic determinants in the acquisition

of spatial language, linking developmental sequences to initial sensori-motor capacities and to subsequent stages of cognitive development within particular traditions of cognitive psychology and/or psycholinguistics. A second group of studies (Section 6.1.2), historically more recent in this domain, has examined children's comprehension and production of spatial devices across languages, concluding that language-specific factors also affect the developmental process. Included in both groups are some studies focusing on discourse functional aspects of spatial reference in children's productions.

6.1.1 *Universal determinants of spatial semantics*

Until recently, most authors agreed to view space (among other domains) in language acquisition as being strongly or even entirely determined by underlying capacities or predispositions and by subsequent progressions in children's cognitive development, which were assumed to be general to all domains of knowledge and language-independent (e.g. Miller and Johnson-Laird 1976; Piaget and Inhelder 1947; see reviews in Bowerman 1989, 1996; Hickmann 1995). Within the Piagetian framework, most frequently used as the basis of interpretation, such progressions begin with an initial phase, situated before and around the emergence of language, during which children's behaviours are assumed to reflect their developing capacities at the sensori-motor stage. At this stage, children construct what might be called a *practical* space based on their perception and manipulation of objects during everyday activities. This type of space involves topological relations such as neighbouring, separation, order, covering, and continuity. Later phases of the acquisition process are seen as following a universal sequence of cognitive stages (Chapter 2). The construction of a projective space begins at around six years, as children become able to conceive of a relative perspective on objects and situations, while the gradual development of a Euclidean space results in a system of axes and co-ordinates.

Related models have postulated various types of relations between children's sensori-motor capacities, their cognitive development, and the process of language acquisition. A first type of model (e.g. Lurçat 1976) places emphasis on children's activity in constructing representations of their own bodies, which they then project on the objects to be localised. Yet other models postulate universal semantic primitives or *features* encoded by human language, the existence of which is determined by cognitive and perceptual constraints, and/or link the notion of semantic complexity to children's cognitive development (e.g. E. V. Clark 1972, 1973b, 1980; H. H. Clark 1973; Clark and Clark 1977; Cox 1985; Cox and Isard 1990; Johnston 1984, 1985, 1988a, 1988b; Piérart 1977, 1978a, 1978b). For example, some objective perceptual features seem to be most salient visually, such as the top of the vertical axis or the front of the sagittal axis, constituting primary features, which are acquired earlier

than other features. H. Clark's (1973) often cited proposal postulates a general correspondence between children's perceptual space (*P-space*) and their linguistic space (*L-space*). This view predicts that children can only learn a spatial term in L-space if they have the appropriate conceptual basis for this term in P-space, and furthermore that the order of acquisition for spatial terms is constrained by the complexity required by the rules of application for different terms. A related hypothesis is that time is a metaphor extending from space, so that children should first acquire spatial terms before temporal ones and should misinterpret temporal terms on the basis of spatial terms.¹

At least two types of research have begun to question some of the assumptions and conclusions of all of the above models on the basis of various types of evidence. First, cross-linguistic research shows some variability during the development of spatial cognition as a function of the language to be acquired, bringing into question the assumed universal nature of this process. We return to this research in some detail below (Section 6.1.2). Second, research has now been undertaken with special populations of children that might enable us to dissociate factors that are normally confounded during the development of spatial cognition. Although some findings concerning retarded children (Piérart 1998) seem to support some cognitive and psycholinguistic models of the acquisition of spatial prepositions, other studies do not. For example, recent research with children presenting a motor impairment (*spinal muscular atrophy*) does not support some of the predictions that can be made on the basis of the Piagetian model concerning the role of motor skills in the development of spatial cognition. Despite some findings with normal children (e.g. Bertenthal and Campos 1987) that show a strong relation between motor development and performance in spatial tasks, the resulting prediction that children with an early motor impairment should display deficits in localisation tasks is not supported by recent research that simply falsifies this hypothesis (Rivière and Lécuyer 2000).

Finally, as noted previously (Chapter 2), research with very young children reports a growing number of results suggesting the existence of extremely precocious spatial capacities and more generally a surprisingly complex knowledge of the physical world that cannot be predicted by the above models (e.g. Lécuyer 1989; Lécuyer *et al.* 1996; Mandler 1992, 1996; Spelke *et al.* 1992; Streri *et al.* 1993). For example, among other results, children from three months of age onwards already display some understanding of the following: temporal concepts and temporal sequencing (e.g. Bauer and Mandler 1989, 1992); object permanence, including the intermodal perception of the contours and unity of objects, the capacity to categorise classes of entities or to apprehend principles of gravity and causality (e.g. Baillargeon 1986, 1987; Baillargeon *et al.* 1989; Baillargeon *et al.* 1985; Eimas and Quinn 1994; Quinn and Eimas 1986; Spelke 1984; Streri 1987, 1991); spatial relations such as

the relation *above/below*, notions of support and containment, object orientation, depth indices, and so on (e.g. Antell and Caron 1985; Baillargeon *et al.* 1992; Caron *et al.* 1988; Gopnik and Meltzoff 1986; Freeman *et al.* 1980; Lloyd and Freeman 1983; Lloyd *et al.* 1981; Needham and Baillargeon 1993; Pineau and Streri 1985; Quinn 1994, 1998; van Geert 1985). This research has led some to adopt a nativistic view, according to which this complex and varied knowledge of the physical world is pre-programmed and modular, while others argue that it is acquired through an early active construction mediated by perception. We return to this debate below, after a discussion of specific results showing recurrent regularities in the development of children's spatial language, as well as cross-linguistic evidence showing variability in this development. As will be suggested (see also Chapter 11), the confrontation of these different lines of evidence clearly shows the need for new models that can articulate the relation between early capacities, on the one hand, and invariable as well as variable aspects of later developments during ontogenesis, on the other hand.

6.1.1.1 Regularities in children's production and comprehension of spatial devices

A large number of studies concerning children's production and comprehension of spatial devices have been undertaken within a universal cognitivist framework. These studies stem from two different types of traditions: studies focusing generally on children's spatial perception and reasoning (e.g. Laurendeau and Pinard 1968; Lurçat 1976; Pêcheux 1990; Piaget and Inhelder 1947; Pinol-Douriez 1975); and psycholinguistic studies focusing on the relation between perceptual, cognitive, and linguistic components of spatial knowledge, to which we turn below (e.g. Charney 1979; E. V. Clark 1972, 1980; Clark and Garnica 1974; Clark and Sengul 1978; Corrigan *et al.* 1981; Cox 1985; Cox and Isard 1990; Dromi 1979; Furrow *et al.* 1985–6; Halpern *et al.* 1983; Harris and Strommen 1972; Johnston 1984, 1985, 1988a, 1988b; Johnston and Slobin 1979; Kuczaj and Maratsos 1975; Levine and Carey 1982; Olson and Bialystock 1983; Piérart 1977, 1978a, 1978b; Vion 1978, 1981; Webb and Abrahamson 1976; Wilcox and Palermo 1975).

Many studies in this second tradition conclude that spatial prepositions are acquired in a regular order, presumed to reflect a universal sensori-motor and cognitive basis. For example, following Piérart (1977, 1978a, 1978b), the first spatial prepositions to be acquired mark neighbouring relations (*near*, *next to*) and containment (*in*). Children then acquire prepositions expressing a relation along the vertical axis, following several developmental steps: before six years they first differentiate these prepositions along the dimension of *covering*, thereby opposing *on* and *underneath*, other relations being rare before four years (e.g. *above* is first used like *on*). Later on they further differentiate prepositions along other dimensions, for example

distinguishing *underneath* from both *on* and *above*, on the one hand, and opposing the latter two along the dimension of contact, on the other hand. Prepositions of the sagittal axis then follow a gradual progression, being at first used in relation to particular properties of the object serving as reference point (intrinsic orientation, opacity): *behind* appears before *in front of*, it is first understood to mean ‘hidden’ and ‘near the back of’ at three years. With both of these prepositions, children first rely on an ‘intrinsic’ strategy and it is not before at least eight years that they are able to rely on a ‘deictic’ strategy, particularly when objects do not have an intrinsic orientation and when locations must take into account the interlocutors’ points of view. Finally, other relations appear quite late (e.g. the preposition *between*).

Relevant evidence provides additional information concerning the acquisition of spatial terms. Humblot (1998) reports that (French) children’s use of deictic vs. intrinsic strategies varies not only as a function of age (five to ten years), but also as a function of the properties of the spatial configurations to be described. In particular, in this study the ground object either did or did not have an intrinsic orientation (a cupboard vs. a ball, respectively) and the oriented ground was either in a congruent or in an incongruent position (the cupboard standing or lying on its front, respectively). Young children do use a deictic strategy when the ground object has an intrinsic orientation, particularly when it is placed in an incongruent position. In this case, although the functional properties of the ground object determining its intrinsic orientation are still clearly visible, they play less of a role than when the ground object is in a congruent position. Furrow *et al.* (1985–6) also argue that children’s early uses of spatial prepositions and adverbials are related to the particular situation in which they are produced. In particular, although the most frequent terms used by children varied with age (*in, here, down, there, out* at 2;0 to 2;6 years, *in, there, where, here, up* at 3;6 to 4;0 years), children use most spatial terms when they refer to their own activity, while uses in other cases increase with age (particularly references to the environment). Finally, despite some cross-linguistic variations (discussed in Section 6.1.2 below), some findings show a similar recurrent progression in the acquisition of the linguistic markers for spatial location across very different languages. Such findings have been interpreted to show that this acquisition order must reflect universal determinants of cognitive complexity, independently of the particular patterns that can be observed in the development of particular languages (e.g. Johnston 1984, 1985, 1988a, 1988b; Johnston and Slobin 1979).

6.1.1.2 *Spatial reference in discourse*

As discussed previously (Chapter 2), spatial reference requires organising the flow of spatial information in discourse and more generally relating utterances to their contexts of use. Two related aspects of child language are relevant

to the discourse pragmatic factors affecting children's uses of spatial devices. First, some studies have focused on the production and comprehension of indexical devices, such as English *here* and *there*, *this* and *that*, *come* and *go* (e.g. Charney 1979; E. V. Clark 1978b; Clark and Garnica 1974; Clark and Sengul 1978; de Villiers and de Villiers 1974). Despite some divergent conclusions, this research shows that during an initial phase children may not systematically differentiate such terms, using them in an egocentric way, without taking into account variables such as distance and reference point in relation to the speaker and hearer. Furthermore, uses of these terms are abundant in early child language, replacing specific uses that would identify motion and location more precisely. As a result, it is often difficult to follow young children's discourse since motion and location are expressed vaguely with no concern for further semantic specification or for pragmatic constraints governing communication in discourse.

Second, discourse organisation requires more generally that speakers provide anchoring, allowing the interpretation of the spatial parameters of the denoted situation in the universe of discourse. This information includes the initial locations of denoted entities, which can then be presupposed in subsequent discourse, but also changes of locations as discourse unfolds. In general, the few studies that have focused on this aspect of discourse show that children have difficulties establishing and maintaining spatial anchors until a late age (eight to ten years) in various discourse situations. Analyses of room descriptions (Ehrich 1981, 1982; Ehrich and Koster 1983) and of route directions (Lloyd 1991; Weissenborn 1981, 1986) find that young children have difficulties organising spatial information in discourse and/or using linguistic devices (spatial adverbials and prepositions) unambiguously. Less is known about spatial anchoring in children's narrative discourse (see some relevant findings in Duchan *et al.* 1995, as well as some indirect cross-linguistic evidence discussed in Section 6.1.2. below). As we saw (Chapter 4), interesting anecdotal evidence concerning early spontaneous narrative productions in conversational settings also show that children indeed do not set the spatial parameters of the narrated situation (e.g. Gopnik 1989; Sachs 1983). In general, all of these lines of research suggest that children have difficulties with providing sufficient spatial anchoring in discourse, although no systematic cross-linguistic comparisons are available in this respect (see relevant evidence in Chapter 9).

6.1.2 Language-specific factors

Finally, developmental studies concerning the production and comprehension of spatial devices have been undertaken in languages other than English (e.g. Bavin 1990; Humblot 1998; Li 1988; Pléh 1998; Verjat 1991; Weist 1991; Weist *et al.* 1999) and some even provide systematic comparisons across a number

of languages (e.g. Berman and Slobin 1994; Bowerman 1996; Bowerman and Choi 2001; Choi and Bowerman 1991; Gopnik and Choi 1990; Hendriks 1993; Hendriks and Hickmann 1998; Hickmann 1995, 1998c; Hickmann *et al.* 1998; Johnston 1984, 1985, 1988a, 1988b; Johnston and Slobin 1979; Slobin 1991, 1996). Among these cross-linguistic studies, some make a partially 'relativistic' claim, proposing that the semantic structure of language (and of particular languages) has a major impact on how children organise spatial information. Thus, despite the above similarities that have been observed in the developmental process across languages, some important cross-linguistic differences show that acquisition is not merely based on universal sensori-motor concepts and later cognitive development, as previously predicted by universalistic views. Rather, specific properties of the language to be acquired have an impact on the rhythm and course of language acquisition and perhaps even on the development of spatial cognition more generally. We examine in turn some cross-linguistic studies that have focused on the expression of static location, on the expression of motion, and on the organisation of spatial information in discourse more generally.

6.1.2.1 The expression of static location

As mentioned above (Section 6.1.1), some cross-linguistic studies (Johnston 1984, 1985, 1988a, 1988b; Johnston and Slobin 1979) show that children's acquisition of locative expressions follows a similar sequence across different languages. Such a sequence has been attributed to a number of universal factors, such as children's cognitive maturity and/or general properties of all semantic systems determining the relative cognitive complexity of various procedures. Nonetheless, despite this similarity in development across languages, children have more or less difficulty performing the same tasks depending on particular properties of their language. Thus, children have less difficulty in Italian and Turkish than in English and Serbo-Croatian, presumably as a result of language-specific factors that contribute to making the same sequence of acquisition unfold over more or less time during the course of language acquisition. Among such factors, the authors note the possible impact of the use of pre- vs. postpositions, of relative morphological complexity, of relative lexical diversity, and of the degree of synonymy among different markers.

Comparative research (Bowerman 1989, 1994, 1996; Bowerman and Choi 2001) also shows clear cross-linguistic differences in children's uses and interpretations of spatial markers in different tasks. A first set of results concerns descriptions of static configurations, presented in the form of pictures, in which subjects of different language groups had to locate one object in relation to another. The results show that as early as three years of age children's descriptions of such configurations

look more like the descriptions that are produced by adults of their language group than like the ones that are produced by children of the same age in the other language groups. The descriptions of young children, then, display the same implicit categories as those found in the adult system (described in Chapter 3). Such results are not compatible with a universalistic view according to which universal language-independent factors should exclusively determine children's responses at a given age or stage of cognitive development. Related evidence is observed with French subjects (Tourné 1997; Hickmann 2002). For example, with items that elicit the preposition *on* in English, French speakers use either the preposition *sur* ('on') or the more neutral preposition *à* ('at') (e.g. *Une tasse sur la table* 'A cup on the table'; *Une veste au/sur le porte-manteau* 'A jacket at/on the coat rack'), and in the latter type of response it is all the more likely that the speaker uses a verb that provides specific information concerning the spatial configuration (e.g. *Une veste accrochée au porte-manteau* 'A jacket hooked at the coat rack'). This pattern is observed with adults and with children, despite the fact that the youngest ones (three to four years) over-generalise the preposition *sur*. Although this developmental progression presumably reflects the role of general cognitive processes, the results also show the impact of language-specific factors, particularly the heavy reliance on verb roots to encode spatial information in French, as compared to English (see below).

6.1.2.2 *The expression of motion*

With respect to the expression of motion, recall (see Chapter 3) that languages differ in various respects and fall into several typological groups (see Talmy 1975, 1983, 1985, 2000). Among them, *satellite-framed* languages encode manner in the verb root and path in verb satellites (e.g. English *run into*, *walk into*, *crawl into*), whereas *verb-framed* languages rely on verbs more, encoding path in the verb root and manner peripherally (e.g. French *entrer en courant*, *en marchant*, *en rampant*). Furthermore, verb-framed languages such as Spanish, French, or Korean provide different structures for the expression of spontaneous vs. caused motion (notwithstanding notable differences among them), whereas satellite-framed languages such as English frequently provide the same structure to express both (e.g. transitive *He rolled the ball into the kitchen* and intransitive *The ball rolled into the kitchen*). Finally, languages differ in other ways, for example Korean distinguishes some relations as involving a tight vs. loose fit between the figure and ground (with the predicates *kkita* and *nehta/nohta*, respectively).

Some longitudinal studies (Choi and Bowerman 1991) show that children under two years already produce the devices that are most typical in their language. For example, comparisons of English and Korean show that children frequently use path particles in English, for example *out* (wanting to go out), *up* (wanting to be picked

up), *down* (sitting down), whereas they frequently mention caused motion in Korean, acquiring the equivalents of English path particles for spontaneous motion only later. Korean children also make a strict distinction between caused and spontaneous motion, they focus on adjustment or fit, distinguish activities of putting on clothes from other forms of contact, as well as different types of vertical motion. The English-speaking children do not distinguish caused and voluntary motion, they distinguish containment (*in/out*), support, contact, manner of attachment (*on/off*), and vertical motion (*up/down*). Such results follow from the properties of the two language systems to be acquired, suggesting that language has an early impact on children's attentional and cognitive organisation.

Similarly, in a controlled experiment (Bowerman 1989, 1996) English-speaking and Korean subjects were asked to describe actions that consisted of displacing an object from one location to another, for example putting one object onto another (e.g. a top on a pan), joining two objects (e.g. two Lego pieces), putting an object into another (e.g. toys in a bag), putting on a piece of clothing (e.g. a hat on a doll). Regardless of age, subjects' descriptions are quite different across the two languages. For example, Korean subjects describe in the same way actions that involve a 'tight fit' (e.g. putting the lid on a jar or a cassette into a cassette box, marked by the predicate *kkita*), differentiating these actions from those that do not involve tight fit (e.g. putting an apple onto a table). In contrast, English-speaking subjects use other criteria to describe actions, differentiating actions that involve contact (e.g. putting a lid on a jar or an apple onto a table) from those that involve containment (putting a cassette into its box), regardless of the fit implied between the figure and the ground. Related results (Bowerman and Choi 2001) were found with much younger children (around 20 months of age) by means of the preferential looking paradigm. Children heard a linguistic input containing English *into* or Korean *kkita* together with a visual display showing two items (6.1). In some cases, one item involved containment but no tight fit (A1), while the other involved tight fit but no containment (A2). In these cases the English-speaking children looked longer at item A1, the Korean children at item A2. In contrast, if one item involved both containment and tight fit (B1) and the other neither property (B2), both groups looked longer at item B1. Children's attentional behaviour, then, shows that they are sensitive to the distinctions expressed by their language from this very early age on.

- | | | |
|-------|----------------------------------|---|
| (6.1) | A1: containment, no tight fit | (e.g. a small object placed in a big container) |
| | A2: no containment, tight fit | (e.g. a peg placed on a peg holder) |
| | B1: containment, tight fit | (e.g. a book placed in its case) |
| | B2: no containment, no tight fit | (e.g. a peg placed on top of a board) |

Using action descriptions in French, a study (Tourné 1997; Hickmann 2002) shows that adults and children (three to six years) respond in three ways: they use a specific preposition (e.g. *sur* 'on'), as illustrated in (6.2), the neutral preposition *à* ('at'), as in (6.3), or no preposition at all, as in (6.4) and (6.5). In addition, responses vary as a function of predicates. With few exceptions, the neutral preposition and the absence of preposition make it all the more likely that the verbs contain relevant specific semantic information. Finally, with increasing age specific verbs increase and responses containing the neutral preposition or no preposition decrease. There is therefore an interaction between predicates and prepositions in French, which is not observed in English and which increases with age.

- (6.2) Tu mets la veste sur le crochet.
(‘You put the jacket on(to) the hook.’)
- (6.3) Tu accroches la veste au crochet.
(Lit. ‘You hang the jacket [at the hook].’)
- (6.4) Tu accroches la veste.
(Lit. ‘You hook the jacket.’)
- (6.5) Tu emboîtes/colles les deux légos.
(Lit. ‘You join-by-putting-in/stick the two lego pieces.’)

Another set of results (Beaurenaut 1998; Hickmann 2002) concerns how French subjects describe animated cartoons showing characters performing two types of voluntary displacements: the crossing of a boundary (e.g. a boy swims across a river), and motion upwards and downwards along a vertical axis (e.g. a squirrel runs up a tree). With boundaries, French adults typically use verbs expressing the path of motion (e.g. (6.6)), but frequently also specify the manner in a peripheral construction (e.g. (6.7)) or in the nominal phrase denoting the figure (e.g. (6.8)). With upwards and downwards motion, however, they focus more on path information (e.g. (6.9)), although some manner information is sometimes provided by lexical means (typically the verb *grimper* ‘to climb’, which necessarily implies manner and upwards motion in French). In contrast, French children (three to six years) have difficulties simultaneously expressing the manner and the path of motion with both types of displacements. They typically focus on path with upwards motion (e.g. *monter* ‘to go up’) and on manner with boundaries (e.g. (6.10)). In the latter case, when pressed with questions, the oldest children (six years) at best produce a path verb that is ambiguous with respect to the precise trajectory involved (particularly *passer* ‘to pass’, as compared to the more specific *traverser* ‘to cross’) and/or adverbial phrases, not providing manner in this case (e.g. (6.11)). In the rare cases when these children do provide both path and manner information, they distribute these two pieces of information across clauses, rather than packaging

them within the clause, as in (6.12). These results are in sharp contrast to those observed in English (Hickmann in preparation). In particular, English-speaking adults and children (three to seven years) systematically package both path and manner information within the clause, as in (6.13) and (6.14). The results concerning the adults are partially in line with those of a study based on a related procedure (e.g. comparisons of English vs. Spanish in Eisenberg *et al.* 1998). The developmental results further suggest that French children's difficulties in expressing both manner and path follow from the properties of their language, which is verb-framed and therefore does not encode both types of information together in the verbal network, as is the case in a satellite-framed language such as English.

- (6.6) Un garçon traverse la rivière.
(‘A boy crosses the river.’)
- (6.7) Un garçon traverse la rivière en nageant/à la nage.
(‘A boy crosses the river by swimming.’)
- (6.8) Un nageur traverse la rivière.
(‘A swimmer crosses the river.’)
- (6.9) [...] Il arrive en bas d’un arbre où se trouve une ruche et il monte pour prendre du miel, puis il redescend et il s’en va.
(‘It comes to the bottom of a tree where there is a beehive and it goes up to take some honey, then it comes back down and it goes away.’)
- (6.10) Y’a un garçon qui nage dans la rivière.
(‘There’s a boy swimming in the river.’)
- (6.11) Un garçon passe la rivière jusqu’à l’autre bout.
(‘A boy passes the river up to the other side.’)
- (6.12) Y’a une dame sur son vélo, elle fait du vélo. [...] Puis elle traverse la voie ferrée.
(‘There’s a lady on her bike, she’s bicycling. [...] Then she crosses the railway tracks.’)
- (6.13) The boy is swimming across the river.
- (6.14) [...] It ran to a tree, ran up into a hole, then ran out of the hole back down, and ran away.

6.1.2.3 *Motion and location in narrative discourse*

Cross-linguistic studies comparing how children express motion and location in narrative discourse show that typological differences, such as those described by Talmy (1975, 1983, 1985, 2000), affect what spatial information adults and children focus upon in narrative discourse (Berman and Slobin 1994; Slobin 1991, 1996). Speakers of satellite-framed languages (English, German) produce numerous combinations between verb roots and satellites, thereby typically encoding

several types of information compactly within the verbal network and elaborating trajectories (e.g. manner, cause, direction, deixis). In contrast, speakers of verb-framed languages (Spanish, Hebrew, Turkish) produce a fairly limited set of verb roots, mostly encoding path in less elaborate ways. They also produce frequent utterances focusing on static locations as part of *stage settings* providing relevant background information. Thus, static locations must be inferred from paths in English (e.g. (6.15) and (6.16)), whereas paths must be inferred from path-verbs and static locations in Spanish (e.g. (6.17) and (6.18)). Despite some developmental progressions, such cross-linguistic differences can be observed from the youngest ages on. More generally, the claim is that children first use the obligatory morphosyntactic devices of their native language for the expression of spatial information in discourse (as well as for temporality, see Section 6.2 below), asserting and presupposing different aspects of their narratives: either motion and/or processes or locations and/or states.

(6.15) The boy put the frog down into a jar.

(6.16) They fall off the edge into a pond.

(6.17) El niño metió la rana en el frasco que había abajo.

(‘The boy inserted the frog in/on the jar that was below.’)

(6.18) El ciervo frena delante de una montaña que da a un río y entonces los dos caen en el río.

(‘The deer brakes in front of a little mountain that faces a river and then the two of them fall in the river.’)

The Spanish narratives also show a three-phase developmental progression with respect to the details of paths (Sebastián and Slobin 1994). In the first phase, illustrated in (6.19) and (6.20), children use verbs alone or with a prepositional phrase specifying the source of motion. In the second phase, illustrated in (6.21), they use locative adverbials together with the verb in a redundant way. Finally, the narratives produced from nine years on show a third phase, illustrated in (6.22), which is characterised by a specification of the source and goal of motion. These data suggest an increasing concern for spatial anchoring, which might reflect either a general development of the ability to organise discourse information or language-specific factors linked to the verb-framed nature of this language. Some related observations based on Turkish (Aksu-Koç 1994) suggest that the former hypothesis may be the right one, but further evidence is necessary to determine whether such phases in spatial anchoring can be observed across other languages. I present relevant evidence in Chapter 9.

(6.19) Se ha subido.

(‘(He) has ascended.’)

- (6.20) El niño se sube al árbol.
(‘The boy ascends to the tree.’)
- (6.21) Sube por arriba por el tronco.
(‘(He) ascends along upwards along the trunk.’)
- (6.22) Los tiró a un precipicio donde había harta agua. Entonces se cayeron.
(‘(He) threw them at a cliff where there was lots of water. Then (they) fell.’)

Other types of comparative analyses have analysed narrative productions in languages that differ in other respects, showing how differences that are not strictly speaking inherent to the domain of space may nonetheless affect how spatial information is organised in discourse. For example, comparisons of Dutch and Chinese narratives (Hendriks 1993) show differences in how children mention spatial grounds. Both languages are satellite-framed with respect to the structure of spatial information in the clause, but they differ in other ways, such as their setting along the null subject parameter (Chinese is a null-subject and topic-oriented language, whereas Dutch has obligatory subjects, see Chapter 3). As a result, Chinese children choose more elaborate initial anchors, while providing less explicit spatial grounds subsequently, for example relying on previous discourse and on temporal-aspectual markers to indicate changes of locations.

Taken together, all of these results show some variability across languages in how children categorise and express location and motion, sometimes relying on different aspects of their language (prepositions, verbs) to express the same information. This variability must be taken into account in any model aiming at explaining the development of spatial cognition. Bowerman’s evidence suggests a complex interplay between universal cognitive factors and language-specific properties linked to how each language ‘cuts up’ the universe of spatial relations. This evidence brings into question two of the more accepted views about development in the spatial domain. The first one states that language acquisition in this domain can be accounted for by an underlying cognitive development that would be general to all domains of knowledge and that would take place over a long stretch of time. The second one postulates domain-specific cognitive capacities, that are innately given as part of the child’s biological endowment. In both views, children match linguistic representations to prior non-linguistic representations, which are independent of language and universal across languages, regardless of whether they are present at birth or constructed gradually over time. Contrary to this assumption, the data show very early cross-linguistic differences in various natural or experimental situations. Such results require a developmental model that can account for both early linguistic constraints and early cognitive constraints. Similarly, Slobin (1991, 1996) proposes a version of linguistic determinism according to which the locus of the impact of

language is to be found in speakers' *thinking for speaking*. According to this view, 'experiences are filtered through language into verbalised events [... which are] constructed on-line in the process of speaking' (Slobin 1996: 75) and 'in acquiring a native language, the child learns particular ways of thinking for speaking' (1996: 76). As a result, the linguistic expression of experience in communication mobilises a special form of thought, which may vary across languages from an early age on.

6.2 Temporal-aspectual markings

Among the many available studies concerning the acquisition of temporal-aspectual devices, we focus first on studies that have examined the acquisition of tense-aspect morphology. As will be shown, some have provided comparisons across child languages (e.g. Berman and Slobin 1994; Cziko 1986a; Smith 1980; Smith and Weist 1987; Johnson 1985), while others have focused on particular languages, such as the following: English (e.g. Bloom, Lifter, and Hafitz 1980; de Villiers and de Villiers 1979; Harner 1976, 1980, 1981, 1982a, 1982b; Mapstone and Harris 1985; McShane and Whittaker 1988; McShane *et al.* 1986; Rispoli 1990; Rispoli and Bloom 1985; Szagun 1978), Italian (e.g. Antinucci and Miller 1976), French (e.g. Bronckart and Sinclair 1973; Fayol *et al.* 1989; Ferreiro 1971; Ferreiro and Sinclair 1971), Greek (Stephany 1981), Turkish (Aksu-Koç 1988), and Trinidad Creole (Youssef 1990). Conclusions and controversies in this domain revolve around the following issues: the impact of universal cognitive determinants of acquisition (Section 6.2.1), the impact of discourse determinants of acquisition (Section 6.2.2), and the impact of language-specific factors (Section 6.2.3). A final section (Section 6.2.4) examines children's uses of other temporal-aspectual markings, such as conjunctions and adverbials.

6.2.1 Cognitive determinants of tense-aspect morphology

Most studies focusing on the development of tense-aspect markers have argued for universal cognitive determinants of acquisition. According to the most commonly cited frameworks (Piaget 1946; Cromer 1974a, 1974b, 1988), children construct a gradually more complex and abstract system of time as they evolve through successive stages of cognitive development. Among other general consequences (e.g. for children's reasoning about time), these stages are assumed to determine children's uses of linguistic devices, which contribute surface evidence for underlying cognitive development (see Bronckart and Sinclair 1973, discussed below). A more recent formulation (e.g. Weist 1986, 1989b) aiming at complementing this approach from a psycholinguistic perspective takes Reichenbach's (1947) system as a starting point and views the child as evolving through several stages, defined in terms of three different temporal reference points determining the uses of temporal-aspectual markers: speech time (ST), event time (ET) and reference

time (RT). Children at first rely exclusively on ST (the 'here-and-now'), then become able to differentiate ST and ET, and it is not until subsequent stages that they are able to differentiate ST from a distinct RT. They do so first by displacing reference from the here-and-now and relying on other reference points (e.g. *yesterday*), then by fully differentiating RT from ST and ET, thereby displaying mastery of temporal relations in discourse (from four to five years on). Some experimental comprehension results across several languages (e.g. Weist *et al.* 1991; Weist *et al.* 1997) indeed show children's difficulties with a relative system involving relations among ST, ET, and RT. However, as shown below (Section 6.2.3), language-specific factors affect this general development. Furthermore, some of the cross-linguistic evidence presented in Part II (Chapter 10) indicates that children may not master the discourse-internal functions of temporal-aspectual devices until a very late age, regardless of the particular language to be learned.

One of the claims put forth by some cognitivist approaches is that a set of universal categories of situations underlie how temporal-aspectual devices are acquired (e.g. Aksu-Koç 1988; Antinucci and Miller 1976; Bloom, Lifter, and Hafitz 1980; Bronckart and Sinclair 1973; Cromer 1974a, 1974b, 1988; Cziko 1986a; de Villiers and de Villiers 1979; Fayol *et al.* 1989; Ferreiro 1971; Ferreiro and Sinclair 1971; McShane and Whittaker 1988; McShane *et al.* 1986; Meisel 1985; Rispoli 1990; Stephany 1981). In particular, it has been argued that young children first associate past perfective inflections with resultative situations. Such evidence has now been reported on the basis of a considerable number of languages and has led to the hypothesis that children's uses of inflections at first do not encode tense, but rather aspect. The general claim is that children's inflections are mainly determined by their underlying cognitive immaturity, leading them to focus on immediate perceptible results in the speech situation (at least during some phases of development, but see variations in this respect below).

This specific hypothesis concerning morphology was first put forth in its earliest form in a frequently cited study carried out by Bronckart and Sinclair (1973). French children (three to eight years) were asked to describe events acted out by the experimenter with toys. These events varied along several dimensions involving a number of distinctions, among which were the following two, illustrated in (6.23) to (6.26): events were either resultative or non-resultative and they were either durative or not (duration lasted between one and fifteen seconds and events of over three seconds were considered to be durative).² Additional variables included iteration (the repetition of an event) and success (whether the events led to a desired result).

(6.23) RESULTATIVE DURATIVE:

A truck slowly pushes a car towards a garage.

(6.24) RESULTATIVE NON-DURATIVE:

A car hits a marble which rolls very rapidly into a pocket.

(6.25) NON-RESULTATIVE DURATIVE:

A fish swims in the basin in a circular movement for fifteen seconds.

(6.26) NON-RESULTATIVE NON-DURATIVE:

A fish swims in the basin in a circular movement for less than three seconds.

The results show differential uses of verbal inflections, particularly the *passé composé* (perfective past), the *imparfait* (imperfective past), and the *présent* (neutralised for aspect in French) as a function of event types. In particular, the *passé composé* is used more often overall with resultative events than with other types of events. In addition, developmental differences also occur, as illustrated in (6.27) to (6.34) (PC = *passé composé*; IMP = *imparfait*; PR = present). Children from six years on use past tenses to mark a relation of anteriority to speech time, further differentiating two main past inflections as a function of event types: the *passé composé* with resultative events as in (6.28) and (6.31) and the *imparfait* with non-resultative ones (6.34), despite some uses of the present in this case (6.33). Before six years, however, the distinction between resultative and non-resultative events is most important, overriding the temporal relation between the denoted events and speech time. The present almost always occurs with non-resultative events (6.32). When the *passé composé* is used, it occurs with resultative events as in (6.27) and (6.30), but it is all the more likely that the events are not durative: the longer the event (or its iteration) lasts, the more likely it is that young children will use the present as in (6.29). Within a Piagetian framework, Bronckart and Sinclair conclude that the most important distinction for young children is the one between results (marked by past tenses) vs. processes (marked by the present tense).

RESULTATIVE NON-DURATIVE

(6.27) Il a sauté après la barrière. (4;5)

(‘He jumped-PC after the fence.’)

(6.28) Il a sauté la barrière d’un coup. (7;8)

(‘He jumped-PC the fence in one jump.’)

RESULTATIVE DURATIVE

(6.29) Il monte sur les barrières. (3;8)

(‘He climbs/is climbing-PR on the fences.’)

(6.30) Il a sauté sur chaque barrière. (5;2)

(‘He jumped-PC on each fence.’)

(6.31) Il a sauté sur toutes les barrières. (6;8)

(‘He jumped-PC on all the fences.’)

NON-RESULTATIVE DURATIVE

- (6.32) Le canard il flotte. (3;7)
 ('The duck, he floats/is floating-PR.')
- (6.33) Le canard navigue dans l'eau. (6;6)
 ('The duck sails/is sailing-PR in the water.')
- (6.34) Dans le lac il y avait un canard qui nageait. (7;5)
 ('In the lake there was-IMP a duck that was swimming-IMP.')

On the basis of these results, Bronckart and Sinclair put forth the hypothesis that, because of their cognitive immaturity, young children (before six years) do not use verbal morphology to mark tense, but rather merely to mark aspect (resultativity in this case, see below). This hypothesis, now known as the *defective tense hypothesis* (see Weist 1986, 1989b, 1991; Weist *et al.* 1984; Weist *et al.* 1991; Weist *et al.* 1997), furthermore proposes that the central cognitive distinction on which children rely is the one between results and processes. This widely held hypothesis has been extended and/or modified on the basis of different kinds of experimental and naturalistic evidence. Other related strong claims have been made on the basis of the observed co-occurrences between temporal-aspectual morphology and verb semantics in child language. Thus, the possible existence of universal underlying concepts of situations has been taken to support the hypothesis of a 'bioprogram', and particularly the existence of an innate distinction between states and processes (see discussions in Bickerton 1984, 1989; Cziko 1986b; Weist 1989a). However, as shown below, such hypotheses have not remained uncontroversial on theoretical and empirical grounds. Before we consider the evidence, I first raise a few questions concerning the claim made by the defective tense hypothesis.

The first question concerns the nature of the difference to be expected between the temporal-aspectual morphology of adults and of children (or of children at different developmental phases). Roughly, the claim is that children's uses of inflections are determined by situation types and/or by verb semantics as a result of some cognitive immaturity and/or strong predisposition to encode certain types of events. As we saw previously (Chapter 3), despite variations across different temporal-aspectual systems, there is a strong relation between verb semantics and temporal-aspectual markings in the adult systems of all languages. An important question to be asked, then, is whether we are dealing with a qualitative or quantitative difference between children and adults. The strong version of the hypothesis, which would suggest the existence of a qualitative difference, is that young children never use the past to denote events that are anterior to speech time and that they only use past perfective inflections to denote immediate results. Note, however, that the strength of the evidence partly depends on the language considered, since the adult system itself is more or less constrained in this respect. For example, as we saw

previously (see Chapter 3), English presents an opposition between progressive vs. non-progressive aspect in all tenses, but not French or German, which neutralise aspect in the present. Furthermore, French presents a sharp opposition between perfective vs. imperfective past, as compared to German, which opposes perfective and an aspectually unmarked form in the past. As will be shown, a subsidiary question here concerns the period of acquisition to be characterised. Although the original study by Bronckart and Sinclair (1973) and subsequent research have claimed that tense is defective up to a late age (e.g. with a cut-off point at around six years), other studies have reported different results, showing that the expected association between verbal morphology and situation aspect only holds during the earliest phases of development.

Another question concerns the types of situations most likely to provide evidence that could falsify the hypothesis. Recall that in the original study by Bronckart and Sinclair (1973), children had to describe events that had just been performed by the experimenter (between one and fifteen seconds before speech time). The question can be raised as to whether such a situation really requires using past tenses, at least if past tense is viewed as exclusively marking anteriority in relation to speech time. Thus, if younger children fail to use past tenses in this situation, we cannot conclude that they are unable to mark anteriority. Furthermore, extensions of Bronckart and Sinclair's (1973) research have been frequently based on naturalistic conversation data that might privilege references to some types of situations, encouraging young children to focus more attention on immediate results than on other situation types. In fact, some subsequent research (Bronckart 1976, 1985; Bronckart and Schneuwly 1991; de Weck 1991) has shown that uses of a number of devices, including temporal-aspectual ones, vary considerably as a function of pragmatic factors, such as the type of discourse in which the speaker is engaged in the speech situation (e.g. narratives, conversations, instructions). We return to this point below (also see relevant results in Chapter 10), where it will be shown that some of the older children's uses of aspect follow from discourse principles related to information status and grounding (previously discussed in Chapters 2 and 3). In this respect, some of Bronckart and Sinclair's examples above illustrate this point already, for example one interpretation of the *imparfait* in (6.34) above (*Dans le lac il y avait un canard qui nageait* 'In the lake there was-IMP a duck that was swimming-IMP') is that the utterance is part of a narrative, in which a referent is introduced and an event backgrounded to set the stage for other events.

Finally, a large set of methodological questions concern the confusing terminology and the many coding systems adopted by various researchers to capture the lexical properties of the predicates used by children. One major problem is a general confusion concerning the linguistic category of *aspect*, which has been defined in

terms of various criteria, including the objective properties of the denoted situations (such as whether an event actually leads to a result), the linguistic properties assigned to these entities as a function of a variety of (lexical, morphosyntactic, and pragmatic) factors characterising a given linguistic system, and/or the functional properties of aspectual devices for the marking of speaker's perspective on these situations in discourse (see Note 2). As shown below, this point is important from a cross-linguistic perspective. A related question is how to define and operationalise notions of *bounded* or *results*. For example, as noted previously (Chapter 3), the strong version of the hypothesis focuses on immediate visible results, while weaker versions might include less obvious types (e.g. disappearance of objects, internal states, fiction).

6.2.2 *Discourse determinants of tense-aspect morphology*

We now turn to further evidence from studies that have argued that discourse functional factors determine the acquisition of temporal-aspectual devices. Studies of this kind have focused on two related, but distinct types of discourse determinants in acquisition: interpersonal interactive processes, typically analysed on the basis of conversational data; and pragmatic principles inherent in discourse cohesion, typically analysed on the basis of more 'monological' narrative productions. Furthermore, cross-linguistic studies show some variability in this respect. As will be shown, although these studies show the impact of discourse determinants on children's uses of temporal-aspectual morphology, they need not as such falsify the defective tense hypothesis without further evidence.

6.2.2.1 Interpersonal interaction

As noted previously (Chapter 4), some evidence concerning early past references (e.g. Veneziano and Sinclair 1995) suggests that the emergence of displaced reference is related to the child's socio-cognitive development. Further evidence for the impact of interpersonal factors (e.g. de Lemos 1981) shows that adults often use perfective aspect with resultative verbs to draw children's attention to the results of everyday events. This kind of evidence need not falsify the defective tense hypothesis as such, merely suggesting that interpersonal processes constitute an additional variable to take into account. It points to two of the problems raised above. First, although children's focus on results may be at least partially determined by the behaviours of adults who interact with them, the type of situation examined may invite such behaviours on the part of both children and adults. Second, if children's and adults' uses of temporal-aspectual markings are affected by the same factors, the evidence suggests that the observed developmental differences are merely quantitative, thereby weakening the initial hypothesis, according to which it is exclusively

or mainly children's cognitive immaturity that invites them to focus massively on the perceptible results of events in the immediate speech situation.

Yet another related but distinct argument has been that some uses of verbal inflections may not be temporal-aspectual at all, serving to mark other distinctions in interpersonal communication. For example, some modal or modal-like distinctions involve non-referential uses of the same devices that are otherwise linked to temporality. Gerhardt and Savasir (1986) show that some uses of verbal inflections are mainly modal, marking the speaker's mode of involvement. English-speaking three-year-olds use the simple present in the context of ongoing activities to indicate that these activities conform to a norm, while intentions for action are always discussed through the progressive, for example (6.35) vs. (6.36). Related evidence in several languages such as English, French, Swedish, and Italian (e.g. Antinucci and Miller 1976; Musatti and Orsolini 1993; Strömquist 1984) suggests that children use the past as a kind of *irrealis* marking, for example to mark role play in pretend games or in the narration of fictitious events.

(6.35) This is how you make windows.

(6.36) Why are you putting this away?

Again, this evidence as such does not exclude the possibility that situational aspect and/or verb semantics nonetheless partially determine children's uses of verbal inflections, as predicted by (one version) of the defective tense hypothesis. In this respect, further research would be necessary to determine the relative impact of situation concepts and of interpersonal processes on the acquisition of verbal morphology, as well as their possible interactions during this process. Thus, if switches to particular inflections marking modal distinctions should mostly coincide with uses of particular verb types, this result could be taken to show that interpersonal modal functions are merely 'parasitic' on temporal-aspectual ones. Similarly, Antinucci and Miller (1976), who do find a relation between the past perfective and resultative events, link uses of the Italian *imperfetto* (imperfective past) to the marking of a particular discourse genre, that is roughly narratives of events that do not correspond to lived personal experience (e.g. fairy tales).

6.2.2.2 *Grounding information in cohesive discourse*

A growing number of studies have also shown that tense and aspect play a role in the development of children's discourse cohesion. In general, most of these studies focus on various types of narrative productions, finding a variety of tense-aspect markings within a given narrative. Shifts from one marking to another are at first seemingly random, gradually taking on particular functions in discourse, such as the function of grounding information. Thus, Bazzanella and Calleri (1991)

show that most Italian children between two and five years use more than one tense form when recounting fairy tales. The most frequent switch involves the simple present (*presente indicativo*), followed by the simple past (*passato remoto indicativo*), then by the past imperfective (*imperfetto indicativo*) and the present perfect (*passato prossimo indicativo*). The authors interpret children's frequent uses of the present as showing their difficulty with the task and their falling back on the tense they know best and have acquired first. Bamberg (1987, 1990) and Bamberg and Marchman (1990, 1991, 1994) also show that German adults shift to the *Perfekt* (past perfective) to mark a retrospective assessment of preceding discourse or to highlight information that is prospectively relevant for subsequent discourse, indicating whether information is locally backgrounded or foregrounded in discourse and simultaneously chunking discourse into units (scenes and episodes). Such shifts occur late (nine to ten years), while younger children use the *Perfekt* to mark the completion of event sequences (three to four years) or to readjust events that are out of chronological order in relation to previous discourse.

Again, note that these studies do not provide information about the possible interactions that may exist between verb semantics and discourse functions across languages (see also Hickmann 1991b). The results point to another type of determinant in the acquisition of verbal morphology, linked to the organisation of discourse cohesion. However, it is unclear to what extent they falsify the defective tense hypothesis. In a first attempt to address this question, a study by Fayol *et al.* (1993) evaluated the relative impact of semantic and discourse factors on the uses of French past verbal inflections by asking adults and ten-year-olds to inflect (in writing) verbs that were presented in two conditions: in one condition the verbs appeared in isolated sentences; in the other condition the same sentences were embedded at the beginning, middle, or end of narratives (roughly corresponding to the setting, complication, and resolution). Subjects were asked to complete the verbs in such a way that they would describe past events. There were several types of predicates (presented in their infinitival forms), among them *activities* (predicates that were durative and unbounded) and *achievements* (predicates that were punctual and bounded), illustrated in (6.37).³ Example (6.38) further illustrates how an achievement (in bold) was embedded at the beginning of a narrative.

- (6.37) ACTIVITY: Les enfants (jouer) [‘The children (to play) football.’]
 au football.
 ACHIEVEMENT: Un pneu [‘A tyre (to explode).’]
 (exploser).
- (6.38) 1. Monsieur Talon se rendait à [‘Mr Talon was going to work.’]
 son travail.
 2. **Un pneu (explorer).** [‘A tyre (to explode).’]

3. La voiture (aller) au fossé. ['The car (to go) to the ditch.']
4. Le pneu avant gauche (être) à plat. ['The front left tyre (to be) flat.']
5. Monsieur Talon (changer) la roue crevée. ['Mr Talon (to change) the flat tyre.']
6. La voiture (démarrer). ['The car (to start).']

The results show that both predicate types and position have an effect on subjects' uses of the *imparfait* with the first two types of predicates. The *imparfait* is most frequent with activities and least frequent with achievements with both isolated and embedded sentences. It is also most frequent at the beginning of narratives and least frequent at the end. However, children overgeneralise this inflection to all predicates and positions. As a result, the effect of predicates is stronger with adults and the effect of position is not significant with children. Finally, predicates either override positions or interact with them, partly because some predicates are more expected in some positions than in others. Thus, adults never use the *imparfait* with achievements, regardless of position, and they use it with activities most frequently in the beginning of narratives.

6.2.3 Language-specific factors in the acquisition of tense-aspect morphology

Some cross-linguistic studies show the impact of language-specific factors on children's uses of tense-aspect morphology. These studies, then, provide evidence that bears directly on the defective tense hypothesis, since this hypothesis, as originally stated, makes the strong claim that a well-defined set of universal cognitive determinants underlie the acquisition of these devices from the earliest to later phases of development, regardless of the specificities of particular tense-aspect systems.

6.2.3.1 Situation or predicate types

Some evidence suggests that the strength of the postulated relations between predicates and temporal-aspectual markings varies as a function of the particular language to be acquired. At one extreme, some studies falsify the hypothesis, simply failing to find the predicted patterns. Thus, children acquiring a transparently inflected language such as Polish mark tense with all verb types, regardless of whether these inflections constitute prefixes or suffixes (Weist 1983; Weist and Konieczna 1985; Weist *et al.* 1984), while nonetheless showing the expected pattern to some extent (as shown by the critique in Bloom and Harner 1989). Similarly, Behrens (1993) fails to find the predicted association between predicate properties and inflections in a study of the emergence of German inflections. Other

types of evidence, on the contrary, strongly confirm the predicted association. Thus, research with Chinese children between three and six years (Li 1990) finds that the predicted association between the perfective particle *le* and resultative or telic predicates is particularly salient to these children, as compared to children learning other languages. Taken together, these divergent data indicate that the strength of this association is variable across languages. This evidence, then, either partially falsifies the strong version of the defective tense hypothesis or requires that it be at least qualified, resulting in a considerable debate concerning determinants of acquisition (see further discussions in Bloom and Harner 1989; Rispoli and Bloom 1985; Smith and Weist 1987).

In addition, some evidence only shows the predicted association during the initial stage of acquisition. For example, longitudinal analyses of French corpora (Champaud 1993, 1994, 1996a) find that this relation is strong during the earliest period (before two years), but much weaker subsequently (between 2;0 and 2;6 years). Champaud suggests several reasons for the results. They may be partly due to the importance of compound verbal forms in early French in comparison to other languages (including Romance and non-Romance languages). In particular, French child language shows a very precocious use and rapid development of the *passé composé* (and related uses of past participles), which marks the two functions of perfective past and current relevance, for which different forms are available in other languages. A related explanation appeals to the greater orientation of French (and of other Romance languages belonging to the *verb-framed* family) towards states and results, rather than towards processes (as is the case in languages of the *satellite-framed* family, such as English or German), partly because of the absence of verbal satellites such as particles (Talmy 1983, 1985, 2000; Berman and Slobin 1994; see discussion in Chapter 3 and in Section 6.1 above).

Cross-linguistic research in progress evaluates the relative impact of verb semantics and of discourse factors across five languages (French, English, German, Dutch, Chinese), extending the study described above concerning French (see examples (6.37) and (6.38) above from Fayol *et al.* 1993). Recall that the method consisted of eliciting temporal-aspectual devices by asking subjects to complete verbs that were presented either in isolated sentences or embedded in narratives. Preliminary results based on adult samples show that in all languages and conditions durative unbounded predicates (activities) attract perfective past inflections the least in comparison to all other predicate types (achievements, accomplishments). In addition, regardless of the language, the perfective past is more frequent when the predicates appear at the beginning of narratives, as compared to other positions. However, cross-linguistic variations can also be observed. For example, in all conditions past and/or perfective markings are most frequent in French and in Chinese, and the impact of predicate type is strongest in these languages. The impact of position is strongest in Dutch

and in German. Finally, only German shows a significant interaction between predicate type and position, whereby bounded predicates inflected in the past perfective (*Perfekt*) are most frequent at the beginning of the text.⁴

6.2.3.2 *Discourse organisation*

Cross-linguistic research also shows the impact of language-specific factors on children's uses of temporal-aspectual markings in discourse. Weist *et al.* (1991) compare Polish, Finnish, and English-speaking children's comprehension in sentence-picture matching tasks involving a variety of distinctions, such as the distinctions between the past vs. the future and between an internal vs. external perspective (complete vs. ongoing incomplete situations). Despite some similarities in children's performance across the three languages, attributed to an underlying conceptual development with respect to time reference (see Section 6.2.1 above), the Finnish children have more difficulties in the same tasks as compared to other children. The authors link this difference to several possible factors, including the great multifunctionality of the relevant markers in Finnish and the greater reliance on verb semantics than on aspect marking for the organisation of discourse in this language.

Furthermore, cross-linguistic studies of children's narrative productions (e.g. Berman and Slobin 1994; Hendriks *et al.* 1998) show variations of several types. Adults and children make differential use of devices to mark episodic structure in English and German, for example producing more overt inceptive aspect in English (e.g. *he started to*) to mark the instantiation of event sequences (Bamberg and Marchman 1990, 1991, 1994). In German and Hebrew children adhere to one anchor tense from three or four years on, while young children produce more tense shifts in Spanish, Turkish, and English (Aksu-Koç and von Stutterheim 1994; Berman and Neeman 1994). More generally, although tense/aspect shifts show an increasing concern for discourse organisation in all languages, they vary across languages, reflecting the fact that adults and children from three years on focus on different aspects of the temporal structure of narratives across languages. According to Berman and Slobin (1994), tense/aspect shifts are at first heavily *perceptually* driven, and it is only later that they become mainly *narratively* determined. Such shifts (e.g. present to past or perfective to imperfective) first take place in descriptions of states and processes across successive pictures, increasingly serving discourse functions such as highlighting information, establishing textual connectivity, differentiating foreground and background, and/or creating hierarchically organised part-whole relations among situations. However, narrators from the earliest ages on mostly rely on the obligatory morphosyntactic devices in their language to organise discourse. For example, distinctions between the past and the non-past and/or between perfective and imperfective aspect are available to a different extent and with varying degrees

of complexity or transparency in the verbal morphology of different languages, resulting in children's greater or lesser focus on the temporal contour of events. Examples (6.39) to (6.42) (from Berman and Slobin 1994: 614–15, relevant forms in bold) illustrate how three-year-olds most typically relate events in English, Spanish, and German. These excerpts show an opposition between aspectually neutral vs. progressive forms in English (6.39), oppositions between perfective vs. progressive forms in Spanish (6.40), or between perfective vs. imperfective forms in Spanish (6.41), but no contrast in German (6.42). In general, English and Spanish speakers focus more on the temporal contour of events by means of verbal inflections than German speakers who most commonly provide no temporal contour (or do so by lexical means, such as adverbs or verbs).

- (6.39) He's [= dog] **running** through there. And he [= boy] **fell** off.
- (6.40) Se **ha caído** el niño. [...] Los mosquitos **estaban saliendo** de las ramas de detrás.
(‘The boy has fallen:PERF. [...] The mosquitoes were exiting: PAST.PROG from the branches behind.’)
- (6.41) Se **cayó**. **Corría** el perro.
(‘[Boy] fell:PFV. The dog ran:IPFV.’)
- (6.42) Da **fällt** der Junge hin. [...] Und der **läuft** da weg.
(‘There the boy falls:PRES down. [...] And he runs:PRES away there.’)

6.2.4 *Connectivity*

The discussion so far has mainly focused on the acquisition of verbal morphology and related temporal-aspectual markings (e.g. aspect particles). Along with these devices, children also learn to use another set of temporal-aspectual markings, consisting of a variety of devices (hereafter *connectives*) that serve to explicitly link utterances in discourse. These devices are quite heterogeneous from a formal point, including *conjunctions*, as well as a variety of adverbial and/or prepositional expressions. Conjunctions may be *co-ordinating* or *subordinating*, depending on the presence/absence of structurally well-defined hierarchical dependence relations among clauses, and they express a number of relations among utterances (e.g. temporal-aspectual *then*, *before/after*, *while*, *when*; causal *because*, *so*, *since*) or are more underdetermined semantically (e.g. *and*). Similarly, adverbials may mark a variety of relations, such as a temporal location (*today*, *yesterday*, *tomorrow*), a relation of partial or total overlap among events represented in discourse (e.g. *at the same time*), or a relation of anteriority/succession (*before/after*). Different languages rely differentially on these devices in order to mark temporal-aspectual distinctions, depending, for example, on the availability and richness of

other markings. Thus, in a language such as Chinese that does not provide any temporal morphology, speakers rely to some extent on (partially optional) aspect particles, but they also rely heavily on connectives to anchor discourse and to organise temporal relations across clauses in discourse.

The developmental literature focusing on the acquisition of connectives typically reports progressions in children's production and comprehension of these devices in a variety of situations. This literature includes studies of children's reasoning about time, as well as studies focusing more specifically on language acquisition in this domain, such as analyses of connective use in spontaneous productions and in experimental situations involving either isolated complex sentences or a variety of discourse types (e.g. Amidon and Carey 1972; Berman and Slobin 1994; Bever 1970; Bloom 1991; Bloom, Lahey, Hood, Lifter, and Fiess 1980; E. V. Clark 1970, 1971, 1973a; Clark and Clark 1968; Coker 1977; Crain 1982; Di Paolo and Smith 1978; French and Brown 1977; French and Nelson 1985; Harner 1975; Jisa 1984–5, 1987; Johnson 1975; Scott 1984; Stevenson and Pollitt 1987; Weist and Buczowska 1987; Youssef 1990). Roughly, this literature shows the strong impact of two major types of determinants during acquisition, cognitive and discourse factors, as well as some interactions between these devices and verbal inflections.

A major recurring issue has been the role of underlying cognitive capacities that might affect children's production and comprehension of these devices. In this respect, a large literature has been devoted to children's understanding of physical time (Piaget 1946) or of conventional notions of time, such as the measurement of time by clocks and calendars (e.g. Friedman 1982, 1986, 1991, 1992). Roughly, as noted above in relation to tense-aspect morphology (Section 6.2.1), this research shows gradual progressions in children's temporal concepts, determined by their cognitive level and resulting in differential uses of temporal terms during the course of development. These studies, however, have not been directly concerned with the acquisition of temporal terms per se, focusing more on the underlying cognitive development that may be uncovered in this and in other domains of knowledge.

Among the studies that have been more directly framed within a psycholinguistic perspective, it has been argued that young children have difficulties with connectives that imply different orders of mention and of occurrence. Thus, Clark proposed that, because of their cognitive immaturity, children mainly rely on a strategy of 'chronological ordering', therefore showing more comprehension difficulties with sentences such as (6.43), in which the order of mention does not correspond to chronological order, than with sentences such as (6.44), in which these two types of ordering coincide. As noted previously (Chapter 2), the principle of chronological ordering is also the default principle guiding adult speakers engaged in discourse, at least in the absence of any additional marking inviting them to ignore this principle,

for example a connective such as *before* in sentence (6.43), the use of particular inflections such as the pluperfect in (6.44), or the contrast between progressive and non-progressive aspect in (6.45) to (6.47), with or without an additional connective. In contrast to children, however, they are able to rely on these markings to reconstruct the chronological sequence of denoted events when this sequence is not mentioned in its order of occurrence, while simultaneously organising discourse around its communicative focus (e.g. main events in the foreground vs. secondary events in the background).

- (6.43) Before Mary ate an apple, she cooked dinner.
- (6.44) After Mary had eaten an apple, she cooked dinner.
- (6.45) Mary was eating an apple when John arrived.
- (6.46) John arrived while Mary was eating an apple.
- (6.47) Mary was eating an apple. At the same time, John arrived.

More recent evidence has concerned discourse factors that might affect children's uses of connectives at different stages during language acquisition. With respect to early stages, most longitudinal studies of spontaneous productions from the emergence of language onwards show that temporal connectives evolve gradually in discourse (Bennett-Kastor 1986; Fletcher 1979, 1981; Jisa 1984–5, 1987; Levy and Nelson 1994). As mentioned previously (Chapter 4), some researchers have also argued that scripts are essential contexts for the acquisition of cohesive devices during these early stages, affecting children's uses of connectives (among other devices) and more generally providing a major mechanism determining the development of time concepts (e.g. French and Nelson 1985; Nelson 1991, 1996). Some have even challenged the idea that children are unable to use devices appropriately because of their cognitive immaturity. Thus, when asked to speak about familiar scripted events, children as young as two to three years use a variety of devices, such as connectives (e.g. *before*, *after*, *so*) and inflections (timeless present), that cannot be observed in experimental situations involving less familiar events (French and Nelson 1985). Scripts, however, typically involve relatively 'simple' temporal relations, namely primarily sequences of successive familiar events, most or all of which are mentioned as being in the foreground of discourse and in the order that corresponds to their typical chronological order of occurrence. In contrast, other discourse types require constructing linguistically more complex types of relations, which are necessary for the regulation of information across utterances, for example relations that require resorting to devices that differentiate the foreground and background of discourse and that do not preserve chronological order.

In this respect, some research has also examined particular discourse factors affecting how children use connectives across a wider age span in various situations.

In general, these studies show an evolution from the mere juxtaposition of clauses to co-ordination and then to more complex subordination relations among clauses in discourse (see Berman 1996; Berman and Slobin 1994). They also provide evidence showing some early precursors of conjunctions in the form of adverbials such as English *also* or *again* (Berman 1998), as well as evidence suggesting that children do not master adult functional properties of connectives until relatively late, despite their frequent early uses of 'correct' forms at younger ages (Berman 1996, 1998; Berman and Slobin 1994; Jisa 1984–5, 1987; Peterson and McCabe 1988). Thus, early uses of some connectives such as the English conjunction *and* (and related equivalents in other languages) at first do not really express any semantic relationships, serving an all-purpose cohesive function in connecting successive utterances in discourse and/or in marking that a conversational turn is not over. The expression of simultaneity in discourse, for example by means of conjunctions such as English *when*, *while*, or *as*, also seems to be a late development (e.g. Clancy *et al.* 1976; Feagans 1980; Silva 1991), notwithstanding the fact that simultaneity is in some respects simpler than order relations expressed by conjunctions such as English *before/after* (e.g. Clark 1970, 1971). Thus, Silva (1991) finds that with increasing age (five to twelve years) children mark simultaneity with different devices (*when*, then *while*, then *as*) and they make increasing use of preposed *when*-clauses to organise discourse. Interrelations are also observed in children's use of predicates, of verbal inflections and of connectives (e.g. Silva 1991; Youssef 1990), although the patterns that are found in child language differ in some respects from those that are found in adult language. For example, Silva (1991) finds that children are much more likely to use durative predicates in *when*-clauses as compared to adults, who show a clear preference for punctual predicates in these clauses. One reason is that children use the conjunction *when* in discourse contexts where adults use other conjunctions (*while*, *as*).

Cross-linguistic studies of child discourse across different languages (Berman 1996, 1998; Berman and Slobin 1994) also show gradually more productive and complex uses of connectives between three and ten years and until adulthood across languages that display different typological properties. Such uses include the marking of local linear connections among events, as well as the marking of a global hierarchically organised action-structure, for example episodic boundaries, processes of foregrounding and backgrounding, and the expression of causality in relation to the thematic structure of the plot. As will be shown subsequently on the basis of analyses of connective use in narrative productions (see Chapter 10), some evidence also shows important differences in how these devices are used. In particular, although our data show similar progressions in connective use for the grounding of information in discourse across four languages (English, German, French, Chinese), the Chinese corpus also reveals a higher and more precocious reliance

on connectives than in the other languages (where temporal-aspectual morphology is available), as might be expected on the basis of the properties of this language (absence of temporal morphology).

Comparisons of (French) children's productions across different discourse types, as well as in the two oral and written modalities, also show differential uses of these (and other) devices as a function of discourse type (e.g. Bronckart 1976, 1985; Bronckart *et al.* 1985; Bronckart and Schneuwly 1991; de Weck, 1991; de Weck and Schneuwly 1994). For example, children's performance was compared in the following situations: *situational discourse* (providing explanations for how to construct an object), *theoretical discourse* (describing an object), and *conversational narratives* (telling what happened the day before). Devices serving as *textual organisers* (connectives, adverbial or prepositional phrases, oral punctuation) fall into five classes, depending on the operations performed: providing textual anchoring (e.g. *un jour* 'one day', *hier* 'yesterday'), marking the macrostructure of the text (e.g. *puis* 'then', *C'est alors que* 'At this point, so then'), contributing to cohesion (e.g. *tandis que* 'while', *puisque* 'since'), moralising (*malheureusement* 'unfortunately'), and ensuring continuity of the textual chain (*bon!* 'well'). The results show differential uses of these devices in older children's productions, for example devices marking continuity are frequent in situational discourse and in theoretical discourse, but rare in narratives; inversely, those anchoring texts are frequent in narrative discourse, but rare in the other discourse types. Comparisons across conversational narratives and picture-elicited ones (de Weck 1991) also show very different types of anchoring, as reflected by a variety of devices, including connectives, verbal morphology (present vs. past), and referring expressions (e.g. uses of pronouns).⁵

These different lines of research focusing on children's uses of this second type of temporal-aspectual markings, then, point to early uses of connectives, which may be facilitated in some discourse situations, but which nonetheless continue to evolve with increasing age in other discourse situations and in relation to other devices, such as temporal-aspectual verbal morphology. This progression reflects general cognitive factors, but also children's growing sensitivity to discourse pragmatic factors, resulting in a more complex type of discourse organisation that is not limited to the mere description of sequences of successive events and that extends to the marking of the foreground and background as a function of communicative focus.

6.3 Summary

In summary, the available developmental literature focusing on language acquisition in the two domains of spatial and temporal-aspectual devices points to two directions. First, much research postulates a universal developmental sequence in one or the other domain, which is presumed to be determined by

underlying cognitive and perceptual processes, common to all children, regardless of their native language. In the spatial domain, the acquisition of devices such as prepositions seems to follow the same progression across different languages, suggesting that some basic general knowledge is the main factor determining development. Similarly, with respect to temporality, quite a number of studies support the *defective tense hypothesis*, according to which children's uses of temporal-aspectual devices (verbal morphology, aspectual particles) is tightly linked to predicate types, reflecting universal concepts of situations, which are assumed to be present initially. According to this hypothesis, children's cognitive immaturity during early phases leads them to focus essentially on the results of events in the immediate speech situation, and further cognitive development allows them to decentre away from the strong attraction imposed by their immediate perception. In addition, studies of connectives have argued that children's use and comprehension of these devices are determined by an underlying cognitive development. Thus, during early phases, children rely on the principle of chronological ordering, according to which the order in which events are mentioned corresponds to the order in which these events occurred.

More recent studies, however, have begun to document cross-linguistic variations in language acquisition across both domains. In the domain of spatial reference, an increasing number of studies have observed differences of two types. First, although some studies report a similar developmental sequence across very different languages, they also observe variations in the rhythm of development. For example, the same spatial relation may be more or less difficult for children to apprehend, depending on the specific properties of their native language (e.g. prepositions vs. postpositions). Second, cross-linguistic studies focusing on children's representation of static or dynamic situations show that they cut up the semantic universe of spatial relations in very different ways or focus their attention on different aspects of motion. Similarly, with respect to the acquisition of tense-aspect morphology, some cross-linguistic comparisons either falsify the defective tense hypothesis or point to the need to qualify it. Thus, results concerning some languages simply do not follow the predicted pattern, while results concerning other languages only support the hypothesis for the earliest phases characterising the emergence of language. In addition, a number of studies show the impact of discourse determinants on the acquisition of temporal-aspectual devices and cross-linguistic analyses show that children focus on different aspects of narrated situations, depending on the tense-aspect system of their language.

It should be noted that such cross-linguistic differences seem to be recurrent across a variety of languages, of databases and methodologies, and of developmental phases. Such recurrent results in different domains raise the fundamental question of the role played by two types of determinants and their interaction during language

acquisition: universal cognitive processes that would be language-independent, on the one hand; language-specific factors that would affect language development and cognitive organisation more generally, on the other hand. As a result, researchers have begun to revive Whorf's *hypothesis of linguistic relativity* (see Chapter 2), suggesting that specific properties of each language (or language family) affect the *habitual behaviour* of speakers by directing their attention to different aspects of the reality surrounding them, which thereby become more or less salient and accessible in everyday situations. We return to an evaluation of this version of the hypothesis in Chapter 11, after a presentation of relevant cross-linguistic data focusing on all three of the domains considered so far (person, space, time). Before turning to these data, we begin the following chapter with a summary of the methodological problems encountered throughout the literature reviewed across domains, which will serve as the basis for the methodology adopted in the present study.

II A cross-linguistic study of children's narratives

7 *Methodological issues*

As recurrently noted throughout the review of the developmental literature presented in the preceding chapters, some pervasive methodological problems plague the study of language and/or discourse development, resulting in divergent conclusions and claims concerning the timing, course, and determinants of acquisition. The first part of this chapter (Section 7.1) summarises these methodological problems, showing that studies differ along a considerable number of variables, making it difficult to compare and to generalise results. Taking this methodological discussion as a starting point, the remainder of this chapter (Section 7.2) then presents the rationale, methodology, and database of the cross-linguistic study to be presented in subsequent chapters, which was designed to address some of the unanswered questions previously raised.

7.1 Control of relevant variables

As noted previously (Chapters 4 to 6), the available developmental research on discourse development and/or on the acquisition of particular linguistic devices in several domains of child language presents some divergent results and conclusions concerning the factors that might determine acquisition. I argued that some of these divergences result from the different theoretical foci adopted by researchers across various disciplines and traditions. In addition, I briefly indicated some problems resulting from a pervasive methodological heterogeneity across studies, to which I now turn in more detail. I consider below different methods of data collection (Section 7.1.1), as well as a number of variables that require adequate control: discourse situations (Section 7.1.2), tasks and adult interventions (Section 7.1.3), materials and their mode of presentation (Section 7.1.4), and background knowledge conditions (Section 7.1.5).

7.1.1 Longitudinal and cross-sectional methods of data collection

Child language data can be collected with longitudinal or cross-sectional methods, which provide different types of information concerning language acquisition. The longitudinal method typically focuses on naturalistic data.

It provides extremely detailed information concerning the development of a relatively small number of children, followed regularly at close intervals during several years. It allows the researcher to observe the emergence of language and small changes during subsequent phases of development on the basis of language use in natural situations, such as everyday interactions between the child and adults or peers. The information is rich, but necessarily limited with respect to the representativity of the samples, and it is often difficult with this method to control the numerous variables involved in a given situation. In comparison, the cross-sectional method examines groups of subjects, selected among particular ages, in particular situations involving controlled procedures and materials. This method allows the researcher to evaluate a representative number of subjects and to control all the variables assumed to be relevant, therefore making it easier to generalise conclusions to a wider population. However, it is limited by the fact that the obtained information is restricted to particular measures and situations, as well as to particular ages, providing no additional cues concerning fine-grained transitions from one age to another.

Given these advantages and disadvantages, it is fair to say that the longitudinal method allows a better grip on fine transitions during the process of emergence, while the cross-sectional method is perhaps most adequate for the controlled study of specific phenomena during later stages of development. Combinations of these two methods have also become frequent, for example controlled measurements of the particular abilities of individual children otherwise recorded longitudinally and/or repeated natural or controlled measurements of groups of children at different points in their development. The choice of one or the other method is often determined by the theoretical approach and aims of the researcher, but also by the time period that is most central to achieve these aims. As will be shown, these methods have led researchers to reach somewhat different conclusions. Thus, in some domains, more precocious skills have been typically reported by studies based on longitudinal naturalistic data than by those based on experimental cross-sectional data. This general difference (by no means corresponding to a perfect correlation) may be due to a great number of reasons. For example, the longitudinal method tends to focus on familiar situations and to allow contextualised inferences on the part of adults, which might lead the observer to attribute more knowledge to the child, as compared to other more experimental situations, which are frequently less ecological. In addition, diverging claims concerning early child language simply result from individual differences across the corpora of different children. In this respect, although such variations across children are a potential problem in all language acquisition studies, they are particularly acute and recurrent in longitudinal studies of early phases of development.

7.1.2 Discourse type

Conclusions are also drawn on the basis of various situations, which present very different properties. One of the most general factors across these situations corresponds to what might be called 'discourse type'. This factor is not easy to define, because it is comprised of a number of different dimensions, including first and foremost the communicative goal to be achieved, but also various parameters of the immediate situation, such as the participants and their relations, the overall setting, the type of content denoted, the presence of relevant entities denoted, the nature of the background knowledge conditions, and so on. Among other factors, the uses of linguistic devices vary as a function of whether the speaker is making conversation mainly to establish social contact or to pursue some other goal, such as to win an argument or to transmit information when providing explanations or when narrating events of various types (e.g. ongoing immediate events, past events of personal experience, conventionalised fictional stories such as fairy tales, etc.). As noted previously (Chapters 5 and 6), research comparing a number of such discourse types shows that children's production of a variety of devices (referring expressions, temporal-aspectual markings) vary as a function of communicative goal (Bronckart 1985; Bronckart *et al.* 1985; Bronckart and Schneuwly 1991; de Weck and Schneuwly 1994; de Weck 1991).

Although discourse type is in principle orthogonal to the method used, the longitudinal method focuses more on some forms of discourse, particularly conversations. Conversations vary with respect to numerous variables and consequently conclusions concerning precocious discourse-internal uses of linguistic devices on the basis of such data (e.g. Charney 1978; Huxley 1970; Keenan and Klein 1975) typically do not allow us to determine unambiguously whether children's uses are deictic or discourse-internal (Chapter 5). The relation between these two different types of uses in development must be further explored. For example, some of the evidence reviewed in previous chapters suggests that uses of indefinite forms in deictic labellings (utterances of the type *That's a dog* or merely *Look! A dog!*) may constitute primitive referent introductions, which serve as the developmental precursors for later discourse-internal uses of the same forms, particularly in situations where the interlocutors do not share sufficient background knowledge about the referent denoted in discourse (also see Section 7.1.5 below).

Furthermore, naturalistic data as they have been traditionally collected typically allow no control over the content that is talked about. As pointed out in relation to the denotation of entities (Chapter 5), children's deictic uses may simply result from the natural tendency of any speech participant to talk mostly about the here-and-now in these conversational settings, making it difficult to determine if children are capable of displaying discourse-internal uses when denoting remote situations.

In addition, as pointed out in relation to temporal reference (Chapter 6), a large number of researchers have put forth the *defective tense hypothesis*, according to which children use tense-aspect morphology to mark the results of events, rather than temporal relations, because of their cognitive immaturity. However, among the many questions raised by this claim, one problem directly linked to discourse type is that perceptible results may be the most salient property of events occurring in the immediate speech situation. It may therefore be no coincidence that this property is indeed most talked about not only by children, but also by the adults who constantly draw their attention to this aspect of the situation as they participate in conversations with them (e.g. de Lemos 1981). Although this problem does not in itself provide sufficient evidence against the defective tense hypothesis, it constitutes a confounding variable that must be controlled.

If we now focus on discourse types that involve the narration of past events, numerous variables contribute to defining different types of narrative situations. Among other points to be discussed below, narratives that occur during the course of conversations in naturalistic settings are typically narratives of personal experience and/or of familiar scripted events. As previously noted (Chapters 4 and 5), these narratives differ in many respects from other types of narratives elicited by more controlled experimental methods. Comparisons across some different narrative types (e.g. Bamberg 1997; Bronckart and Schneuwly 1991; de Weck 1991; Nelson 1986) indeed show more precocious uses of some linguistic devices in narratives of familiar events, as well as different uses altogether across narrative situations, for example more markings of the speaker's attitudes in narratives of personal experience. Furthermore, as discussed in more detail below, other variables affect children's narratives in controlled situations, such as the type of task in which they participate and the method used to elicit productions. Thus, uses of linguistic devices that are elicited by means of pictures differ depending on whether children describe or narrate events, resulting in different uses of referring expressions to denote characters or locations (e.g. more deictic uses that label characters or presuppose locations with picture descriptions) and in different uses of tense-aspect markings (e.g. which make less of a contribution to discourse grounding with picture descriptions).

7.1.3 Task and adult intervention

Different methods of elicitation in controlled experimental situations vary in numerous ways, all of which affect the findings that are reported. As previously shown (Chapters 4 and 5), relatively early or late abilities, as well as exophoric vs. endophoric uses, have been reported depending on the situations that have been examined, for example natural conversations vs. controlled experimental settings,

familiar vs. unfamiliar events in narrative situations, task difficulty, and so on (Pratt and MacKenzie-Keating 1985; French and Nelson 1985). In addition, some methods of data collection allow quasi-spontaneous uses, by merely controlling the materials and letting the child produce an entire stretch of discourse, while others involve numerous interventions on the part of the experimenter. As previously noted (Chapter 5), comparisons across these two types of elicitation methods require some care. For example, consider the studies conducted by Maratsos (1976) concerning children's use of the opposition between definite and indefinite referring expressions. The results indicate that children of three or four years use these forms appropriately to mark both specific vs. non-specific reference and given vs. new information. The method used in the production experiments consisted of providing children with a stretch of discourse, followed by a question that requested a referring expression. Such a method presents two problems. First, children's responses merely consist of isolated referring expressions, the functions of which need not be the one assumed by Maratsos, for example indefinite forms could be used in elliptical predicating constructions (of the type *Who came to the man? [It's] a pig*), rather than to introduce referents in discourse (see also Warden 1977). Second, children's answers in the case of non-specific reference actually show different patterns depending on the nature of adult interventions. A statement such as *He doesn't have a dog or a cat* is somewhat odd (as compared to *He doesn't have any dog or cat*) and a subsequent question such as *Which does he like more?* either presupposes (inappropriately in this context) the existence of a specific entity or would be more adequately answered by a plural expression in English given the discourse context (e.g. *dogs*, rather than *a dog*).

The impact of adult interventions is also apparent if one examines the information that can be elicited by means of various types of scaffolding, for example in the form of questions. It is a well-known fact that children typically display better performance when they are helped by some form of adult guidance. The role of adult scaffolding has led to some views of language and/or cognitive development that place great emphasis on the social context of learning (e.g. Bruner 1983; Vygotsky 1962; see the papers in Hickmann 1987a; Wertsch 1985). With respect to narrative tasks, more content can be elicited from young children if appropriate questions are asked. For example, although four-year-old children typically leave out some aspects of story content when narrating alone, they are able to provide additional information in answer to adult questions, showing that they have a representation of this content (Hickmann 1987a; Trabasso and Nickels 1992).

Furthermore, different conclusions might be drawn on the basis of tasks requiring seemingly similar abilities, which are nonetheless measured by different means. Thus, it is a common observation in developmental research that children display

a better performance in comprehension than in production. Another finding is that their performance may vary in situations that require different levels of control (Chapter 5). Thus, recall Karmiloff-Smith's results (1986, 1992) concerning children's spontaneous self-repairs, which show their early ability to view linguistic devices as part of a system of form–function relations, before they can use and talk about these devices appropriately. Similarly, further evidence by Hickmann and Schneider (1993) shows that young children are able to detect and correct anomalous referring expressions serving to introduce referents in discourse in some tasks (retelling stories, repeating sentences extracted from them), but not in others that require a higher level of control (judgements).

7.1.4 Narrative stimuli and mode of presentation

With respect to narrative productions, studies vary along a myriad of variables, such as the nature of the stimuli used to elicit narratives and their mode of presentation. These stimuli vary with respect to many properties, each of which could have an impact on children's uses of linguistic devices. For example, stories vary non-trivially with respect to their length and structure. Such properties have consequences on the density of coreference and on the marking of episodic boundaries, and they therefore affect children's uses of devices such as pronominals or temporal-aspectual markings. Furthermore, stories vary a great deal with respect to the number and types of referents involved, which differ along several dimensions, such as animacy, humanness, and main vs. secondary status. Previous research clearly shows effects linked to such variables on uses of referring expressions and clause structure for the introduction of referents and for reference-maintenance (Bamberg 1987; Bamberg and Marchman 1994; Hickmann and Hendriks 1999; Hickmann *et al.* 1995; Kail and Hickmann 1992; Karmiloff-Smith 1981, 1987). Finally, stories also vary with respect to other properties, such as the extent to which they involve changes in spatio-temporal anchoring (closely linked to episodic structure).

Modes of presentation also have implications for the abilities that may or may not be displayed by children. For example, typical modes of presentation consist of picture sequences or films. Each of these methods has different implications for children's productions. In contrast to films, pictures avoid memory difficulties, since the to-be-narrated content remains constantly visible to the child (although it is also possible to remove the pictures before narration, resulting in yet a third mode of presentation). However, they also provide static frames, inviting a descriptive mode (rather than a narrative one) and/or deictic uses (rather than discourse-internal ones), particularly on the part of young children. A good case in point is the notorious

difficulty encountered by researchers in their attempts to elicit past tenses in young children's narrative productions on the basis of picture sequences (Berman and Slobin 1994; see other relevant results in Chapter 10). Another example is the divergence among studies claiming early vs. late mastery of devices marking new vs. given information status. As we saw (Chapter 5), MacWhinney and Bates (1978) find early uses of indefinite forms for the first mentions of referents, as well as no relation between word order and information status. The stimuli were sequences of three successive pictures that did not form stories and that were visually available to the children and their interlocutor. As a result, the procedure presumably elicited picture descriptions, rather than narratives, and children may have labelled the referents, rather than provided a true introduction of the referents. In contrast, other studies (e.g. de Weck 1991; Emslie and Stevenson 1981; Hickmann *et al.* 1996; Kail and Hickmann 1992; Karmiloff-Smith 1981, 1987; Power and Dal Martello 1986; Warden 1977, 1981) find late uses of indefinite forms for first mentions, with the exception of some early deictic uses in labellings, as well as a clear relation between utterance structure and information status (see also relevant results in Chapter 8). In all of these studies the stimuli were picture sequences or films that presented stories, and in most of them there was no mutual knowledge (but see below). Although it is not certain that these variables explain all of the variance, they might have contributed to the results. In fact, as noted in Chapter 5, a replication of MacWhinney and Bates' study with French children (Vion and Colas 1987) shows that, at least in this language, young children do make deictic uses of indefinite forms for first mentions.

Yet another means of presentation consists of reading stories to children. In this case, story retell and/or recall are typically measured, for example to determine whether children are sensitive to anomalies that have been introduced in the stimuli (Chapter 4). This mode of presentation has the obvious disadvantage that particular linguistic devices are provided, making it difficult to determine whether children could have produced these devices on their own. Indeed, systematic comparisons between narratives elicited with or without a prior reading of the stories show differences in children's performance as a function of this variable. In particular, previous results (Hickmann 1982) show that children's uses of referring expressions vary as a function of whether the to-be-narrated content is presented in the form of a story, as compared to films or pictures. Spontaneous narratives produced on the basis of filmed dialogues contain fewer appropriate referent introductions for the first mentions of all animate protagonists (including quoted participants and referents denoted by these speakers) in comparison to those produced on the basis of stories that describe these films, whether these stories are read to children instead of the film presentation or in addition to it.

7.1.5 Background knowledge conditions

Finally, a most crucial variable in the study of children's narrative abilities is the type of background knowledge that can be assumed in the situation. Two aspects of this variable are relevant here: the child's prior knowledge of the to-be-narrated content and the possibility of assuming mutual knowledge. First, as we saw (Chapter 5), the child's familiarity with the stimuli can have a facilitating effect, for example potentially resulting in the earlier emergence of particular strategies. Such a problem was noted in relation to the divergent results reported by Karmiloff-Smith (1981) and by Bamberg (1987) with respect to the *thematic subject strategy*. This strategy is observed as early as three years of age by Bamberg (as against six or seven years in Karmiloff-Smith's study), despite the fact that the story used as stimulus was much more complex. This divergence may result from the fact that the children in Bamberg's study were already quite familiar with the story: before producing their narratives, children had already told the story once before, as well as heard it told by an adult twice. As a result, they had ample opportunity to construct a global story schema, in which the thematic role of the main protagonist was obvious to them. In contrast, the children in Karmiloff-Smith's study discovered the story for the first time just before narrating the picture sequences.

Second, mutual knowledge is also clearly a most central aspect of speech situations, determining the uses of a variety of linguistic devices. This aspect of the speech situation depends on a number of variables determining what knowledge the speaker can assume on the part of his or her interlocutors. As has been shown by studies focusing on referential communication, variables related to the interlocutors' competence, including academic status, deafness, and co-operativeness, affect speakers' performance from a young age on (e.g. Anderson *et al.* 1984; Bonitatibus *et al.* 1988; Brownell *et al.* 1988). With respect to the studies reviewed previously (Chapter 5), an unambiguous evaluation of deictic and anaphoric uses of referring expressions in conversations partially depends on mutual knowledge conditions. Similarly, picture-elicited narratives vary a great deal depending on whether the child is addressing an interlocutor who has access to the pictures (mutual knowledge condition) or no such access in various situations (no mutual knowledge). Recall that in Bamberg's (1987) study children were telling a story on the basis of a picture book, which was mutually shared during narration. In such a situation, it is not surprising that children do not use indefinite forms for referent introductions, since the situation does not require the marking of new information status. In addition, as noted above, the children were quite familiar with the story. This additional methodological detail might explain why they used mostly definite forms in this case, rather than indefinite ones in deictic labellings, as compared to a situation where the referents were entirely unknown to them at the time of testing, as was the case in other studies previously mentioned (e.g. MacWhinney and Bates 1978; Vion

and Colas 1987). More generally, studies in which knowledge is mutual typically report few uses of indefinite forms on first mentions (e.g. Bamberg 1987), while those in which knowledge is not mutual report more complex results, partly showing children's early inability to use these forms for referent introductions and partly showing early deictic uses (e.g. Warden 1977, 1981; Emslie and Stevenson 1981). Furthermore, a direct comparison of these two types of situations (Hickmann *et al.* 1995; Kail and Hickmann 1992) shows that, although children from six years on make differential uses of referring expressions as a function of mutual knowledge, only nine- to eleven-year-olds systematically use adequate forms for referent introductions in the absence of mutual knowledge. In addition, only the eleven-year-olds show a maximal reliance on discourse-internal coreference for the organisation of reference maintenance in this situation.

7.2 Design of the present study

Subsequent chapters present the results of a cross-linguistic study designed to address some of the theoretical questions raised in preceding chapters in the light of the methodological considerations discussed above. In this section, I describe the general design of this study and the rationale for its methodology (Section 7.2.1), then summarise the nature of its database (Section 7.2.2), the properties of the languages compared (Section 7.2.3), as well as the general guidelines that served to prepare the database (Section 7.2.4) for the analyses to be presented subsequently (Section 7.2.5).

7.2.1 General design and rationale

The database consists of narrative productions elicited across four languages (English, German, French, and Mandarin Chinese) and a wide age range (children between four and ten years, as well as control groups of adults) by means of an experimental procedure that had the following general rationale, in light of the points raised above. First, the procedure was designed in such a way as to ensure some control over the to-be-narrated content, which was presented by means of the same stimuli to all subjects. Second, a picture mode of presentation was chosen, despite some of the problems raised above, since it avoids taxing children's cognitive capacity, given their memory limitations. Third, however, background knowledge conditions in the narrative context were controlled in such a way as to maximise discourse-internal cohesion, while minimising young children's potential cognitive or processing difficulties. In particular, mutual knowledge could not be assumed, because the stimuli were not accessible to the interlocutor and could not be assumed to be otherwise known by this person. This type of situation, then, invited children to rely on discourse, rather than on non-linguistic context, in order to communicate their narratives efficiently. Finally, the procedure was also meant to allow

within-subject comparisons relevant to specific questions in each domain. For this reason, two narratives were elicited from each subject by means of different picture sequences, varying along a variety of dimensions that are relevant to the study of children's language uses in all three domains. The same stimuli and procedure were used with all groups of subjects in order to provide these various types of control across ages and languages.

7.2.2 Database

7.2.2.1 Materials

Narratives were collected with two picture sequences (hereafter HORSE and CAT stories, shown in the Appendix), consisting of black and white drawings without text (five and six pictures, respectively). Given the aims of the project, these stories were designed to differ in several ways. First, they differed with respect to the status of the animate referents. In the HORSE story there is a clear main protagonist (horse) and two secondary ones (cow, bird), according to several converging criteria: the horse is most frequently displayed, since it appears first alone (first picture) in addition to being portrayed on all remaining pictures; it is mostly agentive (running, jumping), except at the end of the story (where it falls and is nursed by the secondary characters); it is drawn in such a way as to be bigger than the other animals and to always appear in full view. In contrast, no such clear difference in the status of the characters can be found in the CAT story. Among the referents that appear first (the bird family), some are not agentive (the baby birds) and another disappears until close to the end of the story (the mother bird). In addition, although the cat appears early and plays a central agentive role up to the middle of the story, the dog then acts on it (pulling it down, chasing it away). At this point of the story, then, the dog thereby competes with the cat for main status, even though it appears for the first time rather late in the story (picture 4).

Second, the CAT story requires a more complex temporal organisation, since it shows main events that overlap or occur in close temporal proximity. In particular, arrivals on the scene coincide with main plot events, for example the cat arrives as the mother bird flies away, the dog arrives as the cat climbs up the tree, the mother bird returns as the dog pulls the cat down. In comparison, main events are chronologically ordered in the HORSE story, despite some overlaps involving more secondary events (e.g. the bird and the cow look at the horse as it jumps, the bird brings a first-aid kit as the cow helps the horse). Finally, with respect to spatial reference, both stories involve a number of spatial reference points that play a role in how the protagonists are located throughout the plot: the meadow and fence (HORSE story), the tree and nest (CAT story). Both stories also show a number of motion events: arrivals on the scene (both stories) and displacements in space (e.g. running, jumping, falling in the HORSE story; flying, climbing, falling in

the CAT story). In this respect, the CAT story involves more changes of location in relation to the initial spatial origo provided by the scene in comparison to the HORSE story (the departure and return of the mother bird, the departure of the cat and dog, etc.).

7.2.2.2 Procedure

The children were seen individually. They were asked to participate in a ‘story-telling game’, in which they had to tell stories for someone who did not know these stories, who would not be able to see them, and who would have to tell them over. There were two female adult experimenters: one (A1) presented the game and materials, while the other (A2) acted as naive interlocutor. A1 first asked the child to blindfold A2 and to make sure that she could not see anything any more. She then asked the child to look at one picture sequence, to tell the story to A2 as completely and as accurately as possible, and finally to help A2 tell it back. A1 then moved away to the back of the room, leaving the child and A2 to interact in a dyadic situation. At the end of the child’s story, A2 told the story back, using components from the child’s own narrative and occasionally requesting help at random points. At the end of A2’s retelling, A1 returned to present the second picture sequence and the procedure was repeated.

During the child’s story, A2 intervened as little as possible, merely providing phatic contact in the form of verbal nods (of the type *uh huh*). Other types of interventions on the part of A2 only occurred occasionally with children who displayed some difficulties in narrating (a few in the youngest age group). A2’s interventions were designed in such a way as to influence children’s productions as little as possible, thereby enabling the analyses to focus on children’s spontaneous productions. A rough scale of intervention was used, which ranged from some that were least intrusive to others that were most intrusive. In the great majority of cases, interventions consisted in repeating the last utterance or utterance segment just produced by the children, thereby enabling them to continue. If such interventions did not suffice, A2 asked general questions (e.g. *What happened?*). If further specific scaffolding became necessary and if this scaffolding presupposed prior knowledge of the story, A1 joined the dyad again to request or to provide some information (e.g. *What did he see?*), then left again as soon as the child was able to continue on his or her own. Whenever such specific interventions had occurred, A2 then immediately returned to least contaminating interventions of the phatic type (see more details in Hickmann *et al.* 1994). All children participated in the task with obvious pleasure. The two stories were told one after the other and the whole sitting was audiotaped. The analyses focus on children’s narrative productions before each of A2’s retelling. An adapted procedure was used with the adults. These subjects had to tell the stories

Table 7.1 *Samples of subjects in the study*

		English	French	German	Chinese
Children I	Range	3;11–4;11	4;5–5;4	4;2–5;5	4;2–5;4
	Mean	4;4	4;10	4;10	5;3
	N	20	10	10	10
Children II	Range	6;5–7;4	7;0–7;4	7;2–7;7	7;0–7;6
	Mean	7;0	7;1	7;4	7;3
	N	20	10	10	10
Children III	Range	9;0–10;5	9;11–10;11	9;2–11;4	10;2–10;9
	Mean	9;10	10;6	10;4	10;6
	N	20	10	10	10
Adults	N	20	10	10	10
TOTAL	N	80	40	40	40

into the tape-recorder for a future naive listener, who would have to tell the stories on the basis of the recordings alone (without having access to the pictures). In all groups, half of the subjects began with one story, the other half with the other story.

7.2.2.3 *Subjects*

A total of 200 subjects took part in the study and therefore a total of 400 narratives were analysed (two per subject). The subjects included monolingual subjects of four language groups: German, French, English, and Mandarin Chinese. The following age groups were included in all language groups: children of four to five years (hereafter ‘Children I’), of approximately seven years (hereafter ‘Children II’), and of approximately ten years (hereafter ‘Children III’), as well as control groups of adults. In all language groups, a few subjects from the youngest age groups were left out from the corpora and replaced by others, because at least one of their narratives consisted entirely of labellings, despite encouragements to tell what happened in the story. There were twenty subjects per age group in English, ten in the other languages.¹ Table 7.1 summarises the different age groups that were examined in each language, as well as the sample size, age range, and age mean for each one. Testing took place in the following cities: Chicago (English sample), Paris and Marseille (French sample), Köln and Frankfurt (German sample), Peking (Chinese sample). All children were seen in school settings, that is kindergartens (Children I) and primary schools (Children II and III). Depending on school systems and on testing time, primary school children were in the following school years: those of Group II were at the end of their first year (English) or at the beginning of their second year (other languages); those of Group III were at the end of their fourth year (English) or at the beginning of their fifth year (other languages).

7.2.3 Languages compared: summary of properties

As was illustrated in preceding chapters (see particularly Chapter 3), the languages compared in this study present different types of similarities and contrasts. With respect to general properties, the languages compared belong to different families: Germanic (English, German), Romance (French), and Sino-Tibetan (Chinese). Traditional analyses group English, French and Chinese as SVO languages, while German is viewed as a V2-language (verb in second position in main or independent clauses). However, as discussed previously, some of this typological grouping must be qualified. For example, whereas English presents a relatively fixed SVO word order, French presents two obligatory orders (SVO with nominals, SOV with clitic pronouns), as well as flexible utterance structure as a function of discourse factors (e.g. presentatives, dislocations, pre- and postpositioning of noun phrases). Finally, the four languages present different degrees of richness in their nominal and verbal morphology: roughly as follows: German > French > English > Chinese.

The four languages also vary in the extent to which they rely obligatorily or optionally on nominal determiners or on NP position for the marking of information status. The three Indo-European languages structurally require nominal determiners and provide an obligatory opposition between definite and indefinite forms to distinguish given and new information, merely relying on clause structure optionally. The reverse is true in Chinese, where nominal determiners are structurally optional and information status obligatorily marked by clause structure (new information must be postverbal).

With respect to the expression of motion and location, English, German, and Chinese are *satellite-framed* languages, which mark manner in the verb root and other types of spatially relevant information in verbal satellites (particles, prepositions). In contrast, French is a *verb-framed* language (Talmy 1975, 1983, 1985, 2000), which mainly marks path in the verb root, expressing other types of information by means of peripheral modifiers. The languages also display some specific properties, such as the agglutinative nature of resultative verb constructions in Chinese and case markings differentiating types of motion in German (with or without a change of location).

With respect to temporal reference, the languages vary not only in the extent to which they provide morphological markings, but also in the transparency and symmetry of these markings with respect to tense and aspect. English provides a relatively transparent system, which marks progressive and non-progressive aspect in all tenses. In contrast, French and German neutralise aspect in the non-past, providing different types of oppositions in the past, for example the opposition between perfective and non-perfective past is much more clear-cut in French. As for Chinese, it provides no grammaticalised tense, but particles differentiate perfective

and imperfective aspect, and adverbials mark temporal-aspectual distinctions. In all languages, temporal-aspectual markings are partially linked to the temporal structure of predicates (particularly *boundedness*) and to principles of discourse organisation (*grounding*). Other markings such as connectives also contribute to discourse organisation and they are a central means of discourse organisation in Chinese.

7.2.4 *Preparation of the database*

After data collection, the narratives were transcribed, then segmented into clausal units, each of which was coded in multiple ways, according to a detailed coding system, which enabled automatised analyses of this large cross-linguistic database (see details in Hickmann *et al.* 1994). The transcriptions are orthographic, except for local phonetic transcriptions with problematic segments (e.g. idiosyncratic uses, ambiguities with French clitics). The Chinese data were first transcribed in Chinese characters which were then converted into Pinyin and accompanied by a morphemic and a free translation. All transcribed narrative texts were then segmented into units in preparation for the coding of various linguistic devices. Various general and language-specific criteria were used for unit segmentation. Roughly, in all languages, most units correspond to clauses and typically contain a core verb (whether finite or non-finite) with all of its arguments and additional elements in the form of adjuncts. However, depending on a number of general and language-specific criteria, some units do not contain verbs (e.g. labellings, ellipsis, and adjectival verbs in Chinese) and others contain complex verb forms (e.g. modal verbs, periphrastic tense and aspect, and verb-complement constructions). Finally, each segmented unit was coded for a number of properties described below, using general categories for all languages whenever possible and language-specific ones whenever necessary.

7.2.4.1 *Referring expressions*

In all languages, referring expressions were differentiated into several classes of nominals and of pronominals, according to various criteria (e.g. presence and type of determiner in all languages and of classifiers in Chinese, explicitness of pronominal use). Given the goals of the study, which focused on discourse organisation, the following types of NPs were identified and excluded from the analyses: zero elements in untensed clauses (e.g. (7.1) and (7.2)); reflexive pronouns (e.g. *himself* in (7.3)); possessive pronouns involving clause-internal coreference (e.g. *her* in (7.2) and (7.4)).²

- (7.1) While **0** jumping, he hit the fence.
- (7.2) She went **0** to get food **0** to feed **her** babies.
- (7.3) He hurt **himself**.
- (7.4) She feeds **her** babies.

Two sets of categories characterise the role of each NP within its clause on the basis of semantic and formal criteria, with an additional procedure when these roles were not relevant or difficult to apply (e.g. ambiguity, idiosyncratic uses). The same set of semantic roles was used in all languages (*agent, patient, experiencer, instrumental, beneficiary, locative*), as well as a remaining indeterminate category (*null*). This coding is partially related to predicate properties, which are themselves differentiated along several general dimensions, such as agentivity, kinesis, perception, and so on (see Hickmann *et al.* 1994). In the three Indo-European languages various features (case marking, verb agreement, position) were used to differentiate NPs in terms of several grammatical roles (hereafter *subject, direct object, indirect object, other oblique roles*). In Chinese the morphological markings are insufficient to define subjects in the present database (no subject-verb agreement, infrequent aspect particles).³ Chinese NPs were coded as subjects when they carried either the only main thematic role, for example (7.5), or the first main thematic role in the clause, for example (7.6) (relevant NPs are shown in bold).

(7.5) **Ta**1 zai4 pao3.
(3p IMP run)
(‘He’ [SUB/AGT] s running.’)

(7.6) **Gou**3 zhui1 mao1 qu4.
(dog chase cat go)
(‘The dog [SUB/AGT] chases the cat.’)

In addition to form and role, additional coding differentiates whether NPs denote animate or inanimate referents, identifies the particular referents denoted (all animate referents, a subset of the most frequently mentioned inanimate ones), as well as cases of ambiguities and cases where NPs do not refer to specific referents for various reasons (e.g. dummy subjects, generic uses). Finally, NPs are distinguished as a function of whether they introduce a referent (i.e. first mention of the referent) or maintain reference to it (i.e. if the referent has already been mentioned at least once in previous discourse).

7.2.4.2 *Clause structure*

The coding provides information about the position of each NP in its unit. In units containing verbs, the coding first indicates whether each NP is placed before or after the verb (i.e. the tensed verbal component, when relevant). Second, for some units (those containing finite verbs in the Indo-European languages, all units in Chinese) it provides information concerning the order of the major constituents in relation to each other. Elements in initial position are identified, even when they are not referring expressions (e.g. temporal/aspectual adverbials), given

that they may account for the placement of NPs in postverbal position (obligatory in German, optional in some clause types in the other languages). Additional aspects of clause structure are identified. Different types of presentational units are distinguished, such as existentials (*There's a cat*), demonstrative predicating constructions (*This is a cat*) and presentationals involving an 'external' perspective (*We see a cat*). Presentational *unit clusters* are also identified when more than one clause is involved in the presentation of referents (e.g. *Il y a un chat / qui arrive* 'There's a cat that's coming'). Main vs. subordinate clauses are differentiated systematically in the Indo-European languages. Since the criteria necessary for this distinction are not available in most Chinese clauses (e.g. finite versus non-finite predicates, subordinating conjunctions, word-order, etc.), a combination of formal, semantic, and pragmatic criteria is used to identify cases where two or more clauses belong to the same unit cluster (see Hickmann *et al.* 1994). Finally, various types of clause structures are systematically identified, such as dislocations (e.g. (7.7) and (7.8)), cleft constructions (e.g. (7.9)), Chinese *ba3*-constructions in which a preverbal patient NP is accompanied by an object marker (e.g. (7.10)) or Chinese *bei-* or *gei-*constructions, akin to passives (e.g. (7.11)).

- (7.7) Et le chien il lui tire la queue.
(‘And the dog it him pulls the tail.’)
- (7.8) Und der Hund, der zieht die Katze runter.
(‘And the dog, he pulls the cat down.’)
- (7.9) And what she brought back was a worm.
- (7.10) Gou3 ba3 mao1 da3-le.
dog BA cat hit LE
(‘The dog hit the cat.’)
- (7.11) Mao1 bei4 da3-le.
cat BEI hit LE
(‘The cat was hit.’)

7.2.4.3 *Spatial devices*

With respect to spatial reference, particular attention was placed on units expressing the motion and location of animate referents. For each of these units, the coding identifies properties of the following components: predicate types, the entity that is in motion and/or localised (the *Figure*), the entity to which the Figure is related in space (the *Ground*), and the type of spatial relation expressed between the Figure and the Ground. Predicate types included static predicates (*The cat is sitting under the tree; There's a horse*), dynamic predicates representing events as taking place within a general location (*The horse is running in the meadow*), and dynamic predicates representing a change of posture (*The cat sits down*) and/or a change of

location (*The dog pulls the cat down*). Dynamic predicates were further coded with respect to *manner* (e.g. *run, walk*); *deixis* (e.g. *away, back*); *direction* (e.g. *up, down*); and *causativity*, typically combined in some languages with *deixis* (e.g. *chase away*) or *direction* (e.g. *pull down*). Note that direction and deixis are encoded by particles in English and German, but by verbs in French, for example (7.12) and (7.13). As for Chinese, it often relies on resultative complex verb constructions to mark these distinctions, for example (7.14).

- (7.12) Le chat grimpe/monte à l'arbre.
(‘The cat climbs up/goes up the tree.’)
- (7.13) Le chat part en courant.
(‘The cat leaves running.’)
- (7.14) Mao1 pa2-shang4-qu4.
cat crawl-ascend-go
(‘The cat climbs up.’)

The presence of spatial expressions relating figures and grounds was also coded. These expressions included mainly spatial prepositions, particles, and simple pronominal adverbials (e.g. English *here, there*); or complex pronominal adverbials and other adverbial phrases (e.g. English *in there, upwards, underneath*; German *drin* ‘in there’, *driüber* ‘up there’, *oben* ‘above’, *unten* ‘underneath’; French *dessous* ‘under there’, *dessus* ‘on there’, *en haut* ‘up there’; Chinese *li3tou* ‘inside’, *shang4tou* ‘on top’, *xiamian4* ‘below’). Special codes were designed for cases where spatial expressions did not necessarily involve a specific ground and/or involved a ground that could not be identified for various reasons. For example, two different uses of German *da* (‘there’) were differentiated: sentence-initial uses such as (7.15) were not coded as grounds per se, whereas postverbal uses such as (7.16) were assumed to have a ground-like function.

- (7.15) **Da** kommt ein Hund.
(‘There comes a dog.’)
- (7.16) Das Pferd liegt **da**.
(‘The horse lies there.’)

In addition, a special procedure was followed in various cases where potential grounds and/or dimensions relevant for spatial reference were implied by utterances but were highly presupposed. For example, such cases include utterances where a ground was mentioned for the first time with a highly lean form (e.g. (7.17)) or utterances in which the vertical dimension was presupposed by a particle (e.g. (7.18)), an adverbial (e.g. (7.19)), or a predicate (e.g. (7.20)), in the absence of any previous mention of the relevant referent. Finally, the relative complexity of

grounds was coded in cases where several referents served this purpose (e.g. (7.21)) or where special clauses providing purpose or goal served as potential *clausal grounds* (e.g. (7.22)).

- (7.17) The mother bird was **in there**.
- (7.18) He climbed **up**.
- (7.19) Y'a un chat qui arrive **en bas**.
(‘There’s a dog that comes underneath.’)
- (7.20) Il **grimpe**.
(‘He climbs up.’)
- (7.21) The horse jumps **over the fence to the other meadow**.
- (7.22) She flies away **to get some food to feed her baby birds**.

7.2.4.4 *Temporal-aspectual markings*

The coding of temporal reference focused on predicate types, verbal morphology, aspectual particles, and connectives. In addition to the set of general categories used to differentiate predicates, distinctions related to boundedness and durativity were specifically relevant to the temporal structure of situations (see details in Hickmann *et al.* 1994). For the purposes of the analyses below, particular attention was placed on whether predicates were bounded (e.g. changes of location such as *She’s flying back to the nest*, *Elle part* ‘She leaves’) or unbounded (all static predicates and dynamic predicates with no change of location, e.g. *He’s running in the meadow*, *She’s flying around*). Verbal morphology was coded in terms of the language-specific distinctions in the system provided by each language. Different Chinese aspectual particles were also identified. In the case of the multifunctional particle *le*, additional information was provided concerning its position in relation to the verb and to the sentence (sentence-final vs. not, verb-final vs. not), given that these properties might be relevant to differentiating two meanings of this particle (see Chapter 3): perfectivity (necessarily verb-final) and current relevance (necessarily sentence-final).

Connectives included conjunctions and adverbial expressions, which were coded in terms of some general semantic properties, most of which cut across all languages compared (e.g. iteration, continuation, immediacy, anteriority, posteriority, simultaneity, left or right boundary). A distinction was also made in the Indo-European languages between subordinating and co-ordinating connectives, and additional special codes were used for Chinese connectives (e.g. for discontinuous ones such as *de shihou* ‘while’). A more general functional distinction was made among three general types of connectives: those that indicated temporal succession (e.g. English *and then*, *afterwards*); those that related events as being in the ‘same temporal

region' (e.g. English *while, in the meantime*); all others, typically plain co-ordination (English *and*) (see Chapter 10 for more details).

7.2.4.5 Additional information

Various annotations provide further relevant information, for example concerning ellipsis, ambiguities, repairs, commentaries produced by the children, and odd utterances (idiosyncratic markings for case, gender, number, or classifiers, etc.). A special procedure was also used in cases where young children's utterances were preceded by adult interventions in interactive sequences. The nature of the intervention was coded in terms of whether or not it could have influenced the child's subsequent utterances (*general* vs. *specific* interventions) and utterances that immediately followed a specific intervention were not included in the analyses.

7.2.5 Analyses

We turn to the analyses and results from this study in Chapters 8 to 10, which examine how the devices described above were used in the elicited narratives. Chapter 8 focuses on the devices used to denote the animate characters in the narratives: the horse, cow, and bird in the HORSE story; the mother bird, baby birds (treated as a group), cat, and dog in the CAT story. Particular attention was placed on evaluating the effects of several variables on NP types and positions. Chapter 9 examines all devices used to express motion and location. Analyses focus on the nature of the predicates used to represent the displacements of the animate characters and on the devices denoting the following referents that served to locate these characters: the meadow and fence in the HORSE story; the tree and nest in the CAT story. Chapter 10 examines all temporal-aspectual devices used in the narratives. Analyses focus on the relations among different types of devices, their relation to predicate semantics and their cohesive functions in relation to discourse context. In all domains special attention is placed on examining simultaneously sentence-internal and discourse-internal factors determining children's uses.

8 *Animate entities*

In this chapter we examine how the animate characters were denoted in the narratives, while analyses concerning inanimate referents are presented subsequently in relation to spatial anchoring (Chapter 9).¹ Recall that the compared languages vary with respect to several properties of the devices that are necessary for the marking of information status in discourse: their obligatory vs. optional nature, their global vs. local nature, and the parametric properties of the languages in relation to morphological complexity (see Chapter 3). In English, French, or German local markings (determiners) are obligatory to mark newness and global markings (clause structure) are optional for this purpose, whereas the reverse is true in Chinese. Furthermore, subjects are obligatory in English and French [-pro-drop languages], while Chinese and German allow null elements to various degrees [zero-topic languages], despite other differences between them in this respect (topic vs. subject orientation). A first set of results (Section 8.1) concerns how the animate referents are introduced in the narratives, with particular attention to speakers' reliance on local vs. global markings of newness and on the relations among these markings. A second set of results (Section 8.2) concerns the different means used for subsequent reference maintenance, with particular attention to the different syntactic, semantic, and pragmatic factors determining the forms and positions of subsequent mentions in different clause structures. The discussion (Section 8.3) shows that children's relative reliance on different markings of information status is partly determined by the obligatory vs. optional nature of these devices in a given language, as well as by their relative functional complexity, given how languages map discourse and grammatical functions onto forms.

8.1 Referent introductions

With respect to referent introductions, a first set of analyses (Section 8.1.1) examines all the referring expressions that were used on the very first mention of these referents, with particular attention to whether or not they contained local markings of newness. A second set (Section 8.1.2) focuses on the position of these noun phrases in relation to the verb and, more generally, on the particular types

of clause structures in which they were used for referent introductions. A third set (Section 8.1.3) examines the extent to which local and global markings are related in order to determine when general discourse principles such as the ‘new-last’ principle are acquired in development.

8.1.1 *Local markings of newness*

8.1.1.1 *All NP types*

I first summarise all of the NP types that were used for first mentions distinguishing those that did or did not contain appropriate local markings of newness.² When local markings were used, the majority consisted of the following: nominals with indefinite/numeral determiners in the Indo-European languages (English *a dog*, *some/three birds*, German *ein Hund*, *drei Vögel*, French *un chien*, *des/trois oiseaux*), and numeral/quantifying determiners followed by specific or general classifiers in Chinese (*yi1-zhi1 gou3* ‘one/a-SCL dog’, *san3-ge niao3* ‘three-GCL birds’). Also included among appropriate NPs for referent introductions were other rare uses: complex definite NPs in all languages (mostly possessives, e.g. English *her baby birds*), English/German indefinite plurals without determiners (*birds*), English demonstrative *this N* (e.g. *This cat came along*), and Chinese nominals with numeral determiners but no classifiers (*yi1 gou3* ‘one dog’) or with classifiers but no determiners (*ge gou3* ‘GCL dog’, *zhi1 gou3* ‘SCL dog’). Most NPs without local markings of newness in the Indo-European languages contained plain definite determiners (e.g. English *the dog*, German *der Hund*, French *le chien*). Also included were a few cases in English and German consisting of singular NPs used as proper names (e.g. *Cat comes*) and of pronouns. In Chinese, NPs without local newness markings consisted of bare nominals (neither determiner nor classifier, e.g. *gou3* ‘dog’) or of nominals with demonstrative determiners (*zhei4/nei4-ge gou3* ‘this/that dog’). In comparison, as shown in more detail below (Section 8.2), most subsequent mentions (98% to 99%) were definite nominals (Indo-European languages), demonstrative or bare nominals (Chinese), and pronouns (all languages).

8.1.1.2 *Locally marked vs. unmarked first mentions*

Figure 8.1 shows the proportions of introductions with local newness markings as a function of language and age (collapsing stories). Language has no overall effect on these introductions (67% in English, 70% in German, 75% in Chinese, 77% in French), but local markings clearly increase with age in all languages. This increase is significant between four-five and seven years in English (29% vs. 57%), in Chinese (53% vs. 79%), and in German (40% vs. 76%). French four-year-olds differ significantly from ten-year-olds (57% vs. 89%), but not from

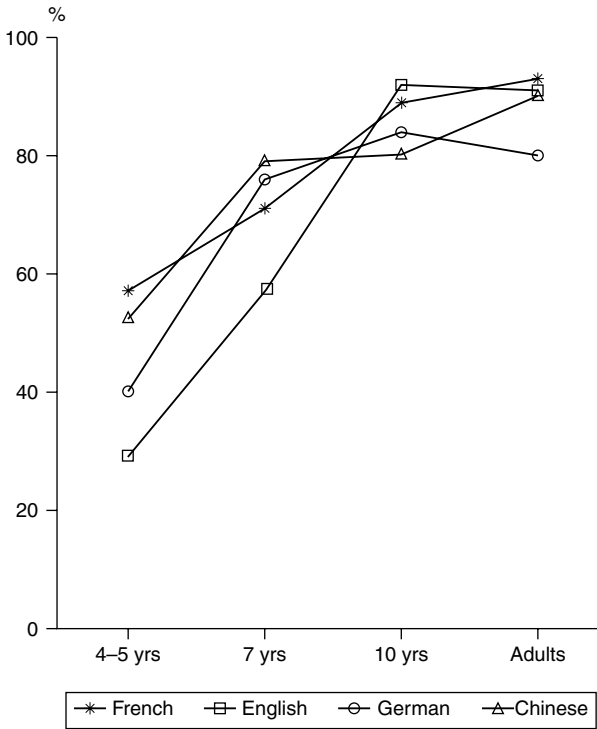


Figure 8.1 First mentions of characters with appropriate local markings of newness

seven-year-olds (71%). Seven-year-olds and ten-year-olds do not differ significantly in any language, except for English (57% vs. 92%). Comparisons across languages within each age also show that pre-schoolers use significantly fewer markings in English than in the other languages. In addition, seven-year-olds use them less frequently in English than in Chinese, while the reverse is true at ten years. That is, local newness markings are at first least frequent in English, they increase with age in all languages, except after seven years in Chinese. Finally, some referent effects are observed. In the HORSE story introductions of the horse stand out in Chinese at all ages (more markings), in English at seven years (more markings), and in French at pre-school age (fewer markings). In the CAT story markings are most frequent for the baby birds in English and for the cat in German (for more details, see Hickmann *et al.* 1996).

Further analyses of Chinese classifiers (see Chapter 3 for the properties of these devices) show three types of cases. First, some noun phrases denoting several of the animate referents contain the general classifier *ge* (e.g. *yil-ge niu2* ‘one-GCL cow’,

ge gou3 ‘GCL dog’, *yi1-ge gou3* ‘one-GCL dog’). Second, other noun phrases contain specific classifiers, which vary depending on the particular referents denoted (as required in Chinese), particularly *pi2* for the horse (e.g. *pi2 ma3* ‘SCL-horse’) and *zhi1* for the other referents (e.g. *yi1-zhi1 gou3* ‘one-SCL dog’, *yi1-zhi1 mao1* ‘one-SCL cat’; *tou2* was also sometimes used for the cow). Third, yet other noun phrases do not contain any classifier, although they sometimes contain a modifier, including cases that do not contain any determiner (where a determiner is not expected, e.g. *lao3 niu2* ‘old cow’) and cases that do contain a numeral determiner (and that normally require a classifier, e.g. *yi1 da4 gou3* ‘one big dog’). Figure 8.2 shows the proportions of these different forms of introduction in Chinese, as well as the corresponding proportions of subsequent mentions. Overall, most first mentions (58%) contain a specific classifier (17% general, 26% no CL), whereas most subsequent mentions (76%) contain no classifier (with only 17% containing a general CL and 7% a specific one). First mentions with a specific classifier also increase significantly with age, particularly between pre-school age and seven years (21% vs. 61%). Finally, referent effects occur: specific classifiers are more frequent for the horse (80% as compared to 40% for the cow and bird), as well as for the dog (70%) and cat (65%) (as compared to 53% for the baby birds and 43% for the mother bird).

8.1.2 Position and clause structure

8.1.2.1 Position in relation to the verb

Figure 8.3 shows the proportions of all postverbal first mentions, as well as the proportions of postverbal subsequent mentions for comparison (stories collapsed). Postverbal position is more frequent with first mentions than with subsequent mentions in all languages (overall German 80% vs. 49%, French 76% vs. 17%, Chinese 61% vs. 8%, English 49% vs. 20%). Age has no significant effect on the position of first mentions in French. In contrast, postverbal position increases significantly between seven and ten years in English (41% vs. 56%) and between pre-school age and seven years in Chinese (44% vs. 69%), while it decreases significantly between ten years and adult age in German (89% vs. 64%). The proportions of postverbal first mentions vary across languages among the children, being highest in German and lowest in English within each age group, but not significantly different among the adult groups. Finally, referents have an overall effect on the position in all languages, but the patterns are quite variable across languages. In the HORSE story postverbal introductions of the horse are less frequent in German and more frequent in Chinese. In the CAT story postverbal position is least frequent for the mother bird in German and most frequent for the baby birds in the other languages.

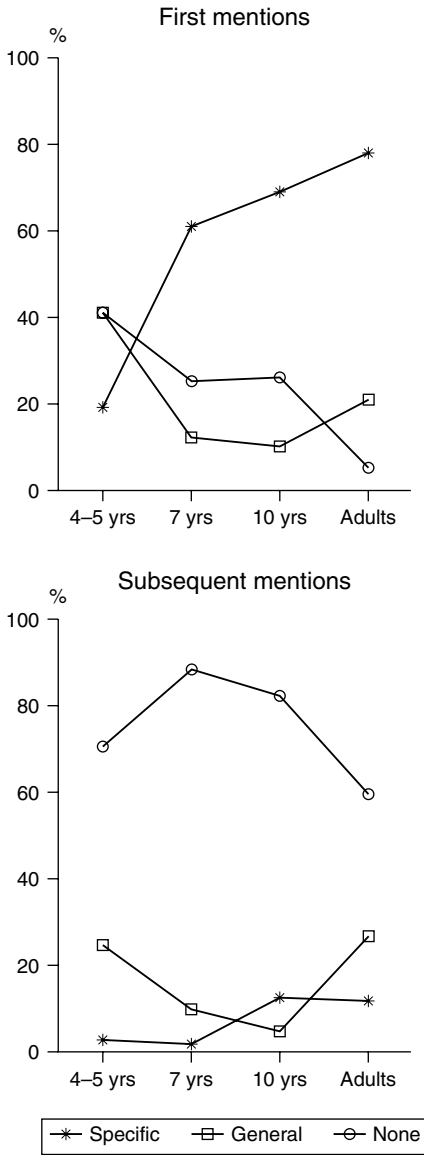


Figure 8.2 Classifier use in Chinese first and subsequent mentions of characters

8.1.2.2 Clause structure

Postverbal first mentions occurred in three types of clause structures, shown in A to C below: postverbal NPs in existential and other predicating structures, for example (8.1) to (8.4); postverbal subject NPs in subject-verb inversions,

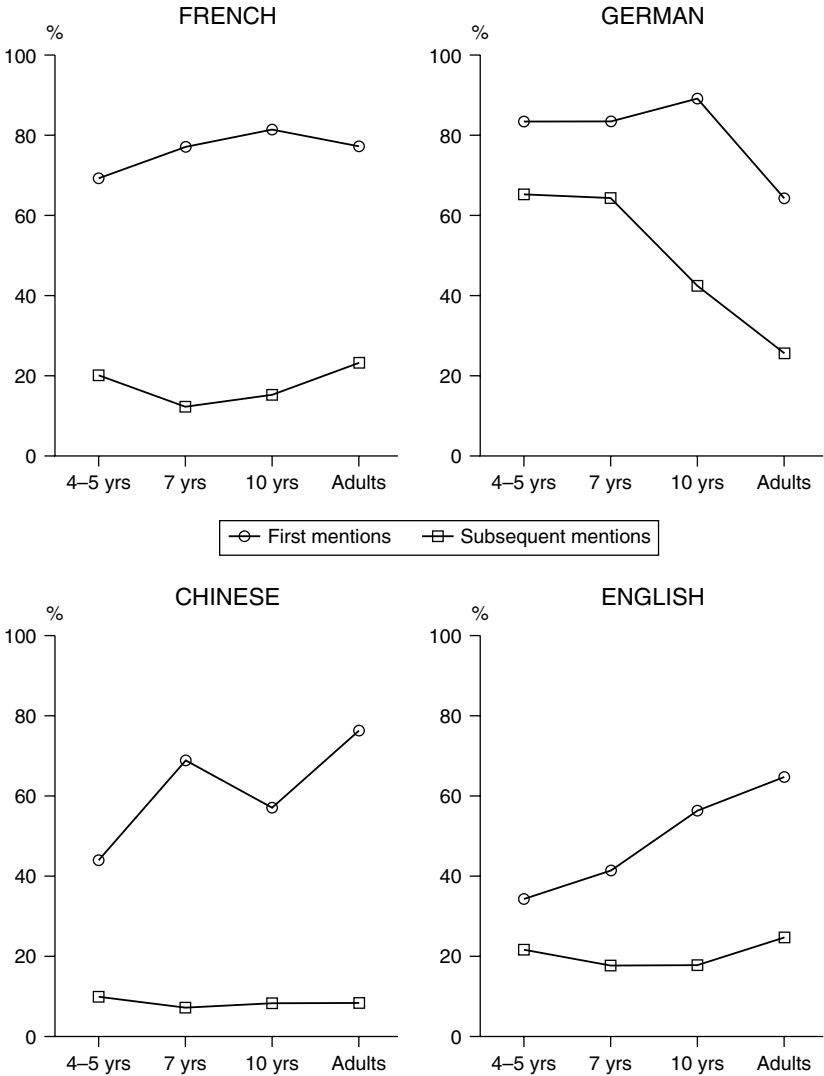


Figure 8.3 First mentions and subsequent mentions of characters in postverbal position

for example (8.5) to (8.8); and postverbal object NPs in SVO clauses, for example (8.9) to (8.12).³

A. Postverbal NPs in existential and other predicating structures [Exis]

(8.1) It/this/there is a horse.

- (8.2) C'est/y'a un cheval qui court.
(‘It/there’s a horse who is running.’)
- (8.3) Es war einmal ein Pferd.
(‘It/there was once a horse.’)
- (8.4) You3 yi1-zhi1 niao3 ma1 ma.
(have one-SCL bird mother)
(‘There’s a mother bird.’)

B. Postverbal subjects in subject-verb inversions [(x)vS]

- (8.5) At the base of the tree stands a cat.
- (8.6) Derrière le chat apparaît un chien.
(‘Behind the cat appears a dog.’)
- (8.7) Und da ist eine Katze. / Und dann kommt ein Hund.
(‘And there is a cat.’ / ‘And then comes a dog.’)
- (8.8) Lai2 le yi1-zhi1 gou3.
come LE one-SCL dog
(‘[There] came a dog.’)

C. Postverbal objects in subject-verb-object clauses [svO]

- (8.9) He sees a cow.
- (8.10) Il voit une vache de l’autre côté.
(‘He sees a cow on the other side.’)
- (8.11) Dann sieht sie eine Katze.
(‘Then sees she a cat.’)
- (8.12) Ta1 sheng1 le yi1-zhi1 xiao3 niao3.
(3p give-birth LE one-SCL little bird)
(‘She gave birth to a little bird.’)

As for preverbal first mentions, they occurred in clause types D to F below. Most were preverbal subject NPs in SV(O) clauses, for example (8.13) to (8.16), or in left-dislocated clauses, for example (8.17) to (8.20). Rare cases also involved NPs embedded in complex subject NPs, for example (8.21).

D. Preverbal subjects in subject-verb-(object) clauses [Sv(o)]

- (8.13) The cat comes to the tree.
- (8.14) Le chat voit les oiseaux.
(‘The cat sees the birds.’)
- (8.15) Die Katze sitzt darunter.
(‘The cat sits down there.’)
- (8.16) Gou3 lai2 le.
(dog come LE)
(‘The dog came.’)

**E. Preverbal left-dislocated subject nominal with pronoun
[SSv(o)]**

- (8.17) First a duck she's sitting in her nest.
 (8.18) Et après le chien il arrive.
 ('And then the dog it comes.')
- (8.19) Und die Katze die kommt.
 ('And the cat it comes.')
- (8.20) Xiao3 niao3 ta1 shi4 yi1sheng1.
 (little bird 3p be doctor)
 ('The little bird it is a doctor.')

F. Other preverbal NPs

- (8.21) A nest of three little birds with a mother bird is on the limb.

Figure 8.4 shows the overall proportions of these structures as a function of language (stories collapsed). Figure 8.5 further shows the distribution of these structures as a function of age within each language, differentiating postverbal first mentions (Figure 8.5a) and preverbal ones (Figure 8.5b) (proportions are complementary across these two figures). Existentials are most frequent in French (59%) and rare in German (1%, but see Note 3) with all referents, while they are intermediary in English (30%) and Chinese (38%), as well as related to particular referents (horse, mother bird, cat). This pattern can be observed at all ages, despite some fluctuation in Chinese. In all languages these structures attract the most local markings. Subject-verb inversions [(x)vS] are most frequent in German with all referents (63%, see Note 3), despite a decrease at adult age. In Chinese they are mostly used by adults (29%) and rarely by children (3% to 9%) (being mostly used for the cat and dog). They are only used by adults in French (16%) and rarely used at any age in English (overall 2%). Postverbal objects [svO] are roughly equivalent across languages (overall 11% to 17%) and across ages, mostly introducing particular referents (cow, baby birds). Preverbal subjects in canonical clauses [Sv(o)] introduce almost all referents (except for baby birds) in English, French, and Chinese, but mostly particular ones in German (horse, mother bird). Although they occur in all languages, they are most frequent in English (51%) and least frequent in French (14%). In French children use dislocated structures [SSv(o)] up to seven years (particularly to denote the horse, cat, and dog). Most first mentions are definite in these structures (90%), as compared to those in canonical [Sv(o)] structures (75% indefinite at ten years, 94% for the adults).

8.1.2.3 Deictic uses

Young children's narratives provide some suggestive evidence showing that their uses of referring expressions are partly deictic, being directly related to

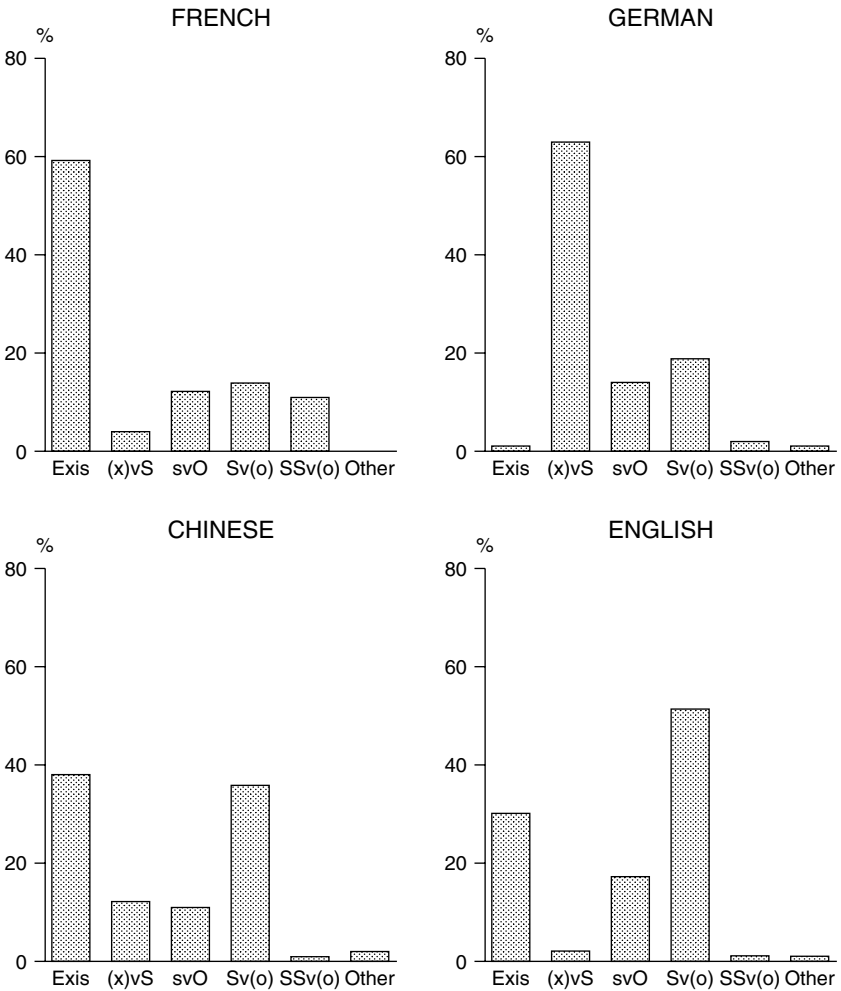


Figure 8.4 Types of clause structures used for the first mentions of characters

the non-linguistic context provided by the pictures. This evidence is of two types. First, as illustrated in English (8.22) and French (8.23), some children's referring expressions are embedded in a variety of explicit predicating constructions (in addition to elliptical ones, see Note 2) that label the referents on first mention, serving to attract the interlocutor's attention to the denoted entities, despite the fact that the child is addressing a supposedly naive (blindfolded) interlocutor. Note that such examples differ from constructions such as the existentials (8.24) or (8.25). In Chinese labellings take other forms (e.g. bare nominals with demonstrative locatives) and in

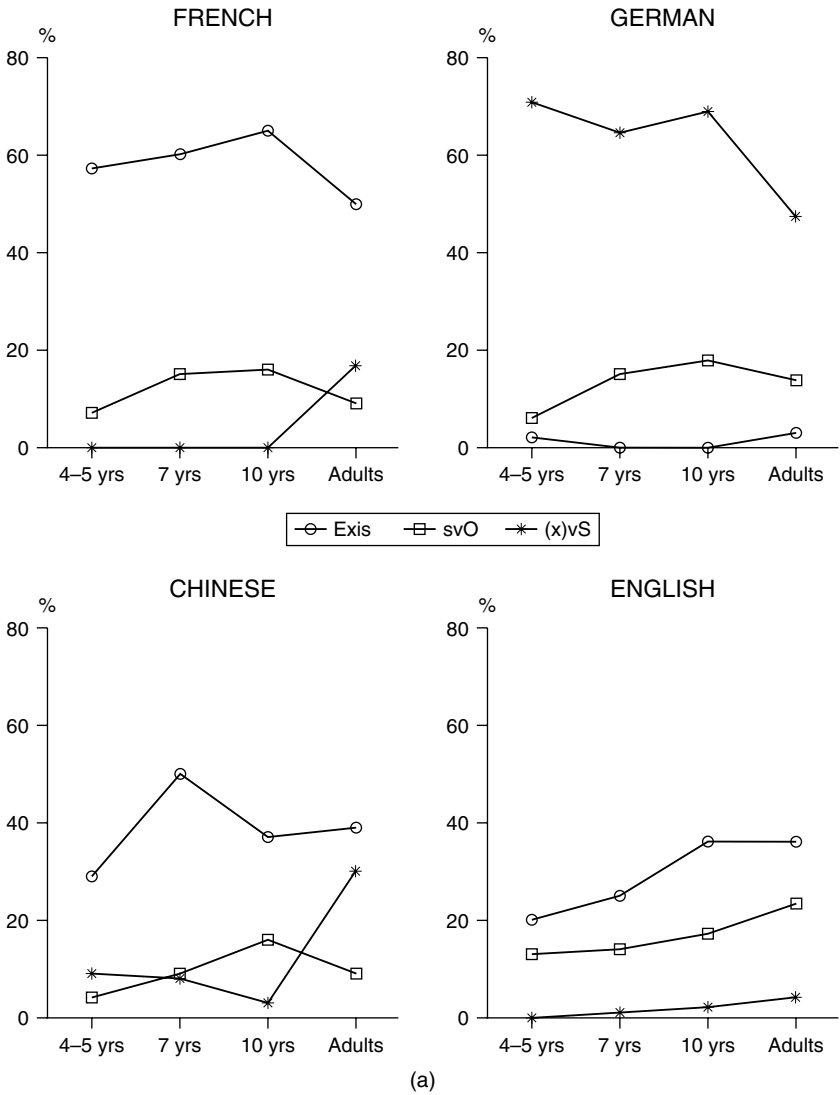


Figure 8.5 Types of clause structures used for first mentions of characters across ages: (a) Postverbal first mentions (b) Preverbal first mentions

German the great majority consist of subject-verb inversions with sentence-initial adverbials (*Da ist NP* 'there is NP').

(8.22) It's a horse.

(8.23) Ça c'est un cheval.

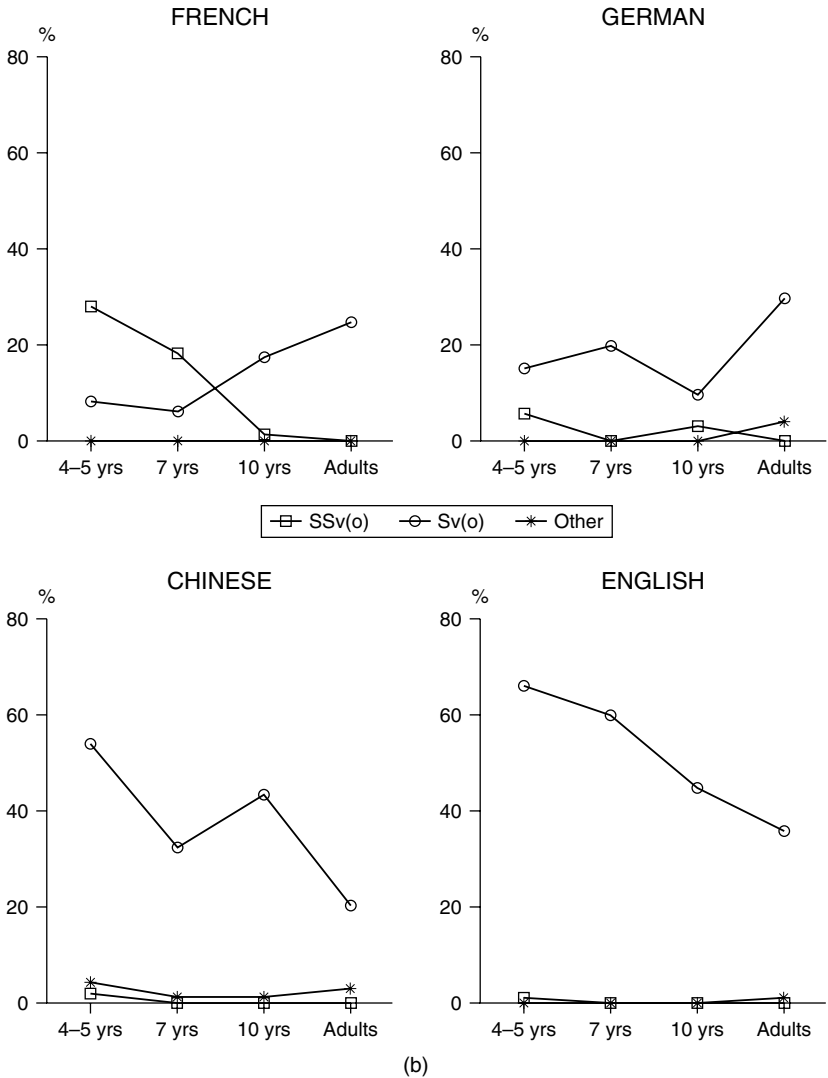


Figure 8.5 (cont.)

(8.24) There's a horse.

(8.25) Il y a un cheval.

Second, another suggestive piece of evidence for children's reliance on deixis is their repeated uses of referring expressions across utterances, including NPs with indefinite determiners or without any determiners, illustrated in English (8.26) and (8.27). Although such uses are not frequent when summed over all children, they

clearly show that particular children, particularly among the younger age groups, describe each picture as separate from other pictures in the sequence.

- (8.26) Horse. A horse is running. [...] And a... horse and a cow. [...] And a horse is... still running. [...] Horse fell down. [...] And a bird's... ca- and the bird came. [...] Cow... helped him. (4 years)
- (8.27) First a duck she's in her nest. [...] Here's duck she's out of her nest... with a cat there... and here's a cat... climbing up the tree with a dog there... [...] and here's a dog biting the... kitty cat's tail... and here's a dog who's chasing a cat and... and THAT thing is getting back into her nest. (4 years)

8.1.3 *Relation between local and global markings*

First mentions fell into four types, resulting from the crossing of the two dimensions examined above, form and position (relevant NPs in bold): preverbal and locally marked NPs (8.28), preverbal and locally unmarked NPs (8.29), postverbal and locally marked NPs (8.30) or (8.31), and postverbal and locally unmarked NPs (8.32).

- (8.28) **A dog** comes to the bottom of the tree.
- (8.29) **The dog** comes.
- (8.30) He saw **a cow** on the other side of the fence.
- (8.31) There was **a cow** there.
- (8.32) He saw **the cow**.

Collapsing ages and stories, Figure 8.6 shows the distribution of first mentions into these four types. Overall, postverbal locally marked NPs are most frequent in French (67%), least in English (43%), and intermediary in Chinese (58%) and German (59%). Remaining introductions are scattered in French (9% to 14%), mostly postverbal and locally unmarked in German (21%), but preverbal – whether locally marked or not – in English (25% and 27%) and in Chinese (18% and 21%).

A series of analyses tested the general hypothesis that there should be a strong relation between local and global markings, given the general principle that new information tends to occur late in the clause ('new-last' principle, see Chapter 3). On the basis of this principle, it is possible to formulate two main predictions: locally marked first mentions should be postverbal and, inversely, postverbal ones should be locally marked. Such results would show a strong attraction between local and global newness markings. Two weaker predictions were also examined: locally unmarked first mentions should tend to be preverbal and preverbal ones should tend to be locally unmarked. Such results would not directly follow from the new-last principle, but would show a complementary attraction between the non-uses of local and global markings. Finally, the analyses examine the emergence

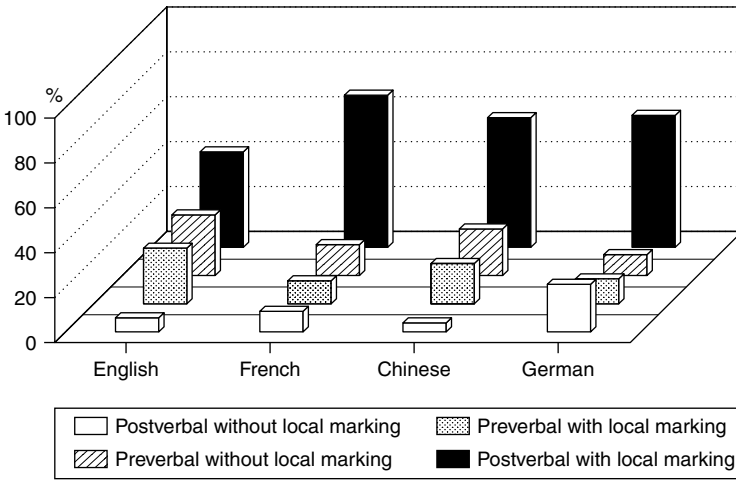


Figure 8.6 First mentions of characters as a function of position and local newness markings

of this discourse principle from a developmental point of view by systematically comparing the relative frequencies of the four types of NPs across ages.

First, locally marked NPs are significantly more often postverbal than preverbal in all languages (English 43% vs. 25%, French 68% vs. 10%, Chinese 58% vs. 18%, German 59% vs. 11%). No age effects occur in this respect, except in German, because of an increase in locally marked preverbal NPs after ten years. Second, postverbal NPs are more often marked than unmarked in all languages (English 43% vs. 6%, French 68% vs. 9%, Chinese 58% vs. 4%, German 59% vs. 21%). Age effects occur in English, in Chinese, and in German, due to an increase in postverbal marked NPs with age. Third, unmarked NPs are more often preverbal than postverbal only in English (27% vs. 6%) and Chinese (21% vs. 4%). Age effects occur in these languages, due to a decrease in unmarked preverbal NPs with age. In German unmarked NPs are significantly more often postverbal than preverbal (21% vs. 9%), with an age effect due to a decrease in postverbal unmarked NPs with age. Fourth, analyses comparing locally marked vs. unmarked preverbal NPs show no overall significant differences in any language. Age has an effect in English, in French, and in Chinese, due to a decrease in preverbal unmarked NPs and/or an increase in marked ones with age. In general, then, the results support the main predictions by showing an attraction between local and global newness markings. They furthermore show how this attraction comes about: when local markings are acquired, they become postverbal, but before this point postverbal position is not systematically used for discourse purposes, except in French. Finally, the results support only very partially the weaker predictions concerning the non-uses of these markings.

8.2 Reference maintenance

Analyses of reference maintenance focus on all forms that denoted the animate referents after their first mentions. After a general description of all the NP types used (Section 8.2.1), we examine the impact of the following additional properties of these NPs on their form: their position in the clause (Section 8.2.2), their grammatical and semantic roles in the clause (Section 8.2.3), and their participation in coreferential relations of different types (Section 8.2.4). A last section (8.2.5) examines in more qualitative detail additional aspects of form variations in reference maintenance across ages and languages.

8.2.1 Forms of referring expressions

I first summarise the distribution of all subsequent mentions that were found in the narratives. These NPs are grouped under two general types (to be further differentiated below): pronominals, which include null and overt pronouns; and nominals, which provide more specific lexical content concerning the denoted referents. Figure 8.7 shows the percentages of all lean forms (overt and null pronominals) across ages and languages. Summing up across all ages, pronominals are significantly more frequent than nominals in French and in Chinese, but the reverse is true in German and no difference is observed in English. The only significant age

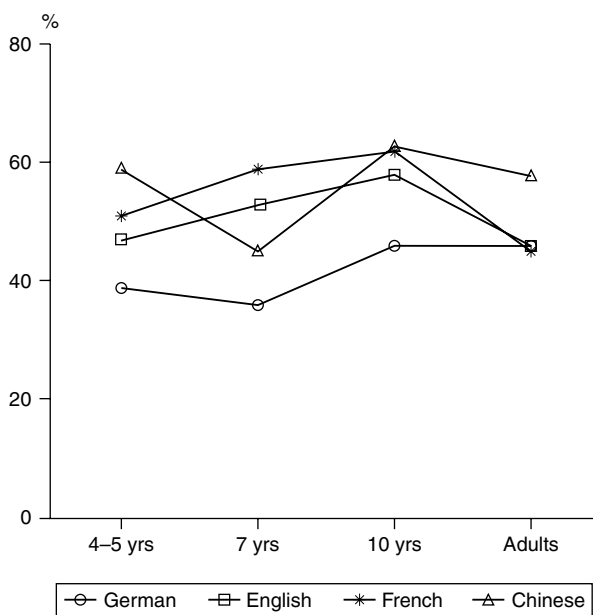


Figure 8.7 Lean forms in reference maintenance to characters

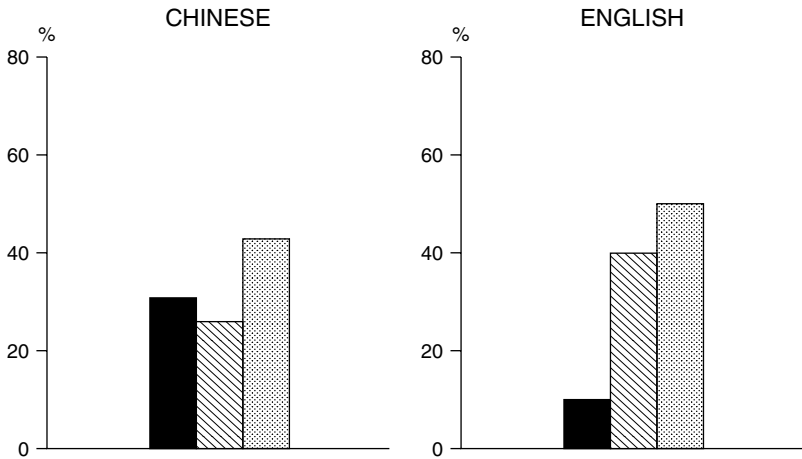
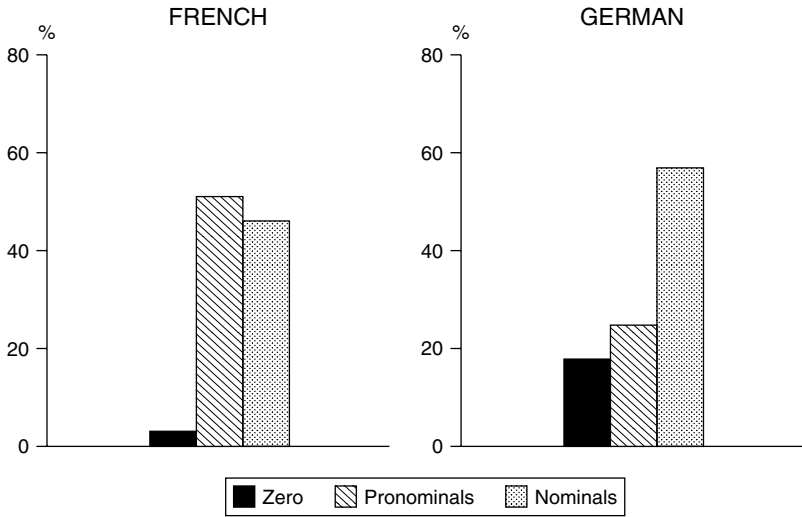


Figure 8.8 Different forms used in reference maintenance to characters

effects show that French pronouns decrease for adults and that Chinese pronouns decrease at seven years to increase again thereafter.

Figure 8.8 further shows the overall distribution of subsequent mentions, distinguishing zero elements, overt pronouns, and nominals.⁴ Null elements are most frequent in Chinese, followed by German, then by English, but they are rare in French. In all languages overt pronouns include mostly personal pronouns. German explicit pronouns consist mostly of one set of forms (e.g. *er* 'he', *sie* 'she/they', *es* 'it') with another less frequent set (e.g. *der* 'he', *die* 'she/they', *das* 'it') and

in French the great majority are preverbal clitics (e.g. *il* ‘he’), although relative pronouns (*qui* ‘who’) also occur more frequently than in other languages.⁵ A few additional cases include demonstrative pronouns (mostly Chinese) and pronominal adverbials (e.g. German *daneben* ‘next to it/him’). As for nominals, they consist mostly of nouns with definite determiners in the Indo-European languages (e.g. *the cat*), a few of which are complex (e.g. *the three baby birds*), with some rare demonstratives (e.g. *that cat*), indefinite forms in labellings (e.g. *(It’s) a cat*), bare nominals akin to proper names (e.g. *Kitty comes*), and nominals in possessive constructions (e.g. *her babies*). Chinese nominals consist mostly of bare and demonstrative nouns, as well as of a few nouns used with quantifiers or possessive constructions. As we saw (see Figure 8.2 in Section 8.1.1), most Chinese nominals used as subsequent mentions contain no classifiers and very few contain specific classifiers, in sharp contrast to first mentions.

Figure 8.9 roughly shows the same distribution of these forms across ages within each language, with the following qualifications. First, in all languages zero elements tend to increase with age, overt pronouns either do not change or tend to decrease, and nominals tend to increase (by ten years or adult age). Second, an additional type of French subsequent mention is displayed in Figure 8.9, namely dislocated structures, illustrated in (8.33) to (8.35).⁶ The great majority consist of left-dislocated definite nominals such as (8.33), particularly frequent among the children (48% of definite nominals are of this type for pre-schoolers, 43% for seven-year-olds, 22% for ten-year-olds, with only one occurrence in the adults’ narratives).⁷ A few additional cases occurred, including definite nominals dislocated to the right or to both sides such as (8.34) and (8.35). In comparison, dislocations are much less frequent in the other languages (5% in German, 2% in Chinese, and less than 1% in English).

- (8.33) Le chat il observe les oiseaux.
 (‘The cat he observes the birds.’)
- (8.34) Il lui attrape la queue au chat.
 (‘He catches him the tail to the cat.’)
- (8.35) La maman elle s’envole la maman.
 (‘The mother she flies away the mother.’)

Finally, story and referent effects can be observed, but they are variable across languages. Pronominals are more frequent than nominals in the French, Chinese, and English HORSE stories. In the CAT story they are less frequent than nominals in English and do not differ significantly from them in French or Chinese. German pronominals are generally less frequent, especially in the CAT story. Figures 8.10 and 8.11 show the mean percentages of pronominals for each referent within each

Animate entities

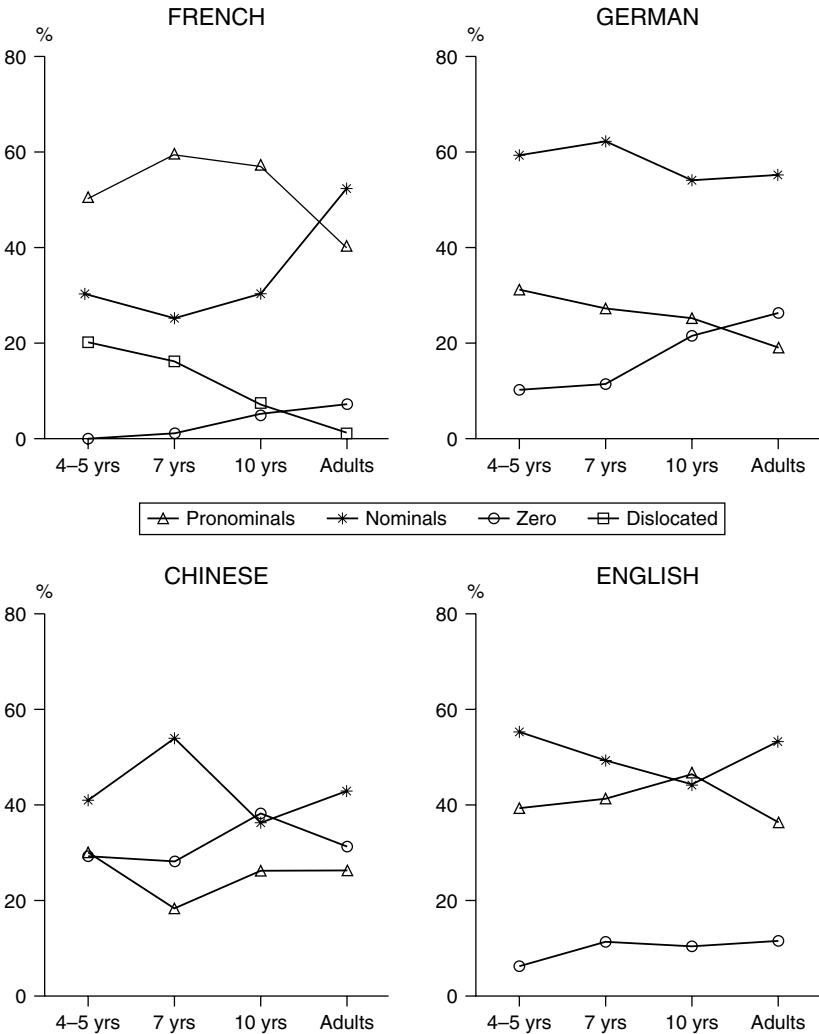


Figure 8.9 Different forms used in reference maintenance to characters as a function of age

story as a function of age in each language. In the HORSE story pronominals are most frequent with the horse (all groups). In the CAT story differences across referents are not as striking, but pronominals tend to be more frequent with the cat. In all languages referents also have a significant effect on the sheer volume of subsequent mentions: in the HORSE story most NPs denote the horse, while in the CAT story more denote the cat than other referents.

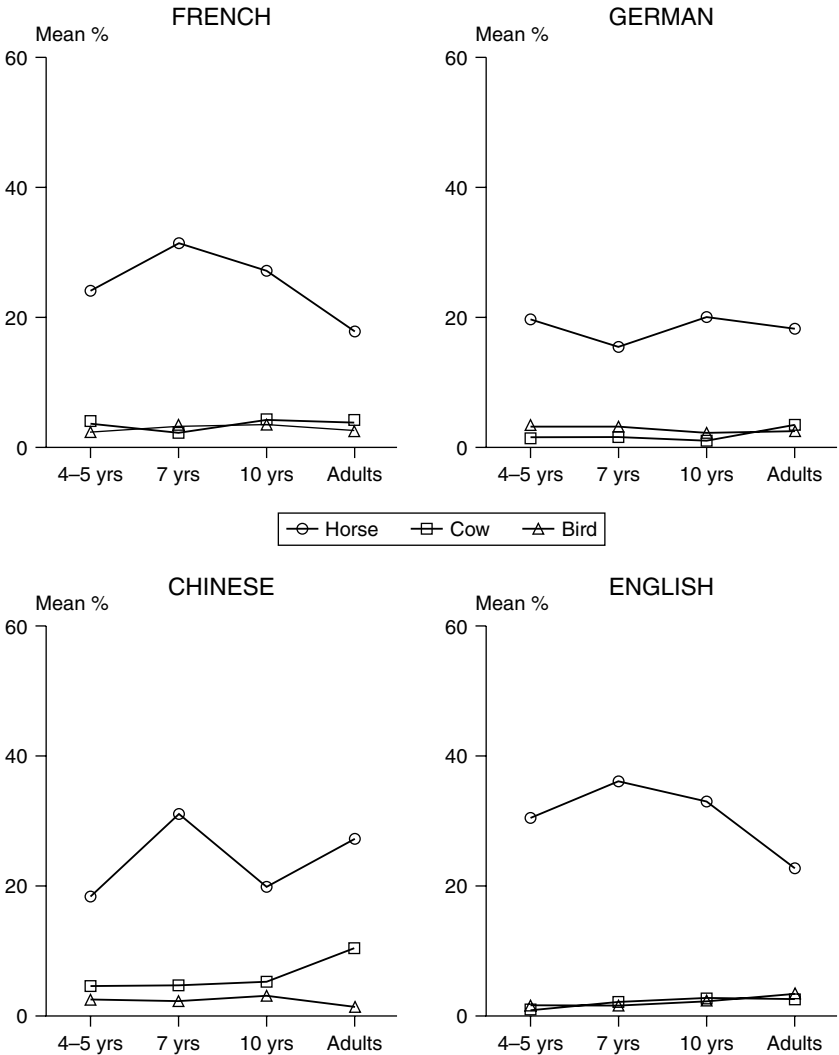


Figure 8.10 Lean forms used for each character of the HORSE story

8.2.2 Position of noun phrases

With respect to position, subsequent mentions are significantly more often preverbal than postverbal at all ages and in all languages, except for German (see Figure 8.3 in Section 8.1 above). In German preverbal subsequent mentions are rare for pre-schoolers and seven-year-olds, then increase significantly thereafter, becoming frequent in the adults' narratives. The young German children's greater reliance on postverbal position is due to their frequent use of sentence-initial

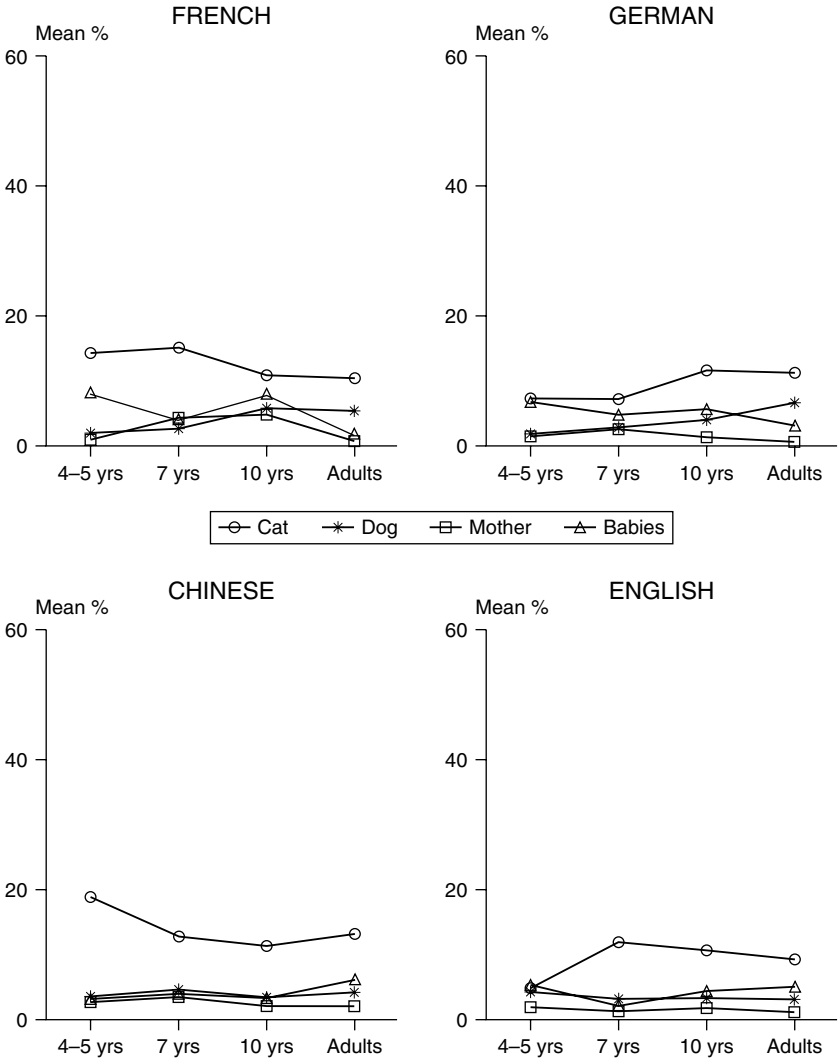


Figure 8.11 Lean forms used for each character of the CAT story

temporal or spatial elements, resulting in obligatory subject-verb inversions (e.g. *Und dann fliegt sie weg* 'And then flies she away'). In all languages preverbal NPs most often denote the horse and the cat. Finally, Figure 8.12 displays the mean percentages of subsequent mentions as a function of both form and position. In French, English, and Chinese, preverbal pronominals are more frequent than preverbal nominals, while postverbal nominals are more frequent than postverbal pronominals.

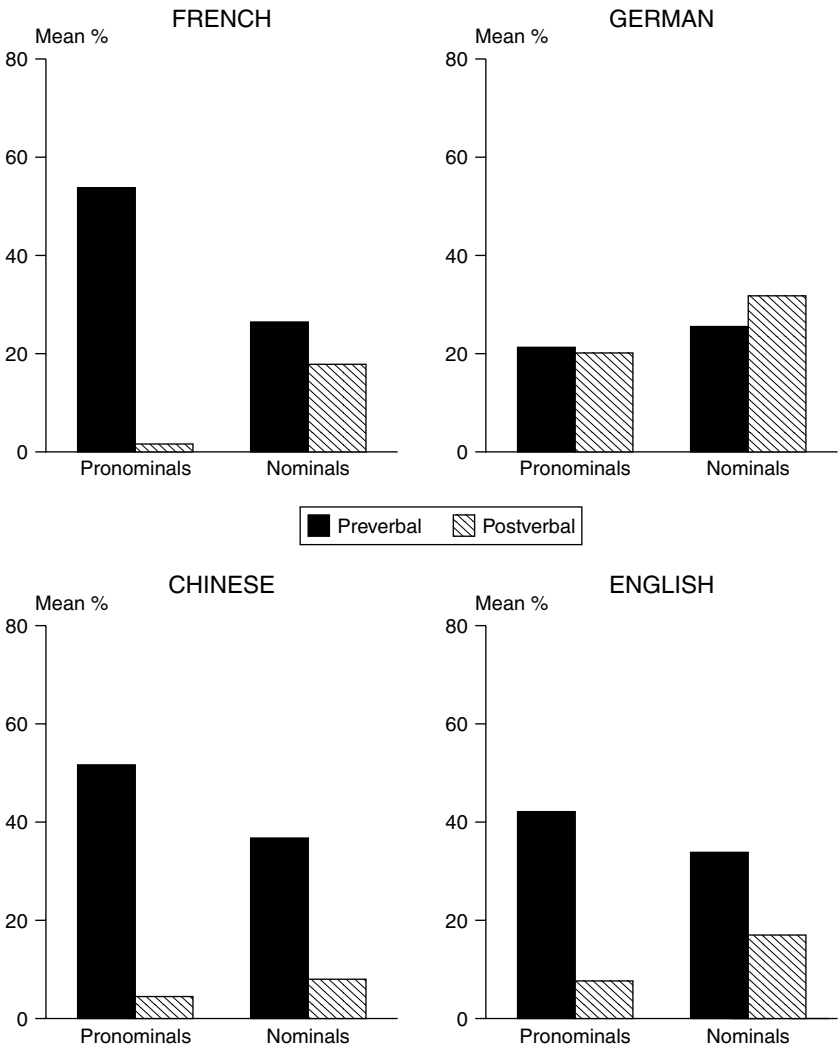


Figure 8.12 Overall relation between the position and form of subsequent mentions

No such interaction is observed in German: pronominals and nominals are both as likely to be preverbal or postverbal, and preverbal expressions are as likely to be pronominals and nominals. Nonetheless, as is the case in other languages, postverbal nominals are more frequent than postverbal pronominals. These patterns hold at all ages.

8.2.3 *Role within the clause*

As illustrated in English (8.36) to (8.40) (relevant NPs in bold), subsequent mentions were coded according to a variety of semantic and grammatical roles, grouped below along two dimensions: (1) ‘prototypical’ agents (AGT) vs. all other NPs (NAGT); (2) subjects (SUB) vs. all other NPs (NSUB). Noun phrases coded as ‘prototypical’ agents occurred with predicates clearly representing actions performed with volition, for example actions on patients (*bite*) and active motion (*run*), as well as cognitive or perceptual actions implying volition (*decide*, *look at*). Non-agentive roles included experiencers, patients, beneficiaries, instrumentals, and locatives (see Chapter 7 and Hickmann *et al.* 1994).

(8.36) **He** (AGT/SUB) is running in the meadow.

(8.37) **The dog** (AGT/SUB) bit **the cat** (NAGT/NSUB).

(8.38) **He** (NAGT/SUB) fell and **0** (NAGT/SUB) got hurt.

(8.39) **The cow** (AGT/SUB) looked at **him** (NAGT/NSUB).

(8.40) **The birds** (NAGT/SUB) were sitting in a nest.

8.2.3.1 *Semantic roles*

In all languages noun phrases in agent role are most likely to denote particular referents (horse, cat), least likely to denote others (bird in the HORSE story, baby birds in the CAT story). As shown in Figure 8.13, these agent noun phrases are more frequently preverbal than postverbal in all languages, although this difference is more important in English, French, and Chinese (where almost all agents are preverbal) than in German (where postverbal agents are nonetheless frequent). In contrast, more variation occurs in this respect with noun phrases that are in other roles. Finally, as shown in Figure 8.14, there is no interaction at all between semantic role and form: agents and other NPs are as likely to be pronouns as nouns. This result holds for all language groups, ages, and referents in both stories.

8.2.3.2 *Grammatical roles*

In all language and age groups most subsequent mentions are in subject role, but these expressions are more frequent in the HORSE story. There is a significant interaction between grammatical role and position in all languages: subjects are frequently preverbal (almost exclusively in French, English, and Chinese), whereas other noun phrases are either both pre- and postverbal (Chinese) or frequently postverbal (English, French, and German). This pattern is not really surprising, given the properties of these languages. It holds at all ages, despite an increase in German preverbal subjects from seven years on (to which we return below). It also holds within each story, although the interaction between role and

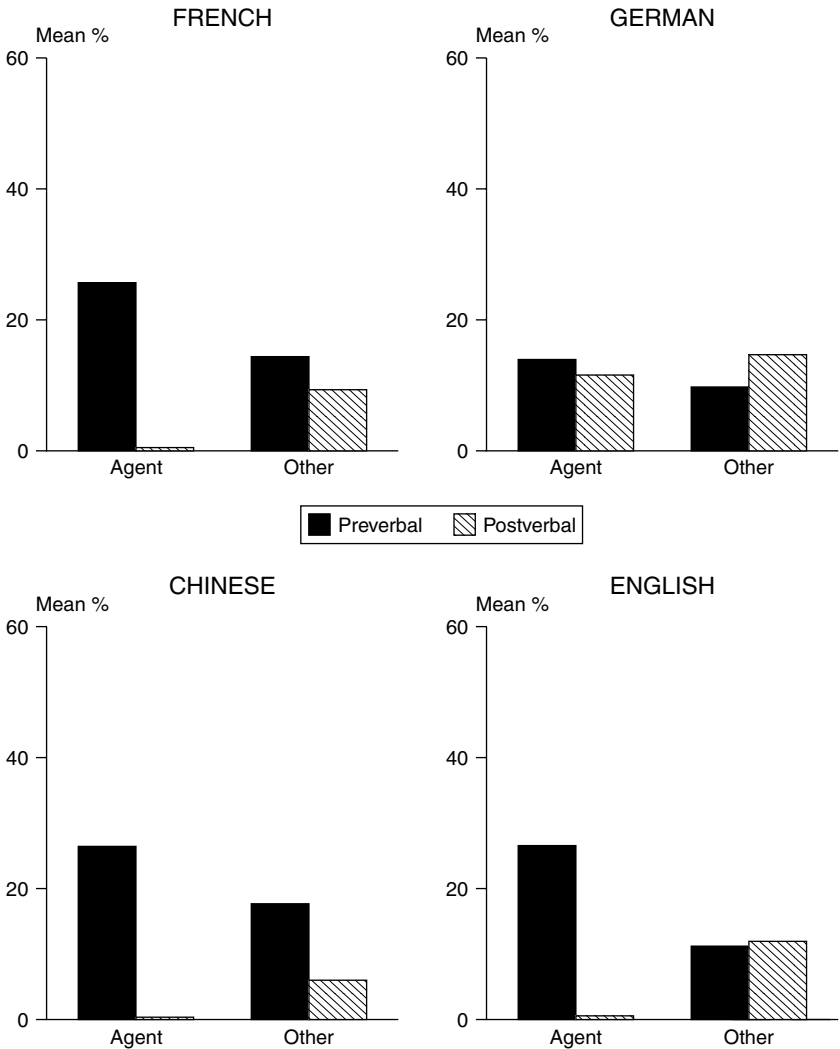


Figure 8.13 Overall relation between the semantic role and position of subsequent mentions

position is only significant in the CAT story. More interestingly, Figure 8.15 shows that there is a significant overall interaction between grammatical role and form in French, in Chinese, and in English. At all ages in these three languages, there are more pronominals than nominals in subject role, whereas noun phrases that are not in subject role tend to be more frequently nominals than pronominals. Although this result seems to indicate a relation between form and grammatical role in these

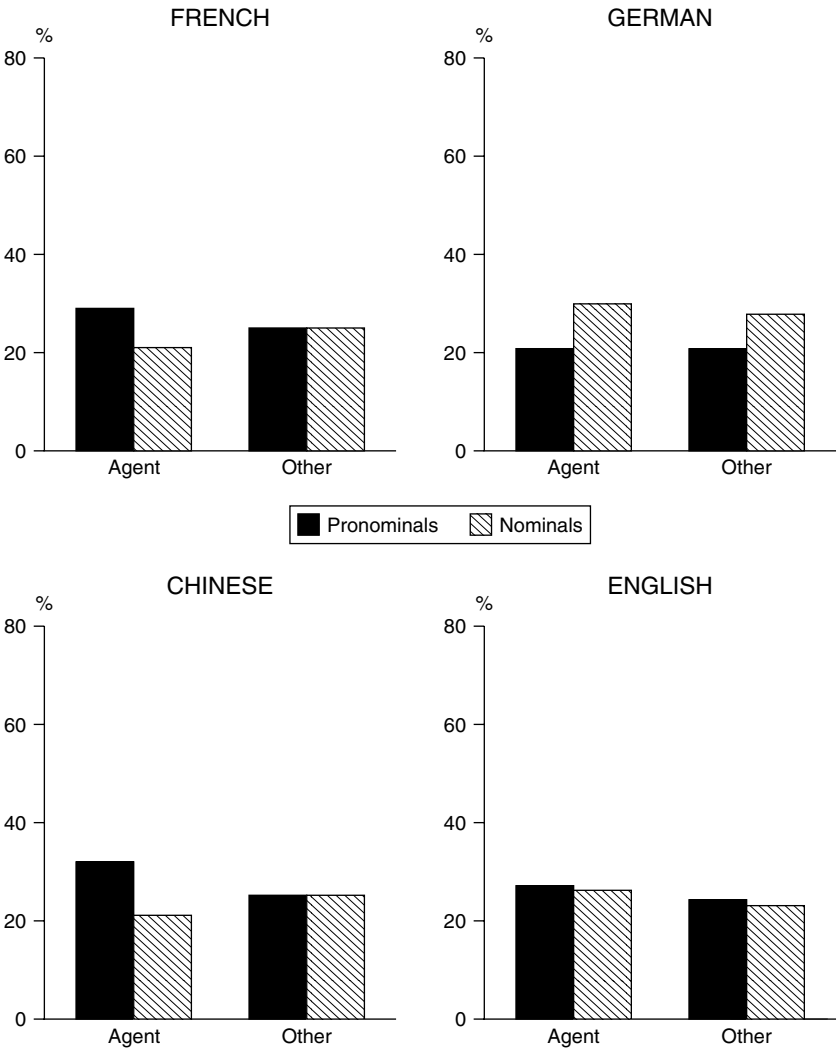


Figure 8.14 Overall relation between the semantic role and form of subsequent mentions

languages, it is shown below that it involves the impact of other factors (Section 8.2.4).

8.2.4 Coreference across clauses

In addition to the above properties of reference-maintaining devices within their clause (form, position, role), we now focus on discourse determinants

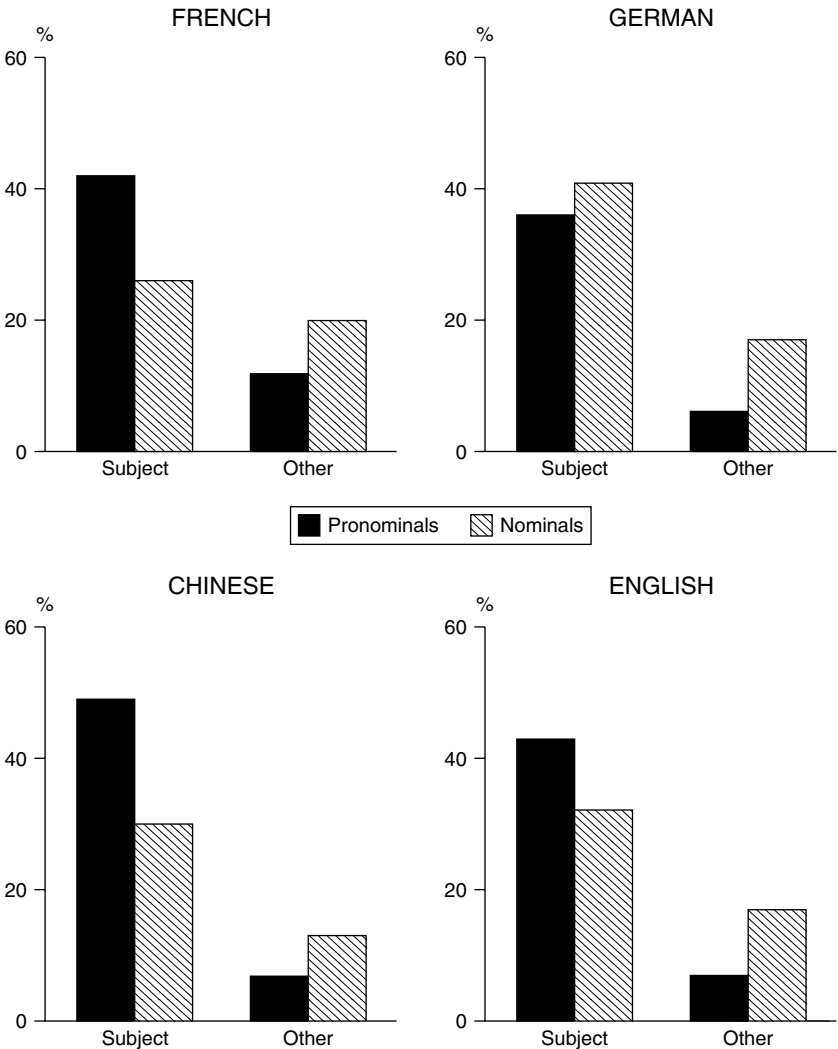


Figure 8.15 Overall relation between the grammatical role and form of subsequent mentions

by examining the impact of coreference relations on the forms of these devices. I first contrast noun phrases that occur in coreferential contexts vs. non-coreferential contexts, then examine different types of coreferential relations within the universe of coreference. In all of these analyses, we focus on *immediate* coreference: noun phrases were considered to enter into coreferential relations when they denoted the same entity as another noun phrase in the immediately preceding clause.

8.2.4.1 *Coreferential and non-coreferential contexts*

Example (8.41) illustrates subsequent mentions that occurred in coreferential vs. non-coreferential contexts (preceding context in brackets, relevant NPs in bold): the null subject is coreferential (CO) with the NP *the cat* in the preceding clause, which is itself not coreferential (NC) with any NP in the preceding context clause.

(8.41) [The mother bird flies away.]

The cat (NC) sits down and **0** (CO) looks at the baby birds.

The frequencies of coreferential vs. non-coreferential subsequent mentions show the following distributions. Subsequent mentions are significantly more often coreferential than non-coreferential in English (59%), in French (59%), and in Chinese (62%), but not in German (49%). No significant variation occurs across ages, despite a tendency for German coreferential forms to increase from pre-school age and seven years (42% in both groups) to ten years (53%) and adult age (55%). Despite some variations, this general pattern holds across stories. However, coreference increases earlier in the German HORSE stories (seven years) than in the German CAT stories (ten years). Furthermore, in all languages referents have significant effects on the sheer volume of coreferential subsequent mentions, which denote the horse and the cat more frequently than other referents. As shown in Figure 8.16, the majority of subsequent mentions consist of coreferential pronominals and of non-coreferential nominals. This pattern holds within each story, despite the greater density of coreferential pronouns denoting the horse in the HORSE story. Figure 8.17 further shows the proportions of NPs that are coreferential within each form type (nominals vs. pronominals) as a function of age. At all ages within each language most pronominals are coreferential, but most nominals are not, despite a gradual increase in German coreferential pronominals from pre-school age on.

As shown in Figure 8.18, this impact of discourse coreference partially overrides the relation noted above between grammatical role and form (see Figure 8.15 in Section 8.2.3 above). In all languages the great majority of pronominals are coreferential subjects and few are non-coreferential subjects. In comparison, nominals are scattered among all types and/or tend to be non-coreferential subjects. That is, subject NPs are frequently pronominalised, but mostly because they occur in coreferential discourse contexts. Figure 8.19 further displays this distribution of coreferential subsequent mentions as a function of form and grammatical role across age groups. Within each language coreferential subject pronominals are more frequent than all other types of subsequent mentions at all ages. This pattern holds in both stories.

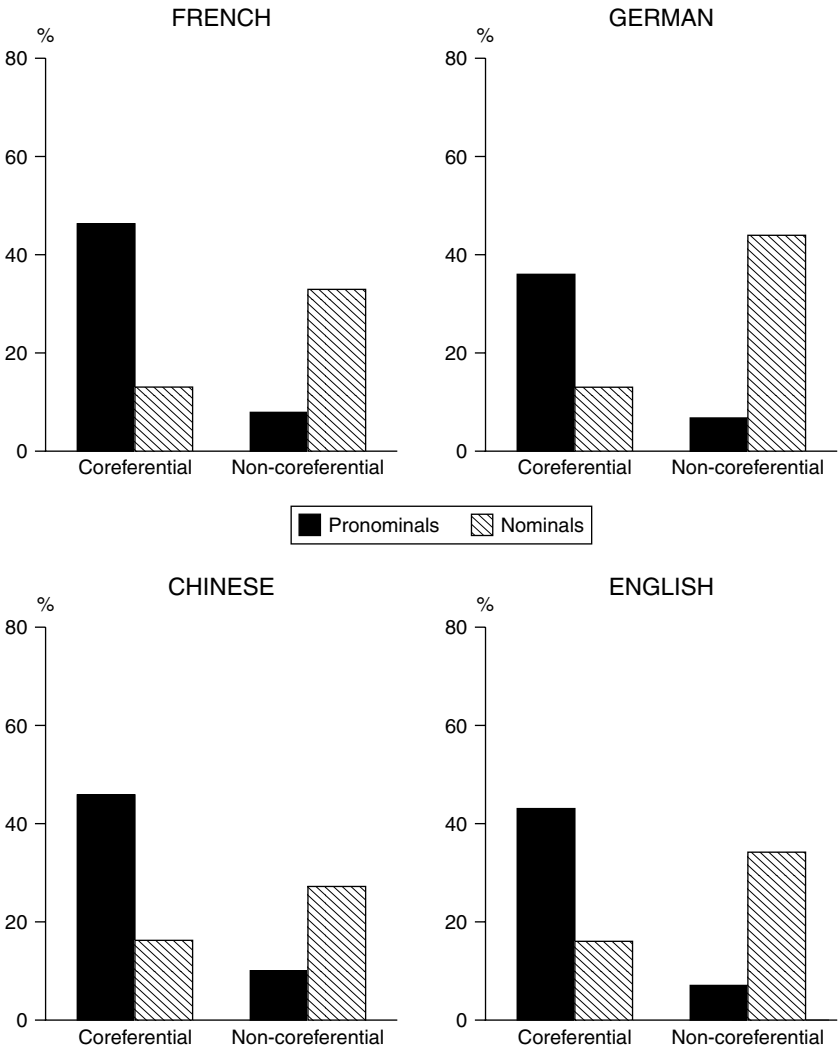


Figure 8.16 Overall relation between coreference and the form of subsequent mentions

8.2.4.2 *Types of coreferential relations*

Coreferential subsequent mentions occurred in several types of coreferential contexts, as illustrated in English (8.42) to (8.45) (context in brackets, relevant NPs in bold). For each coreferential NP, the nature of its role relation with the preceding coreferential NP was determined on the basis of grammatical roles, resulting

Animate entities

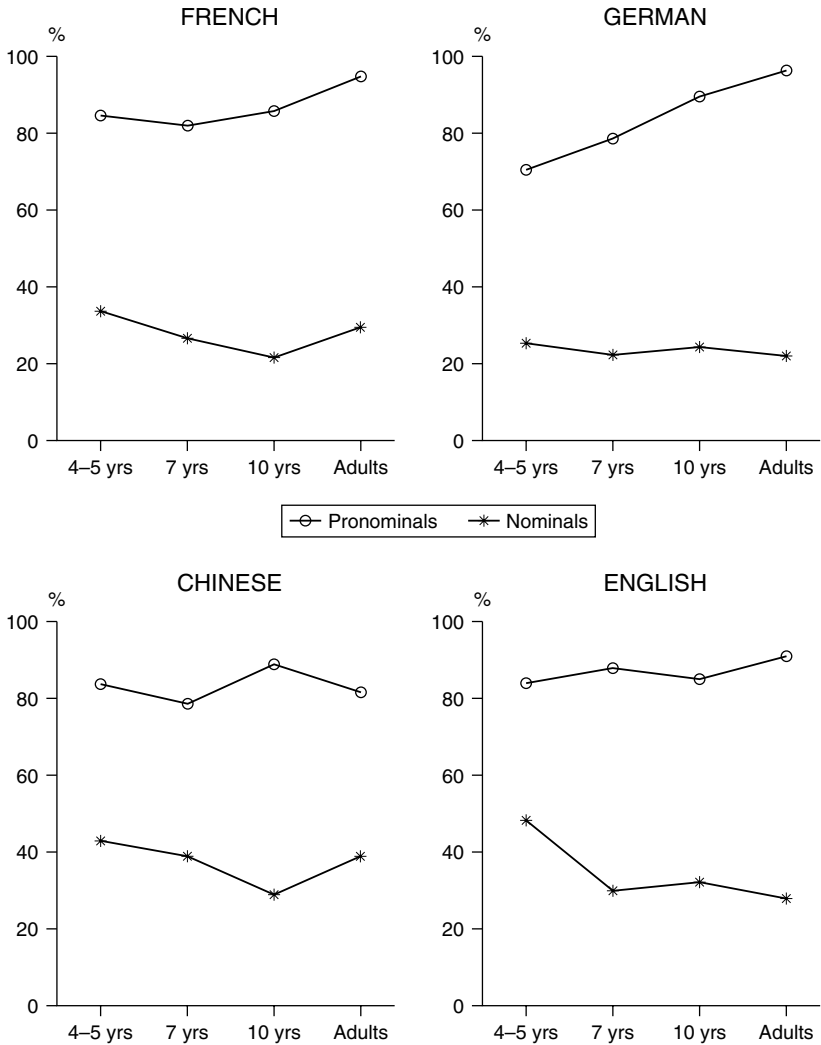


Figure 8.17 Percentages of coreferential NPs within each form type

in four types of coreferential relations: Subject-Subject (SS), Other-Subject (OS), Subject-Other (SO), and Other-Other (OO).

- (8.42) [The horse is running] and **he** (SS) comes to a fence.
- (8.43) [There's a horse in a meadow.] **He** (OS) is running to a fence.
- (8.44) [He pulled him down]. **The cat** (OS) ran and **the dog** (NC) chased after **him** (SO).
- (8.45) [The dog pulls the cat down] and **0** (SS) chases **him** (OO) away.

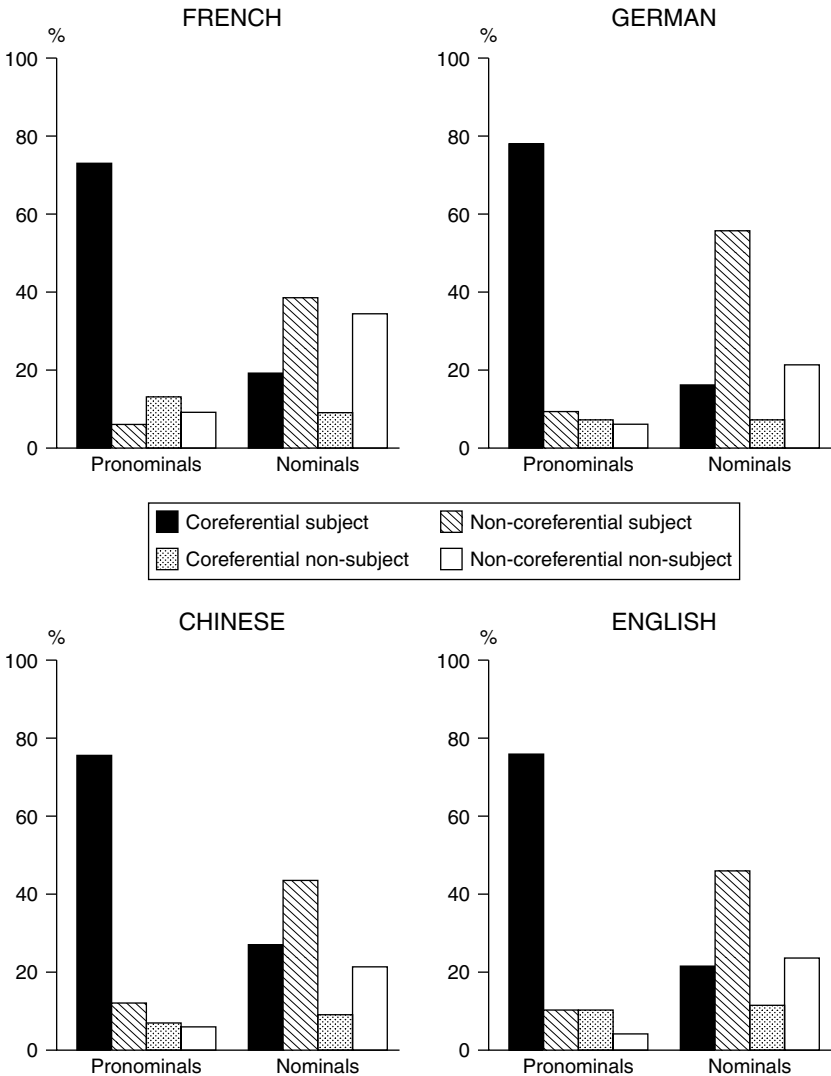


Figure 8.18 Grammatical role and coreference within each form type

Figure 8.20 shows for each language group the overall distribution of coreferential forms across the four different types of coreferential relations. In all languages SS-coreference is more frequent than other types, although OS-relations are also frequent in French. Figure 8.21 further displays the same distribution across age groups, despite a tendency for SS-relations to increase with age (especially in Chinese) and for OS-relations to decrease in French (at adult age). The same overall

Animate entities

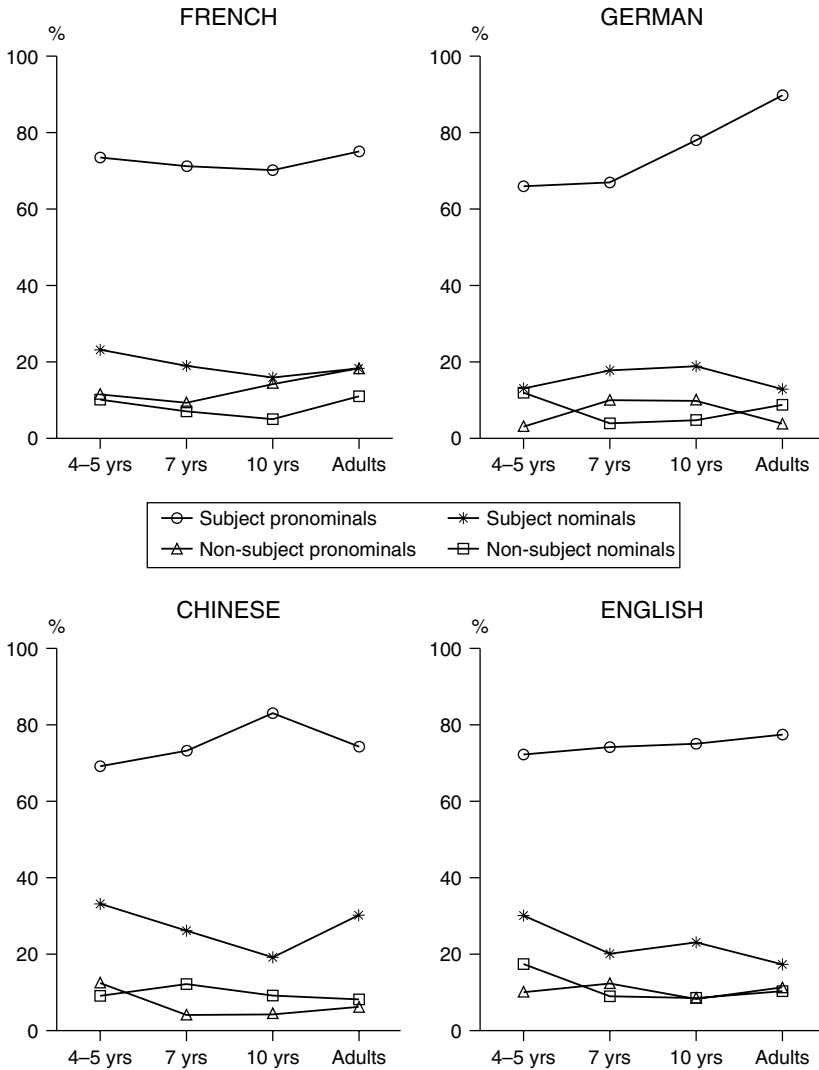


Figure 8.19 Relation between the grammatical role and form of coreferential subsequent mentions across ages

pattern can be observed within each story. However, in all age and language groups SS-relations are more frequent in the HORSE story than in the CAT story (overall French 55% vs. 39%, English 75% vs. 58%, German 86% vs. 75%, Chinese 75% vs. 67%). In addition, OS-relations are more frequent in French children's CAT story (pre-school age 44%, seven years 51%, ten years 42%) than in their HORSE story, where SS-relations predominate (64%, 61%, 54%).

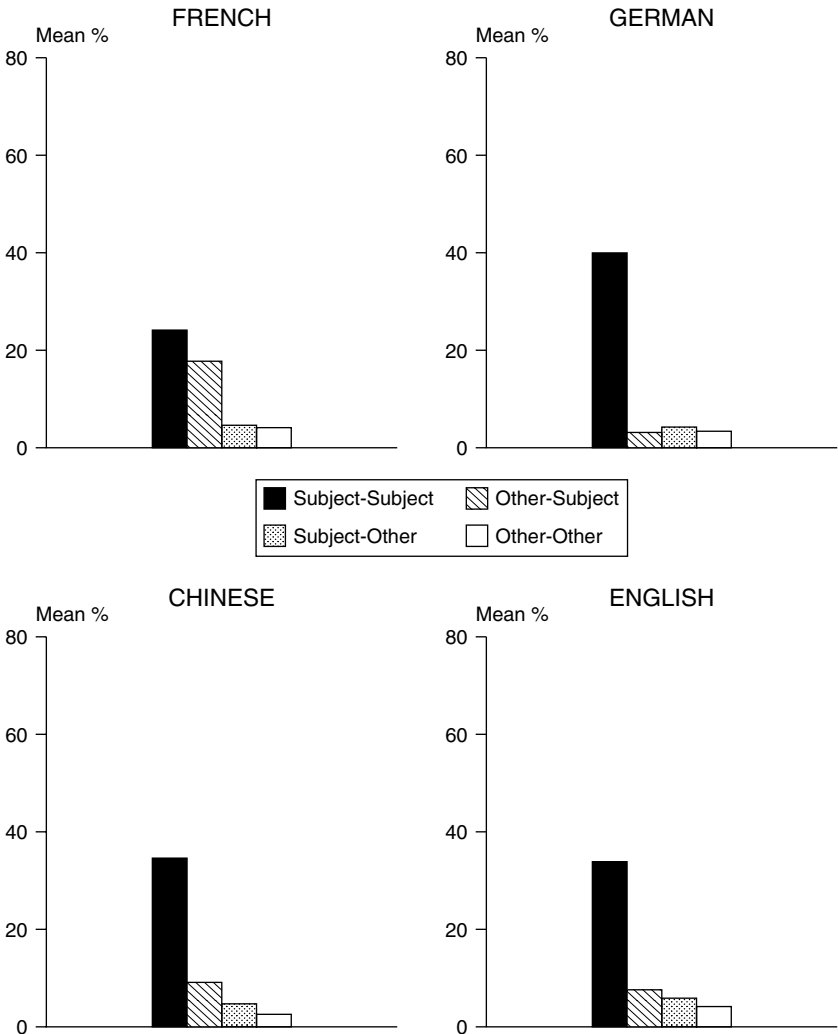


Figure 8.20 Types of coreferential subsequent mentions overall

Figure 8.22 shows the overall distribution of all coreferential subsequent mentions as a function of coreference type (SS, OS, others) and form (pronominals vs. nominals) within each language group, collapsing ages and stories. SS-pronominals are most frequent in German (65%), Chinese (59%), and English (55%), while both SS- and OS-pronominals are frequent in French (38% and 28%, respectively). In contrast, the less frequent coreferential nominals are scattered across all coreference types.

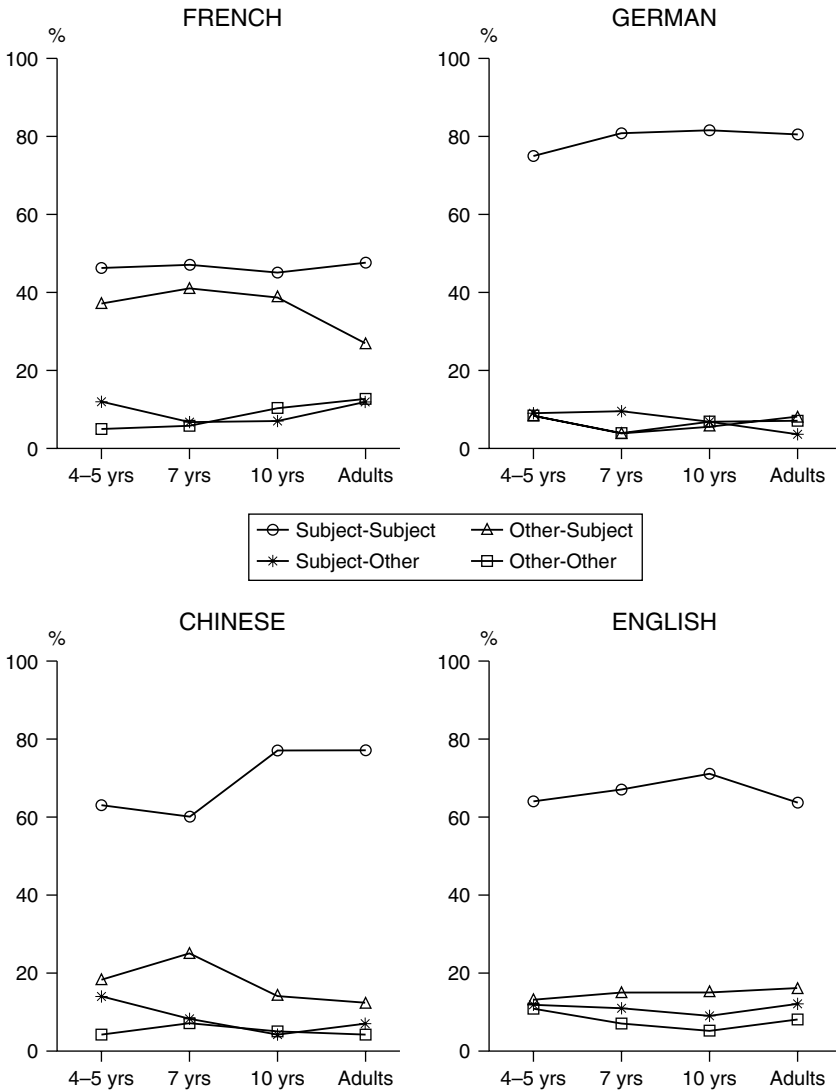


Figure 8.21 Types of coreferential subsequent mentions across ages

This pattern is significant in both stories, despite the overall higher density of SS pronominals in the HORSE story. Figures 8.23 and 8.24 further show the mean percentages of SS-pronominals vs. nominals for each referent of the two stories (collapsing ages). SS-pronominals are most frequent for the horse and for the cat, although the differences among referents are more marked in the HORSE story than in the CAT story.

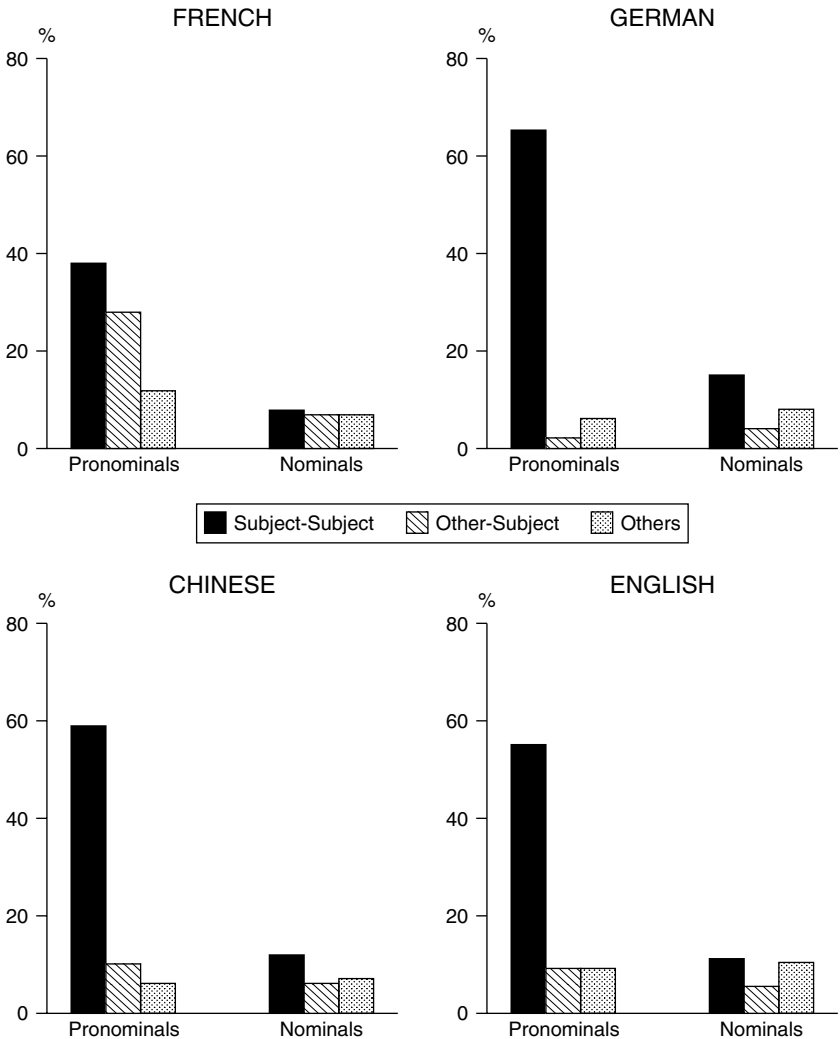


Figure 8.22 Types of coreferential subsequent mentions within each form type overall

Some age variations also occur, particularly in the uses of pronominals. As shown in Figure 8.25, SS-pronominals increase significantly with age in Chinese (particularly between seven and ten years) and in English (from pre-school to ten years), but not significantly in German and not at all in French. Additional analyses show that this increase in Chinese and English holds for both stories, whereas French and German SS-pronominals tend to increase in the CAT story, but not in the HORSE story.

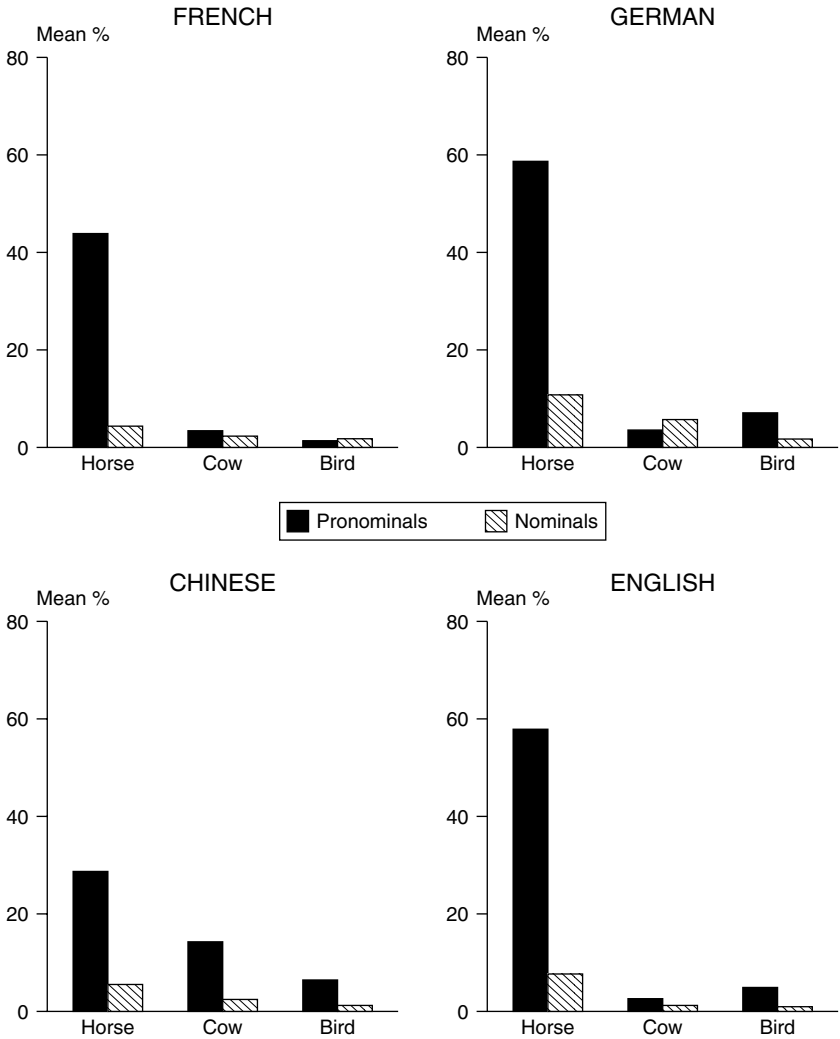


Figure 8.23 Pronominal and nominal subsequent mentions in SS relations for each character in the HORSE story

8.2.5 *Variations within form types*

More qualitative analyses show some variations among different types of pronominals and nominals. First, in all languages null elements are always subjects, with few exceptions, illustrated in (8.46) (relevant NP in bold). In comparison, there is more variability in the roles of overt pronominals (67% subjects in French, 82% in English, 76% in German, 72% in Chinese), with the notable

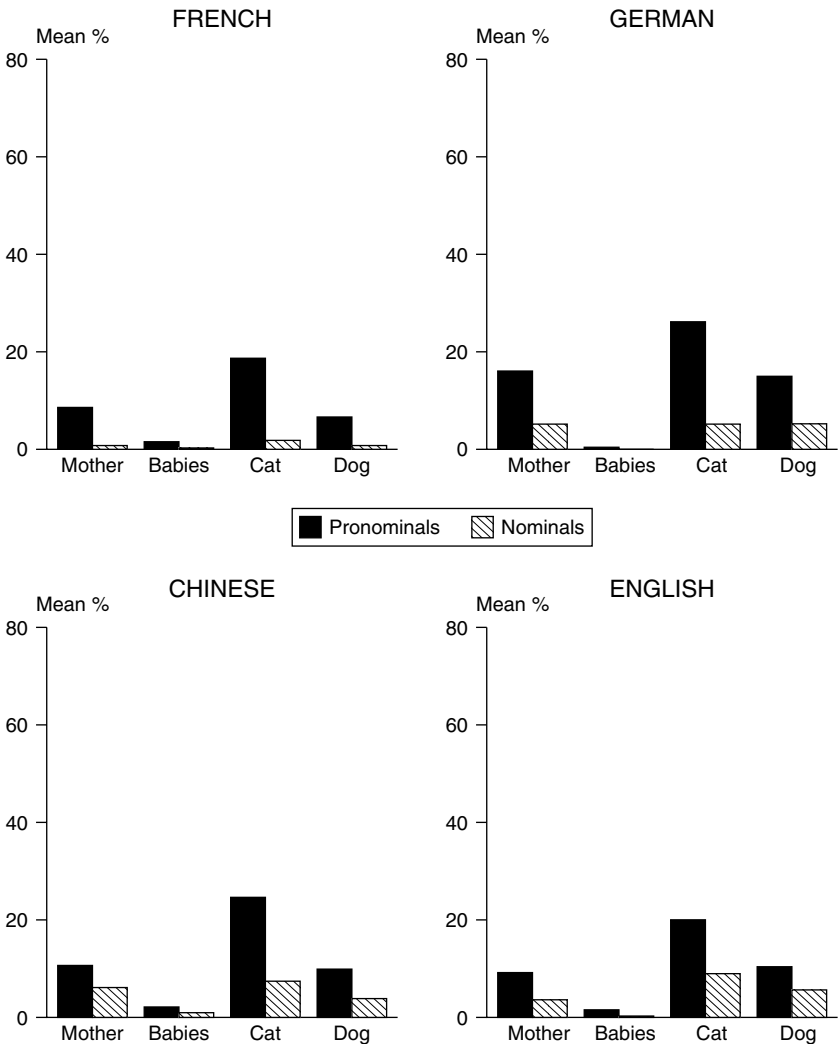


Figure 8.24 Prenominal and nominal subsequent mentions in SS relations for each character in the CAT story

exception of French relative pronouns, which always consist of the subject pronoun *qui* ('who/that') in complex existential constructions such as (8.47).

- (8.46) Il part et le chien il court après [0]. (7 years)
 ('He [cat] leaves and the dog he runs after [him].')
- (8.47) Et puis y'a la maman oiseau **qui** s'en va. (5 years)
 ('And then there's the mother bird that leaves.')

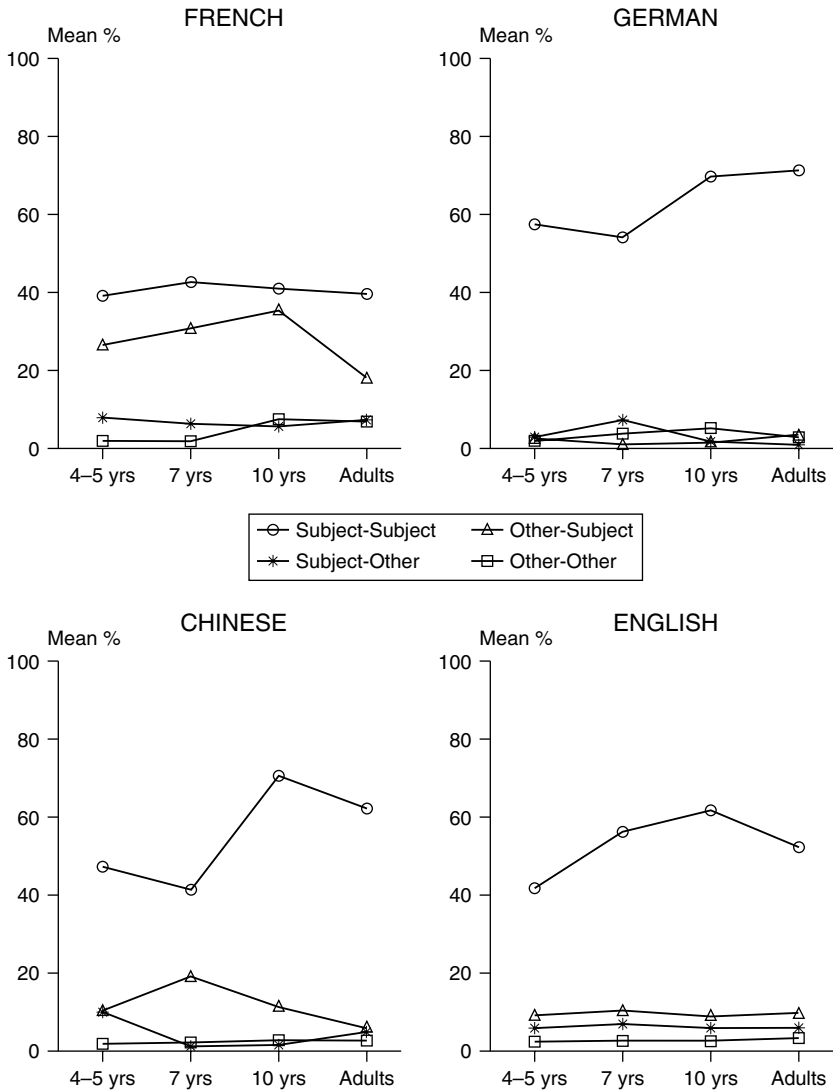


Figure 8.25 Types of coreferential subject pronominals

Second, null elements are almost always coreferential, but overt pronouns are more variable in this respect (English 97% vs. 83%, German 96% vs. 76%, Chinese 92% vs. 70%, French 100% vs. 77%). However, exceptional non-coreferential null elements in English and German all involve preceding subordinate clauses as in (8.48) (grammatically correct and pragmatically appropriate), but also in other contexts in the Chinese children's narratives, e.g. (8.49).

- (8.48) Then a cat comes along when the bird flies away, [0] sat down... (10 years)
- (8.49) Ta1 pao3 ne, hou4lai2 ne you3 yi1-ge niu2 zai4 zher4, ke3shi4 zher4 [0] tiao4-bu4-guo4-qu4. (5 years)
(3p run PCL, then PCL have one-CL cow be-at here, but here jump-not-pass-go)
(‘He [horse] was running, then there was a cow here, but here [horse] couldn’t jump over.’)

Third, null elements almost always occur in SS-contexts in the Indo-European languages, with few exceptions, such as the odd case in English (8.50) (presumably involving a repair) and rare cases in French (see example (8.46) above). Chinese null elements are most frequent in SS-contexts (86%), but they also occur in other relations, for example (8.51).

- (8.50) The cow... looked on the horse... [0] rode on its back... in agony. (Adult)
- (8.51) Yi4-zhi1 da4 huang2gou3 lai2 le, jiu4 [0] yao3 ta1 de wei3ba. Yi2xia4 [0] pao3 le. (7 years)
(one-CL big yellow dog come LE, then bite 3p-POS tail. Suddenly run LE)
(‘A yellow dog comes and [0] bites his [cat’s] tail. Suddenly [cat] ran away.’)

More variation occurs with overt pronouns. German and English pronouns frequently occur in SS-contexts at all ages (overall 79% and 69%, respectively), but others are evenly scattered across other coreference types. Chinese overt pronouns are also frequent in SS-contexts at ten years (80%) and at the adult age (68%), but less so at pre-school age (56%) and at seven years (44%), where they are frequent in SO-contexts such as (8.52) and in OS-contexts such as (8.53) (where the context clause contains a presentative) or (8.54) (where the context clause contains a direct object).

- (8.52) [0] Gan3jin3 pao3, hou4lai2 gou3 hai2 zhui1 ta1 qu4. (5 years)
(hasten run, afterwards dog still chase 3p go)
(‘[Cat] quickly ran away, and then the dog went chasing him.’)
- (8.53) You3 yi4tian1 you3 pi2 ma3, ta1 pao3 ne. (5 years)
(once upon a time have CL horse, 3p run PCL)
(‘Once upon a time there was a horse, he was running.’)
- (8.54) [0] Xiang3 chi1 ta1men, ke3shi4 ta1men zai4 shu4dong4 li3. (4 years)
(want eat 3p-PL, but 3p-PL be-at tree hole in)
(‘[Cat] wants to eat them [baby birds], but they are in the tree hole.’)

Finally, although most French nominals occur in non-coreferential contexts, whether they are dislocated (68%) or not (74%), coreferential dislocated nominals occur most frequently in SS- and OS-contexts (57% and 41%, respectively), while non-dislocated ones occur in all contexts (SS 27%, OS 30%, SO 18%, OO 25%). Examples of dislocated structures are shown in (8.55) to (8.59) (relevant NPs in bold). Uses of these structures also vary with age. From about seven years on, they are used increasingly often in contexts where a referent has just been introduced, as in (8.55) and (8.56), or where it is 're-introduced', as in (8.57). Younger children use dislocations in less specialised ways, as illustrated in (8.58) and (8.59).

- (8.55) Y'a un chat qui arrive, **le chat** i regarde le nid, i voit les oiseaux. (10 years)
(‘There’s a cat coming, the cat he looks at the nest, he sees the birds.’)
- (8.56) Y'a un chat, après **le chat** il a vu les oiseaux, il monte à l’arbre. (7 years)
(‘There’s a cat, then the cat he has seen the birds, he climbs up the tree.’)
- (8.57) Le chien fait tomber le chat et **la maman** elle revient. (10 years)
(‘The dog makes the cat fall and the mother she comes back.’)
- (8.58) Le cheval i court et puis **le cheval** i regarde la bamby. (4 years)
(‘The horse he runs and then the horse he looks at the bamby.’)
- (8.59) Elle regarde le cheval, **le cheval** il court. (4 years)
(‘She looks at the horse, the horse he is running.’)

8.3 Summary and discussion

8.3.1 *First mentions*

The analyses concerning first mentions examined how children and adults mark newness in English, French, German, and Chinese, with particular attention to their uses of nominal determiners (local markings) and of clause structure (global markings) to introduce new animate referents in narratives. The results show that three aspects of the development of newness markers are similar across the four languages. First, the acquisition of obligatory markers (indefinite determiners in Indo-European languages, postverbal position in Chinese) occurs relatively late in all languages. Although pre-schoolers use some newness markings in all languages, these uses are not systematic: appropriate determiners are not frequent (about or under 50% across languages) and, with the possible exception of French, postverbal position is either infrequent (English, Chinese) or not contrastive (German). Additional data collected with new samples of children show significant increases in local newness markings by six years, suggesting a somewhat earlier emergence than in the present sample. Nonetheless, the results diverge from studies reporting an early

acquisition of nominal determiners by three/four years (e.g. Brown 1973; Maratsos 1976; MacWhinney and Bates 1978). Our data suggest that, despite some early uses of indefinite/definite determiners, the discourse-internal function of this opposition for the contrastive marking of new/given information is learned late. Such a conclusion only emerges from properly controlled narrative situations characterised by the absence of mutual knowledge (also Kail and Hickmann 1992).

Second, the strong relation that was found in all languages between local and global markings of newness is consistent with the 'new-last' principle according to which new information is preferred in utterance-final position. This study further shows how this principle emerges with age. From seven years on local and global markings of newness attract each other in all languages. Despite differences in overall uses across languages, most postverbal first mentions are locally marked and most locally marked ones are postverbal. Before this age non-uses of local/global markings are only weakly related (see below). Therefore, the above principle should be qualified: newness is indeed preferred in final position, but only if the relevant NP is locally marked. This qualification might account for previous findings that children seemingly do not mark information status with word order (MacWhinney and Bates 1978) or place new information at the beginning of utterances (reviewed in Bates 1976; Slobin 1985a). These previous studies focused on young children who do not yet mark newness locally (two-word stage on) and/or on situations that invite deictic rather than discourse-internal uses of local/global markings, for example indefinite NPs for labellings, utterance-initial NPs for information which is most salient in non-linguistic contexts. As we saw, some uses were of this type in the present study, as a result of the picture presentation mode. Again, the acquisition of newness markings must be examined in situations that require discourse-internal cohesion.

Third, local markings are the first to emerge in all languages, regardless of whether they are obligatory or optional. Thus, Chinese children use both numeral determiners and specific classifiers from seven years on, despite the fact that determiners are entirely optional, that numeral ones are optional for newness, and that specific and general classifiers are both possible in all contexts. Finally, although Chinese children do use postverbal position by seven years, they do not do so as frequently as might be expected even at ten years, given its obligatory nature. These results falsify the hypothesis that Chinese children should first use obligatory postverbal position to mark newness. This conclusion, however, deserves further discussion. Clearly, the frequent uses of both types of optional local markings by Chinese adults (who combine them with postverbal position) might invite children to use these markings at the beginning of acquisition. However, the adult input cannot account for why children do not rely more on obligatory postverbal position, especially at ten years. A further look at this corpus shows some changes with age in the nature of

children's preverbal introductions, reflecting their growing sensitivity to constraints on subject-verb inversions. In particular, these structures are only allowed with a particular set of predicates, such as intransitive motion verbs (see (8.8) above: *Lai2 le yi1-zhi1 gou3* '[There] came a dog'). The ten-year-olds' inappropriate use of preverbal position (typically with appropriate local markings) only occur with predicates that do not allow inversions such as (8.60), whereas younger children use preverbal first mentions (with or without local markings) in conjunction with a variety of predicates, including those that allow inversions, as in (8.61) and (8.62). This constraint partially accounts for the ten-year-olds' inappropriate use of preverbal position, but not for why they did not rely more on other structures such as existentials (possible with any predicate), requiring a further explanation.

- (8.60) *Yi1-zhi1 mao1 lai2-dao4 shu4 xia4.*
(one-CL cat come-arrive tree under)
(‘A cat arrives under the tree.’)
- (8.61) *Yi1-zhi1 gou3 lai2 le.*
(one-CL dog come LE)
(‘A dog came.’)
- (8.62) *Gou3 lai2 le.*
(Dog come LE)
(‘[The] dog came.’)

The finding that Chinese children use local newness markings earlier than global ones is compatible with studies of sentence comprehension showing that local markings are easier to process than global ones (e.g. Ammon and Slobin 1979; Slobin 1982, 1985a; Slobin and Bever 1982). Note that it is not the formal complexity of global markings as such that determines their cognitive complexity, but rather their functional complexity. Thus, Chinese utterance structure is multifunctional at two levels. First, Chinese word order constitutes the principal marking of grammatical relations at the sentence level, for which practically no local markings are available (except for lexical cues and rare optional particles), whereas other languages provide morphological markings of varying complexity. Second, Chinese word order is also an obligatory marking of information status at the discourse level, which is merely optional in other languages (notwithstanding order constraints in French). In contrast, Chinese local newness markings do not contribute to the expression of grammatical relations. Furthermore, they also do not contribute to reference maintenance, mostly characterised by the absence of markings (bare nouns, unmarked pronouns, frequent zero elements), whereas Indo-European morphology (case, person, number, gender) can help disambiguate reference. Also note that greater morphological complexity does not coincide with greater difficulty in

Indo-European: at pre-school age indefinite forms are least frequent in English (least complex morphology) and as frequent in German (most complex morphology) as in French.

Some results also indicate the impact of language-specific factors. In French, children from pre-school on (that is earlier than in Chinese) frequently use postverbal position for newness, even though this type of marking is not strictly speaking obligatory. However, they also use preverbal dislocated NPs (mostly definite) up to seven years, despite the fact that these constructions are not appropriate for referent introductions (see (8.18) above). In this respect, young children differ sharply from older ones, who reserve dislocations for reference maintenance to promote NPs to topic status when there is a 'topic shift'. Such cases are typically of two types, which were illustrated in some of the examples above (see (8.55) to (8.57)): 'extensions' of first mentions before pronominal use and 're-introductions' of referents. They reflect some general properties of spoken French, which relies much on structural variations to mark the given/new distinction (e.g. existentials) and further distinctions in reference maintenance (e.g. dislocations) which are similar in Chinese (Li and Thompson 1981). In this respect, our data are consistent with findings suggesting that some 'subject-oriented' languages such as French (Lambrecht 1981, 1987), Italian (Bates and Devescovi 1989), and Spanish (Dasinger and Toupin 1994) behave like 'topic-oriented' languages such as Chinese in some respects. However, French and Chinese differ in two ways, which might partially account for the earlier use of postverbal position in French. Unlike Chinese, French partially grammaticalises the given/new distinction by means of obligatory preverbal pronouns. Consequently, children may make a strong association between preverbal position and givenness, avoiding this position for newness. Furthermore, presentatives mostly consist of existentials in French (where inversions are rather literary as in English). In contrast, inversions are quite common in Chinese, presenting children with difficulties directly tied to the grammatical system (e.g. displaced agent, predicate constraints).

In English word order is rarely exploited as a marking of information status. This result is consistent with studies showing that English word order is all the more strongly tied to the marking of grammatical relations in that morphology is relatively weak. Thus, previous studies (see Chapter 5) show that adults and children rely heavily on word order during sentence comprehension and produce few word-order variations in discourse (e.g. MacWhinney and Bates 1989). Children's reliance on word order at the sentence level might also account for their infrequent use of local newness markings at pre-school age, given the attraction that was found between local and global markings. Thus, if English NPs are more heavily determined by argument structure than by discourse factors, young children may be inclined to use preverbal definite NPs on first mention with some predicates (e.g. subjects of intransitive motion verbs, such as *come*, frequently used for introductions). In

comparison, French and Chinese children use more frequent structural variations with the same predicates, thereby avoiding preverbal first mentions and increasing the likelihood of local markings. Note that, despite an increase in English postverbal introductions with age, these NPs remain infrequent by the adult age, in contrast to Chinese, where morphology is weak, but global newness markings obligatory in the adult system.

Postverbal position is not a contrastive newness marking for German children, who use frequent postverbal NPs independently of given/new information status. This result is related to children's heavy use of sentence-initial spatio-temporal elements (*und da* 'and there', *und dann* 'and then'), with which subject-verb inversions are grammatically obligatory (see Chapter 3). Example (8.63) shows four postverbal NPs that directly follow from these connectives: two first mentions (in bold), one locally marked (*eine Katze* 'a cat'), the other not (*der Hund* 'the dog'), and two subsequent mentions (*die Vögelchen* 'the little birds', *die Katze* 'the cat'). Older children and adults use fewer such connectives, as well as more subordinate clauses which require a verb-final order (and therefore preverbal NPs), for example (8.64). Thus, German children's heavy reliance on postverbal position reflects a combination of pragmatic and grammatical processes. Note that reliance on position is nonetheless indirectly tied to information status, since it follows from the uses of other devices that structure discourse.

- (8.63) (...) un da war **eine Katze**. Da waren **die Vögelchen** alleine. Un dann geht **die Katze** hoch zu den Vögelchen. Un da kam **der Hund** (...) (4 years)
(‘and there was **a cat**. There were **the little birds** alone. And then goes **the cat** up to the little birds. And there came **the dog**...’)
- (8.64) (...) sie bemerkt nicht, daß da unten **eine Katze** ist. (...) (10 years)
(‘she [mother bird] does not notice that under there **a cat** is...’)

Finally, newness markings also vary with referents, but this effect is not homogeneous across languages. Local markings are more frequent for the main protagonist in Chinese (all ages) and in English (seven-year-olds), but less frequent for this referent in French (pre-schoolers), while no such effect of thematic status occurs in German. The French data are consistent with previous findings showing that young children presuppose main protagonists on first mention (Kail and Hickmann 1992). Although they might reflect a more general effect of thematic status, whereby children mainly presuppose the main protagonist (Karmiloff-Smith 1981), differences in this respect across languages suggest that this effect is not as general as might be expected on the basis of previous research. With respect to global markings, referent effects involve three factors: thematic status, narrative depth, and role. With

the exception of German, postverbal introductions in existential constructions are frequent with the main protagonist and/or with referents that appear at the very beginning of the plot, while subject-verb inversions only introduce referents later (cat, dog). In addition, non-agentive referents (baby birds) are more likely to be introduced with postverbal object NPs (likely to be locally marked) than agentive ones.

8.3.2 *Subsequent mentions*

The results concerning reference maintenance highlight three types of implications. First, these results show that immediate discourse coreference has a massive impact on form variations in all age and language groups, showing that children are sensitive to referential continuity vs. discontinuity across clauses from four years on. In contrast, the analyses of referent introductions above showed that the ability to distinguish newness from givenness emerges later. In particular, obligatory newness markings (indefinite forms in the Indo-European languages, postverbal position in Chinese) are not systematically used for referent introductions until about seven or even ten years. The results raise a first question concerning timing in acquisition. The findings suggest the later development of newness markings in comparison to markings indicating degree of givenness. Late mastery of the forms of referent introductions is not consistent with some previous studies focusing on nominal determiners. However, as discussed above, the data used to claim early mastery were not the most appropriate (e.g. because of confounding variables such as mutual knowledge). In comparison, our result is compatible with studies focusing on children's discourse-internal uses of nominal determiners in the absence of mutual knowledge, showing the importance of controlling this crucial variable in the study of discourse development. Nonetheless, the lag observed in the mastery of appropriate forms for first vs. subsequent mentions must be explained. Such a lag is not consistent with the findings of other studies, which show a difference in the reverse direction. For example, anomalous first mentions are more salient to young children and therefore detected earlier than anomalous subsequent mentions (Hickmann and Schneider 1993). In addition, a stronger impact of coreference on pronominal use can be observed among French eleven-year-olds as compared to six- and nine-year-olds (Hickmann *et al.* 1995), suggesting that coreference becomes the predominant organising principle in reference maintenance at this age.

Second, let us consider the different factors determining form use across languages for first and subsequent mentions in the present study. A number of factors have an impact on the acquisition of both sets of markings, including factors that operate within utterances (syntactic and semantic roles) and across them (discourse status as new, given, most presupposed). In French, English, and Chinese (for German, see below), subsequent mentions are often preverbal, particularly

when they are in agent and/or subject roles, while first mentions in various roles are often postverbal, particularly when they are locally marked for newness. In addition, in contrast to nominals, pronominals are massively preverbal. Although this fact is not surprising in French, since clitic pronouns are obligatory in this position, it can also be observed in English and Chinese, where pronoun placement is not so grammatically constrained. This cross-linguistic similarity suggests the need for a pragmatic account, that can at least partially encompass all three languages. The results also show that NP role has no impact on form variation in any of the four languages. Agency is not related to form: agentive and non-agentive NPs are as likely to be pronominalised. Although subjecthood and pronominalisation are seemingly related, coreference overrides this relation: subject NPs are likely to be pronominalised, but only when they are coreferential with another subject NP in the preceding clause. Indeed, local coreference is the crucial variable accounting for the forms of subsequent mentions, as shown by two results: pronominals are most likely to occur in coreferential contexts, but nominals in non-coreferential contexts; NPs in SS-relations are more likely to be pronominalised than those in all other types of relations. These results are extremely sturdy across languages, ages, stories, and referents.

Finally, although these general aspects of development apply to all languages, others are clearly language-specific. In particular, a number of language-specific properties affect the likelihood with which children use word order for discourse organisation in a given language, as shown in two striking patterns. First, most German NPs are postverbal regardless of discourse status, particularly in the narratives of the young children, who frequently use sentence-initial spatio-temporal elements to anchor and structure discourse (resulting in grammatically obligatory inversions). German speakers also tend to use more nominals than other groups. It is possible that these two results are related, for example postverbal position might 'attract' fuller forms in comparison to preverbal position. Indeed, both nominals and postverbal position decrease with age in German. However, the high frequency of nominals may also result from the fact that coreferential relations are less frequent in German than in other languages, particularly at pre-school age and at seven years, gradually increasing with age thereafter. This finding might also account for the high frequency of nominals in the German narratives. This particular pattern in the German corpus was not expected and deserves further research.

Second, the fact that French partially grammaticalises the given/new distinction (since clitic pronouns are obligatorily preverbal) perhaps highlights this distinction during first language acquisition, encouraging children to make more use of clause structure variation in French as compared to other language groups. Thus, presentative constructions are most frequent in French both for the introductions and for the re-introductions of referents, resulting in more frequent OS-relations

in discourse as compared to other languages. Such sequences are of several types, particularly among older children: the presentative construction includes a subject relative pronoun and/or it is followed by a dislocation that 'promotes' the referent to topical status for the purpose of pronominalisation in further discourse (see example (8.55) above). Until seven years children use such structures in less specialised ways not only for reference maintenance, but also for first mentions (see (8.18) above), thereby providing inappropriately marked 'topic shifts'.

Cross-linguistic variation was also found in finer-grained analyses of particular referring expressions. All other things being equal, null elements are most frequent in Chinese and quite frequent in German. This result cannot be accounted for in pragmatic terms, but it is predicted by parametric theory, according to which Chinese is a pro-drop and zero-topic language, German a non-pro-drop and zero-topic language (Huang 1984). However, other facts raise some questions about the parametric status of the languages examined, such as the very low frequency of null elements in French as compared to English (both of which are assumed to be non-pro-drop and non-zero-topic). In addition, only a functional approach can account for why speakers might or might not choose to make use of the null subject options provided by their language in given contexts. The data show that similar functional principles determine form variation in all languages, regardless of parametric differences among them: null elements overwhelmingly occur in SS-coreferential contexts, as compared to overt pronouns (which occur in other coreferential contexts) and to nominals (which occur mostly in non-coreferential contexts).

Further research is necessary to address some questions not considered here. First, further analyses must also examine some grammatical factors, such as hierarchical relations across clauses, that might override pragmatic factors linked to linear discourse organisation. Indeed, with increasing age, children gradually use more subordinate clauses, particularly temporal-aspectual ones (e.g. *when*, *as soon as*, *while*). Such uses simultaneously introduce some grammatical constraints, which are not taken into account by the linear analyses presented here. A first set of analyses suggests that such grammatical constraints only account for a limited set of cases where structures involved grammatical constraints on pronominalisation, while the great majority of subsequent mentions occur in independent main clauses (particularly until adult age). Other analyses (see subsequent analyses in Chapter 10) show that these clauses serve a number of discourse functions, frequently co-occurring in all languages with contrastive uses of temporal-aspectual markings (verbal inflections, aspect particles) in particular discourse contexts. As will be shown, children from seven years on combine structural and morphological means to ground information in discourse, that is to differentiate the discourse foreground and background. Second, further analyses must examine coreference in the narrative. In particular, much weight was placed here on immediate coreference

in comparison to other types of coreferential relations, which must be defined in terms of a larger distance across clauses in discourse. In this respect, it is likely that particular referents (e.g. main protagonists) might be presupposed over large stretches of discourse.

Indeed, our results show that the only referent that constitutes a main protagonist in the stimuli of the present study (the horse in the HORSE story) clearly stands out in reference maintenance in comparison to all others. This referent is most often denoted by coreferential SS-pronominals, accounting for most differences observed across stories. This result holds for all age and language groups, despite variations concerning form and position across them. However, this configuration of properties is part of a larger pattern, since the likelihood of pronominalisation is greater in SS-contexts, regardless of referents. The special status of the main protagonist, then, could result from at least three factors: the greater frequency of reference to this entity, the resulting greater density of coreference in relation to this entity, and the more frequent use of NPs denoting this entity in subject role. Further qualitative analyses are also necessary to determine whether different individual strategies may have gone uncovered by the research presented above, with particular attention to children's uses of forms in same-subject vs. switch-subject contexts. For example, the results suggest that children at all ages use pronominals and nominals contrastively according to a number of local coreference strategies. In contrast, the hypothesis that some children rely on a global thematic subject strategy (Karmiloff-Smith 1981) predicts that they should use subject pronominals only to denote the main protagonist and avoid using other forms or other NP roles for this referent, regardless of other factors (presence and type of local discourse coreference). As noted above, the results concerning first mentions also show some impact of referent status with referent introductions, but only among the French children (also see Kail and Hickmann 1992). Further research is necessary to account for cross-linguistic differences in this respect.

In conclusion, children's acquisition of the devices necessary to mark information status is determined by several factors in all languages. With respect to newness markings, obligatoriness clearly affects the developmental process, but the timing and course of acquisition is also partly determined by relative functional complexity in a given language. In particular, the devices available to mark newness contribute to two levels of organisation: the sentence and discourse. This type of multifunctionality presents children with an essential problem to solve during the acquisition of all languages. However, global markings present further difficulties in this respect when the languages to be acquired provide few local markings for grammatical organisation. In these cases children seem to 'reserve' global markings for sentence organisation (English, Chinese). Similarly, with respect to reference maintenance, syntactic and semantic sentence-internal factors have an impact on word

order, but discourse pragmatic factors strongly affect the form and position of referring expressions. In addition, language-specific factors result in cross-linguistic differences. Null elements partially vary as a function of parametric language properties. Clause structure partially varies as a function of other properties, for example French presentatives and dislocations are used to mark information structure in discourse, while the heavy reliance on postverbal position in German is determined by a combination of discourse pragmatic and grammatical factors. Given such results, then, an adequate model of acquisition in this domain requires a careful cross-linguistic account of how language maps both discourse and grammatical functions onto forms. The present study suggests that this type of multifunctionality is a fundamental problem to be solved by children during language acquisition.

9 *Space*

This chapter examines a variety of linguistic devices expressing motion and location in the narratives. As we saw (Chapter 6), previous developmental studies have shown the role of general cognitive factors in children's organisation of spatial information in discourse, as well as the impact of language-specific factors from the youngest ages onwards. Recall (Chapter 3) that languages belong to typologically distinct families with respect to the encoding of motion events (Talmy 1983, 1985, 2000). Satellite-framed languages (English, German, and Chinese in the present sample) represent the manner of motion in the main verb root, while compactly expressing other types of information by means of satellites (such as particles, prepositions, complex verb constructions). In contrast, verb-framed languages (French in the present sample) encode path information in the verb root, while manner, if it is at all expressed, is encoded in the periphery of the clause. The analyses below first examine the situation types denoted by various predicates across languages (Section 9.1). I then examine the ways in which spatial grounds are mentioned in discourse, focusing first on the overall explicitness of these mentions (Section 9.2), then on the first mention of these entities in discourse (Section 9.3) and on subsequent reference-maintenance (Section 9.4). It is concluded (Section 9.5) that sentence factors (grammaticalisation or lexicalisation) and discourse factors (the status of spatial information) both affect children's uses of spatial devices, resulting in invariant, as well as language-specific developmental patterns.

9.1 Situation types

I begin by comparing the different types of situations that were represented across language and age groups. For this purpose, I focus on the nature of all the predicates that were found in the narratives, taking into account the properties of the verb, its satellites, and various complements in the clause. I first compare the relative frequencies of static and dynamic predicates (Section 9.1.1), then examine in more detail dynamic predicates with respect to several dimensions (Section 9.1.2).

9.1.1 *Static vs. dynamic predicates*

Predicate types fall into three classes depending on whether they involve motion and on whether this motion does or does not imply a change of location (also see Chapter 7). As illustrated in (9.1) to (9.5), a first class of predicates includes uses of the copula, posture verbs, or other verbs that localise a referent in the absence of any motion (hereafter *static* predicates).

- (9.1) There is a horse in a meadow.
 (9.2) The bird is sitting on the fence.
 (9.3) Y’a une maman oiseau avec ses petits.
 (‘There’s a mother bird with her little ones.’)
 (9.4) Da sitzt die Katze unter dem Baum.
 (‘There sits the cat under the tree.’)
 (9.5) Niao3 zai4 lan2gan1 shang4 zhan4-zhe.
 (bird at fence on stand-IMP)
 (‘The bird is standing on the fence.’)

A second type includes all dynamic predicates denoting motion events that do not imply any change of location (hereafter *dynamic general* predicates). In these cases, motion takes place within a general location, whether this location is mentioned explicitly within the utterance or presupposed from context. Examples are shown in (9.6) to (9.9).

- (9.6) The horse is running.
 (9.7) Die Katze klettert hoch.
 (‘The cat climbs up.’)
 (9.8) Le cheval galope dans le pré.
 (‘The horse gallops in the meadow.’)
 (9.9) Ma3 zai4 pao3.
 (horse DUR run)
 (‘The horse is running.’)

Finally, a third type includes all dynamic predicates that imply a change of posture and/or of location (hereafter *change of location*). Examples (9.10) to (9.13) illustrate these cases with utterances representing a departure from – or a return to – an explicit or implicit origo.

- (9.10) The mother bird flies away.
 (9.11) Die Katze läuft weg.
 (‘The cat runs away.’)
 (9.12) La maman oiseau quitte le nid.
 (‘The mother bird leaves the nest.’)

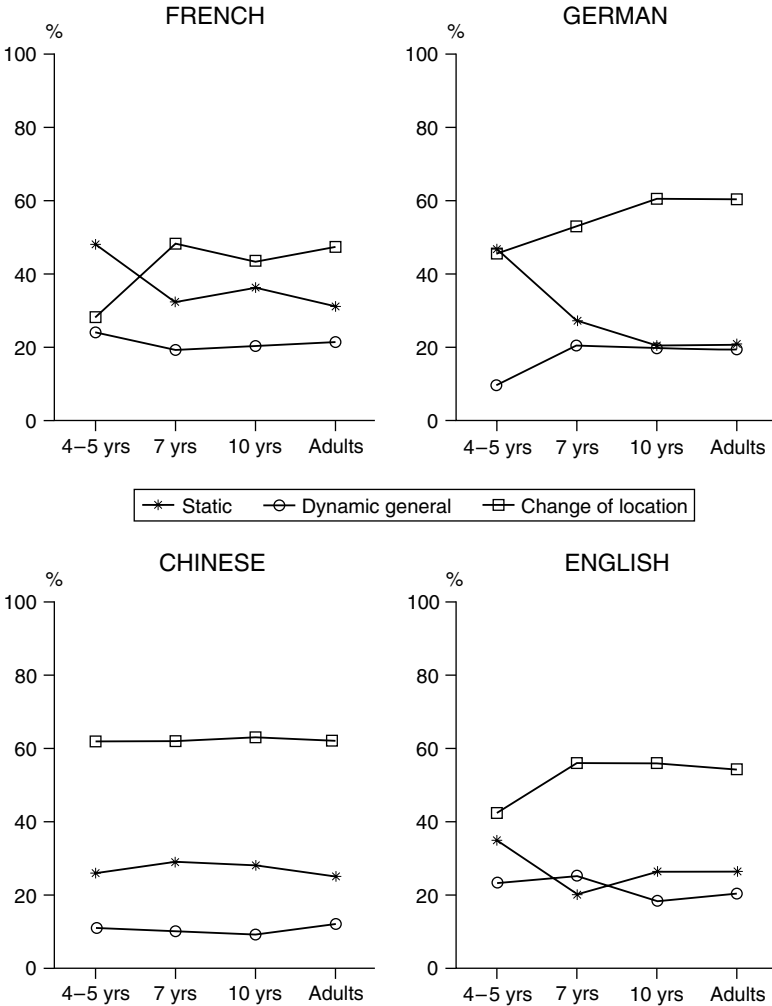


Figure 9.1 Overall distribution of predicate types

- (9.13) Niao3 fei1-hui2-lai2 le.
 (bird fly-return-come LE)
 ('The bird came flying back.')

Figure 9.1 shows the overall proportions of these three different predicate types across language and age groups. In all languages there are fewer dynamic general predicates overall, as well as more changes of locations, in comparison to static predicates. However, this pattern is more marked in the English, German, and Chinese narratives, as a result of frequent uses of static predicates in French. In

addition, age differences occur in the Indo-European languages, where more static predicates and fewer changes of locations occur at four/five years than at other ages. This pattern is especially marked in French, where static predicates are the most frequent at this age, in comparison to all dynamic predicates.

Further analyses examined the predicates used for particular pictures of these stories in order to determine the extent to which predicate types might differ for the very same situation across languages. These analyses are not presented in detail here, but only illustrated with a particular example relevant to the discussion below. The results above partly replicate previous findings (Berman and Slobin 1994) suggesting that speakers of verb-framed languages focus more on static aspects of situations than on dynamic ones, as compared to speakers of satellite-framed languages. In addition, consider now how children narrated motion events at the onset of the HORSE story (see the Appendix). The first picture of this story shows a dynamic event taking place within a general location (a horse running in a meadow). This situation presents the following conflicting requirements: the speaker must recount a dynamic event, while simultaneously setting the scene. It was expected that French children would use more static predicates than children in other groups in order to set this scene. Indeed, despite some similarities across languages linked to the contents of the picture, some differences can be observed. First, this picture elicits few changes of location in all languages, but these predicates are least frequent in French, especially at four/five years (no occurrence, as compared to 31% in German, 18% in English, and 14% in Chinese). Second, dynamic general predicates occur in all languages and at all ages, but static predicates are most frequent in French at four/five years (55% as compared to 38% in German, 23% in English, and 36% in Chinese), as well as in French and Chinese at seven years (41% and 59%, respectively, as compared to 23% in English and 17% in German). I return to this point below (Section 9.2.2) to show that this result is partly related to subjects' uses of presentative constructions in French and Chinese, illustrated in (9.14) and (9.15). Although existentials also occur in English and German, children frequently use dynamic predicates in various clause types for this picture, as shown in (9.16) and (9.17).

- (9.14) Y'a un cheval qui court dans un pré.
(‘There’s a horse that’s running in a meadow.’)
- (9.15) You3 yi1-pi2 ma3 zai4 cao3yuan2 shang4 pao3.
(have one-CL horse be meadow surface run)
(‘There’s a horse running in a meadow.’)
- (9.16) A horse is running in a meadow.
- (9.17) Da läuft ein Pferd auf der Wiese.
(‘There runs a horse in the meadow.’)

Table 9.1 *Packaging of information in dynamic predicates: French*

	4–5 years	7 years	10 years	Adults	Total
GENERAL LOCATION					
Manner	.61	.48	.56	.32	.51
Direction	.32	.41	.15	.24	.29
Deixis	—	—	.04	.12	.03
Manner + Direction	.07	.07	.26	.28	.16
Manner + Deixis	—	—	—	.04	<.01
Direction + Cause	—	.03	—	—	<.01
LOCATION CHANGE					
Manner	.14	.12	.17	.19	.16
Direction	.14	.12	.11	.16	.13
Deixis	.53	.72	.65	.59	.63
Cause	—	—	.03	—	<.01
Manner + Deixis	.19	.04	.04	.06	.07

Table 9.2 *Packaging of information in dynamic predicates: English*

	4–5 years	7 years	10 years	Adults	Total
GENERAL LOCATION					
Manner	.64	.71	.68	.51	.63
Direction	—	—	.06	—	.01
Manner + Direction	.35	.29	.26	.47	.35
Direction + Cause	—	—	—	.02	<.01
LOCATION CHANGE					
Manner	.19	.14	.20	.19	.18
Direction	.13	.12	.08	.08	.10
Deixis	.43	.51	.39	.40	.43
Manner + Direction	.01	.05	.04	.03	.04
Manner + Deixis	.18	.09	.18	.16	.15
Direction + Deixis	.03	<.01	.01	—	.01
Cause	—	—	—	.01	<.01
Direction + Cause	.01	.03	.04	.04	.03
Deixis + Cause	.03	.03	.05	.07	.05

9.1.2 *Manner, direction, deixis, cause*

Tables 9.1 to 9.4 show the proportions of different dynamic predicates that encode information about manner, deixis, direction, and cause. Overall, the majority of dynamic predicates package one or more of these types of information

Table 9.3 *Packaging of information in dynamic predicates: German*

	4–5 years	7 years	10 years	Adults	Total
GENERAL LOCATION					
Manner	.70	.63	.53	.61	.61
Direction	.10	.10	—	—	.05
Deixis	.10	—	—	.15	.05
Manner + Direction	.10	.16	.33	.15	.20
Manner + Deixis	—	.10	.13	.08	.09
LOCATION CHANGE					
Manner	.18	.13	.18	.19	.17
Direction	.10	.09	.08	.10	.09
Deixis	.46	.51	.44	.40	.45
Manner + Direction	.09	.02	.04	.07	.05
Manner + Deixis	.16	.16	.15	.17	.16
Direction + Cause	—	.02	.04	.02	.02
Direction + Deixis	—	.01	—	—	<.01
Deixis + Cause	—	.05	.07	.06	.05

Table 9.4 *Packaging of information in dynamic predicates: Chinese*

	4–5 years	7 years	10 years	Adults	Total
GENERAL LOCATION					
Manner	1.0	1.0	1.0	.91	.97
Manner + Deixis	—	—	—	.04	.01
Direction + Direction + Deixis	—	—	—	.04	.01
LOCATION CHANGE					
Manner	.14	.18	.17	.18	.17
Direction	—	.06	.03	.04	.03
Deixis	.42	.42	.43	.40	.41
Cause	.01	<.01	.02	—	<.01
Manner + Direction	.07	.03	.06	.01	.04
Manner + Deixis	.13	.20	.20	.21	.19
Manner + Cause	.04	.02	—	<.01	.02
Manner + Direction + Deixis	.05	.05	.03	.03	.04
Direction + Deixis	.11	.03	.05	.07	.06
Direction + Deixis + Cause	.03	.02	.03	.05	.03

in addition to sheer motion in all languages (88% in French and English, 87% in German, 93% in Chinese) and at all age groups (variations between 77% and 90% in French, 77% and 96% in English, 84% and 93% in German, 90% and 97% in Chinese). However, dynamic predicates vary in several important ways across languages. These differences are observed at all ages and they can be summarised along the following dimensions: the diversity of predicate types, the extent to which predicates encode multiple types of information, and the extent to which this information is either compactly packaged in the clause or distributed across clauses in discourse.

First, French provides a rather limited set of dynamic predicates (about a dozen frequently used types and a few additional ones with rare tokens), as compared to the wide diversity that can be observed in the other languages (over a hundred frequently used types). This difference in diversity is quite striking at all ages. Second, in all languages dynamic general predicates encode mostly manner alone (e.g. *run*, *laufen*, *courir*, *pao3*), while changes of location encode mostly deixis (*come back*, *zurückkommen*, *partir/venir*, *lai2*). However, important differences also occur across languages in the types of information that are encoded in these predicates. In particular, many English and German predicates combine manner with direction at all ages, particularly dynamic general predicates (e.g. *climb up*, *hochklettern*). In addition, changes of location also frequently encode combinations among other different types of information, for example manner and deixis (*run away*, *wegfliegen*), manner and direction (*jump up*, *hochspringen auf+ACC*), cause and direction (*pull down*, *runter ziehen*), cause and deixis (*chase away*, *wegjagen*). In contrast, Chinese dynamic general predicates practically always encode only manner (e.g. *pao3* ‘run’), while changes of location typically combine different types of information, mostly by means of resultative verb constructions (e.g. *pa2-shang4-qu4* ‘climb-ascend-go’, *tiao4-guo4-qu4* ‘jump-cross-go’). In this respect, Chinese encodes some events by focusing on resulting states, while other languages encode the same event as involving merely a general location. In French few combinations occur: dynamic general predicates mostly encode manner alone (e.g. *courir* ‘to run’) or direction alone (*monter* ‘to go up’), despite an increase in some predicates encoding both manner and direction simultaneously from ten years on (e.g. *grimper* ‘to climb up’). Similarly, French predicates involving changes of locations mostly encode deixis alone (e.g. *partir* ‘to leave’, *venir* ‘to come’), with few combinations, except for some rare cases that encode both manner and deixis either in the verb root (e.g. *s’envoler* ‘to fly off/away’) at four/five and seven years or by means of more complex peripheral adjuncts (e.g. *partir en courant* ‘to leave by running’) from ten years on.

Finally, some types of information present difficulties to young narrators which seem to vary as a function of their language. For example, consider some excerpts from the narratives, all of which describe the fifth picture of the CAT story (see the Appendix). In this picture, the cat is hanging from the branch of the tree, trying to

get to the bird's nest, while the dog is pulling on its tail. It is possible to infer from this picture and from the subsequent picture, which shows the dog chasing the cat away, that the dog acts on the cat in such a way as to make it come down from the tree. As shown in the excerpts (9.18) to (9.21), English-speaking narrators from four years on express causativity and combine this information with other types of information (direction, manner, deixis) within the same utterances when describing these events, that is through the use of predicates such as *pull down*, *get down*, *bring down*, *get off* (picture 5) or *chase away*, *scare away* (picture 6).

- (9.18) The dog was pulling the cat down by his tail. (4 years)
- (9.19) He tried to get the cat down [...] and then the dog was chasing the cat away. (7 years)
- (9.20) He grabbed his tail and brought the cat down [...] and the dog chased the cat far far away. (10 years)
- (9.21) A dog comes along and grabs the cat by the tail and pulls him off the branch and scares him away. (Adult)

Examples (9.22) to (9.24) from the German corpus illustrate the same phenomenon. Causativity is combined with direction in the description of picture 5 (*runter ziehen* 'pull down'), as well as in the description of picture 6 (*verjagen* 'to chase away').

- (9.22) [...] un dann war die Katze bei fast auf m Baum und der Hund zieht se mit Schwanz runter [...] (7 years)
(‘And then the cat was almost on the tree and the dog pulls it down by the tail.’)
- (9.23) [...] Da beißt der Hund der Katze in den Schwanz und zieht sie runter. [...] (10 years)
(‘[...] There the dog bites the cat in the tail and pulls it down.’ [...])
- (9.24) [...] und im letzten Moment kommt ein Hund dazu und verhindert daß die Katze dann – also zieht die Katze am Schwanz und zieht sie runter und vertreibt – verjagt die Katze. [...] (Adult)
(‘[...] and at the last moment comes a dog too and prevents the cat – so pulls the cat by the tail and pulls it down and chases the cat.’ [...])

Similarly, the Chinese corpus shows the use of compact constructions in combination with particles expressing multiple types of information in relation to these complex events, even though some of this information is spread across utterances in the younger children's narratives. Excerpt (9.25) from a ten-year-old shows a typical complex verb construction *zhuai4 le xia4-lai2* ('pull down-come') which is used in conjunction with an object marker (*ba3*), thereby combining causativity with manner and direction.

- (9.25) Jiu4 den4-zhe ta1 de wei3ba ba3 ta1 zhuai4 le xia4-lai2.
 (then pull-IMP 3p POS tail BA 3p pull LE down-come)
 ('then he pulled his tail he pulled him down.')

In contrast, excerpt (9.26) from a five-year-old's narrative first describes the action of the dog biting the cat in two ways: an active construction that provides the location of the biting ('the dog bites him in his tail'), then a construction involving the passive-like marker *gei3* that combines causativity with direction ('was bitten down'). The cat's change of location is then described with two intransitive constructions describing voluntary motion and providing either direction alone ('come down') or manner and direction ('run down').

- (9.26) Jiu4 yao3 yao3 ta1 yao3 ta1 de wei3ba (ng)
 (then bite bite 3p bite 3p POS tail (ng))
 ('then [the dog] bit him, bit his tail.')
- hou4lai2 ne huang2lang2 nei4-ge gei3 yao3-xia4 nei4-ge... yi1 tuo1
 ta1 de yi3ba
 (after PCL weasel that-CL GEI bite-down that-CL... one pull 3p POS
 tail)
 ('and after the weasel was bitten down... once he had been pulled his
 tail')
- xia4-lai2 le (ng)
 (down-come LE (ng))
 ('he came down (ng)')
- hou4lai2 nei4-ge sh – hou4lai2 nei4-ge... huang2lang2 xia4-pao3 le.
 (after that-CL – after that-CL... weasel down-run LE)
 ('and after, that – and after that... weasel ran down.')

Excerpts (9.27) to (9.30) from the French corpus show a different pattern. For example, in (9.27) and (9.28) the cat's change of location is expressed with intransitive verbs representing either voluntary motion (*descendre* 'to go down') or involuntary motion (*tomber* 'to fall down'), and in neither case is this location change explicitly related to the dog's action by a direct causal link. More generally, although causativity can be expressed in conjunction with path or manner information in French, these different types of information are frequently distributed across clauses in discourse, rather than combined explicitly within the same clause. As a result, some causal chains are not expressed explicitly and must be inferred by the hearer. It is only in the narratives of some ten-year-olds and adults, such as (9.29) and (9.30), that causativity is sometimes explicitly expressed either lexically (e.g. *chasser* 'to chase') or by means of complex causative constructions which compactly combine all types of

information within the clause (e.g. *faire tomber* 'to make fall', *forcer à redescendre* 'to force to come back down', *faire fuir* 'to make flee').

- (9.27) Après le chien lui mord la queue. Après le chat descend de l'arbre et le chien l'attrape. (4 years)
('Afterwards the dog bites his tail. Afterwards the cat comes down from the tree and the dog catches him.')
- (9.28) Il tire le chat par la queue. Le chat tombe. (Adult)
('He pulls the cat by the tail. The cat falls down.')
- (9.29) Et le chien il mord la queue du chat pour le faire tomber [. . .] et ensuite il y a le chien il chasse le chat. (10 years)
('And the dog he bites the tail of the cat to make him fall down [. . .] and then there is the dog he chases the cat.')
- (9.30) Le chien le tire par la queue et le force à redescendre [. . .] puis le fait fuir en aboyant. (Adult)
('The dog pulls him by the tail and forces him to come down [. . .] then makes him flee by barking.')

In sum, then, the French data contain a relatively restricted set of predicates, with most distinctions encoded directly in the verb root. In this language, subjects encode mostly one type of information and/or distribute other components of these events across utterances in discourse. In contrast, in English and German information is coded by particles in numerous combinations with verb roots with all dynamic predicates, while similar combinations occur frequently only with changes of location in Chinese. In addition, with some complex motion events the expression of causativity in combination with other types of information presents problems to young French narrators and/or involves the distribution of the information across clauses until a late age, whereas the description of such events seems to naturally elicit compact predicates providing multiple types of information in the other languages. These different results follow the patterns predicted on the basis of typological properties (Talmy 1983, 1985, 2000) and partially replicate the results reported in other studies (Berman and Slobin 1994) on the basis of a different set of languages.

9.2 Explicitness of spatial grounds

I now turn to analyses focusing on how referents serving as spatial grounds were mentioned in the narratives. For this purpose, I examine how narrators denoted the inanimate referents that served as the main spatial anchor points to locate the animate characters. In the great majority of cases, such grounds involved four inanimate referents in the stories: the meadow and fence in the HORSE story, and the tree and nest in the CAT story (see the Appendix). In this section I examine the

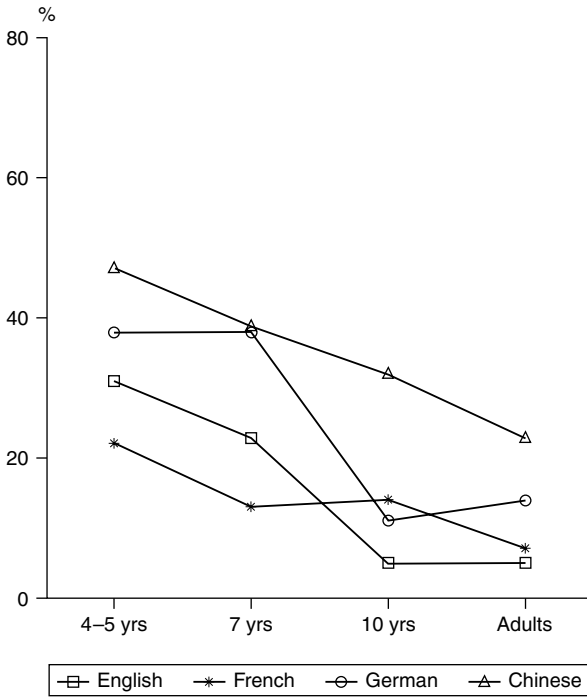


Figure 9.2 Ambiguous mentions of spatial grounds

overall explicitness of ground mentions (Section 9.2.1), as well as some properties of the clause types in which these ground mentions occur (Section 9.2.2).

Two preliminary points concerning ground mentions are first necessary. First, as previously mentioned (Chapter 7), expressions were excluded when they did not denote particular entities, but rather pointed to an entire spatial scene (a picture or even the entire story) and/or were part of larger structures. Such cases mostly concern sentence-initial *da* in German (being extremely rare in the other languages) and they typically occurred in presentative clauses (e.g. *Da ist ein Pferd* ‘There is a horse’). I return to these cases below (Section 9.2.2). Second, among the devices that did mention particular spatial anchors, some were entirely ambiguous and could have denoted one of several possible referents. Figure 9.2 displays the proportions of ambiguous ground mentions across ages and languages, showing that they decrease with age in all languages, particularly between four/five and seven or ten years. All analyses below focus on the devices that unambiguously denoted particular inanimate referents.

9.2.1 Overall explicitness of grounds

I first examine the extent to which children mentioned grounds overall. These cases include all mentions of referents serving to locate the characters throughout the stories, consisting of two types of forms: *full* forms (nominals) and *lean* forms (pronominals). Illustrations of full forms are shown below with different predicates (relevant NPs in bold). Examples (9.31) to (9.34) contain static predicates with indefinite, definite, and bare nominals.

- (9.31) A mother bird is sitting with her baby birds in **a nest**.
 (9.32) Y'a une maman oiseau dans **un arbre** avec ses petits.
 ('There is a mother bird in a tree with her little ones.')
- (9.33) Da sitzt ein Vogel auf **dem Zaun**.
 ('There sits a bird on the fence.')
- (9.34) San1-zhi1 xiao3 niao3 zai4 **niao3wo1** li3.
 (three-CL little bird be/at bird nest in)
 ('Three little birds are in a nest.')

Examples (9.35) to (9.38) illustrate full forms with dynamic general predicates.

- (9.35) A horse is running in **a meadow**.
 (9.36) Le cheval galope dans **le pré**.
 ('The horse gallops in the meadow.')
- (9.37) Auf **einer Wiese** läuft ein Pferd.
 ('In a meadow runs a horse.')
- (9.38) Gou3 zai4 **shu4** xia4 pao3-zhe.
 (dog be/at tree under run-IMP)
 ('The dog is running around under the tree.')

Examples (9.39) to (9.42) illustrate full ground mentions in utterances representing changes of location.

- (9.39) The mother comes back to **the nest**.
 (9.40) Le cheval est tombé **de l'autre côté de la barrière**.
 ('The horse fell on the other side of the fence.')
- (9.41) Das Pferd springt über **den Zaun**.
 ('The horse jumps over the fence.')
- (9.42) Ma3 pao3-dao4 **lan2gan1** qu4 le.
 (horse run-reach fence go LE)
 ('The horse ran to the fence.')

Finally, uses of lean forms for ground mentions are illustrated by the English pronoun in (9.43) and its French and German equivalents in the form of pronominal adverbials in (9.44) and (9.45).

- (9.43) He jumps over **it**.
- (9.44) Il saute **par-dessus**.
- (9.45) Das Pferd springt **drüber**.

Both full and lean ground mentions can be contrasted to all cases where grounds were entirely presupposed in the utterance, as in some of the examples above, such as English (9.6) and (9.10) (reproduced below), where motion takes place within a presupposed general location or towards/away from an origo that is entirely presupposed from context.

- (9.6) The horse is running.
- (9.10) The mother bird flies away.

A global look at this universe in Figure 9.3 shows the overall density of (full and lean) reference to entities serving as spatial grounds in the narratives. It can be seen

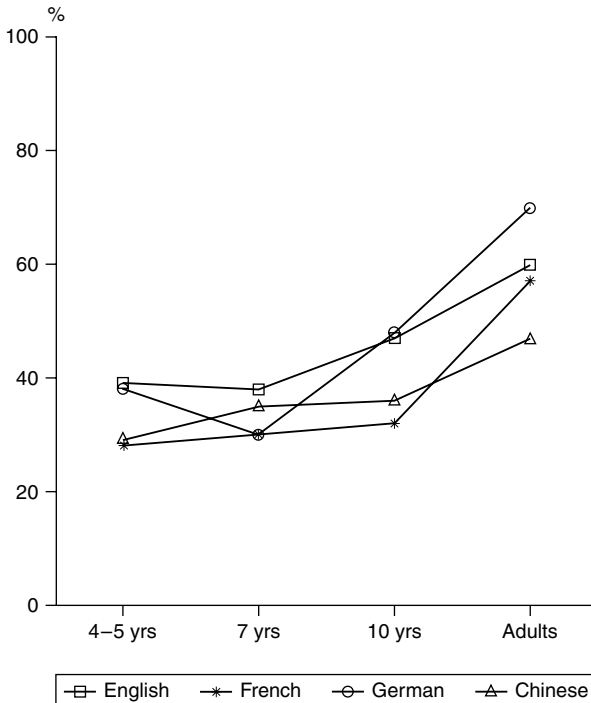


Figure 9.3 Overall explicit mentions of spatial grounds

that this density increases with age in all languages, resulting from a decrease of utterances in which spatial grounds are entirely unmarked, particularly after seven years (German, English) or ten years (French, Chinese). Note that this overall density remains low as compared to the mentions of the animate characters previously discussed (see Chapter 8), even at adult age (where mentions of spatial grounds do not exceed 70% of utterances). As discussed in previous chapters, this result reflects the fact that spatial reference involves more reliance on world knowledge and on inferences that can be drawn from preceding context. As will be shown below, however, the density of reference and the nature of its global increase with age also vary as a function of predicate types.

9.2.2 Ground explicitness, predicates, and presentative constructions

Figure 9.4 shows the proportions of units that contained the mention of a ground as a function of predicate types. It can be seen that, despite a general increase in ground mentions with age in all languages, this increase occurs mostly with static or dynamic general predicates, rather than with changes of location. However, in English and German grounds increase with both static and dynamic general predicates from seven years on. In contrast, in French and Chinese they increase at first with dynamic general predicates, but only later with static predicates (especially from ten years on).

Recall that static predicates were found to be more frequent in French overall, as well as in the initial parts of the French and Chinese HORSE stories at young ages (see Section 9.1 above). On the basis of previous results concerning the ways in which children introduced the animate protagonists (Chapter 8), it was hypothesised that such presentative units would also be more likely with inanimate spatial grounds in some languages (especially French, but also Chinese), partially accounting for the differences noted above. These constructions are of two types: simple presentatives, typically existentials such as (9.46) to (9.48), and more complex ones that combine an existential with the expression of motion or location, as shown in examples (9.14) and (9.15) above for the HORSE story (reproduced below) and further illustrated in (9.49) to (9.50) for the CAT story. Simple existential constructions occur in all languages, but they are infrequent in English (for German, see below), while complex presentative constructions are much more frequent in French and Chinese, as compared to both English and German. In general, then, French and Chinese children use more frequent presentative constructions to introduce animate referents, inanimate ones, or both in relation to one another.

- (9.46) Y'a un cheval.
(‘There’s a horse.’)

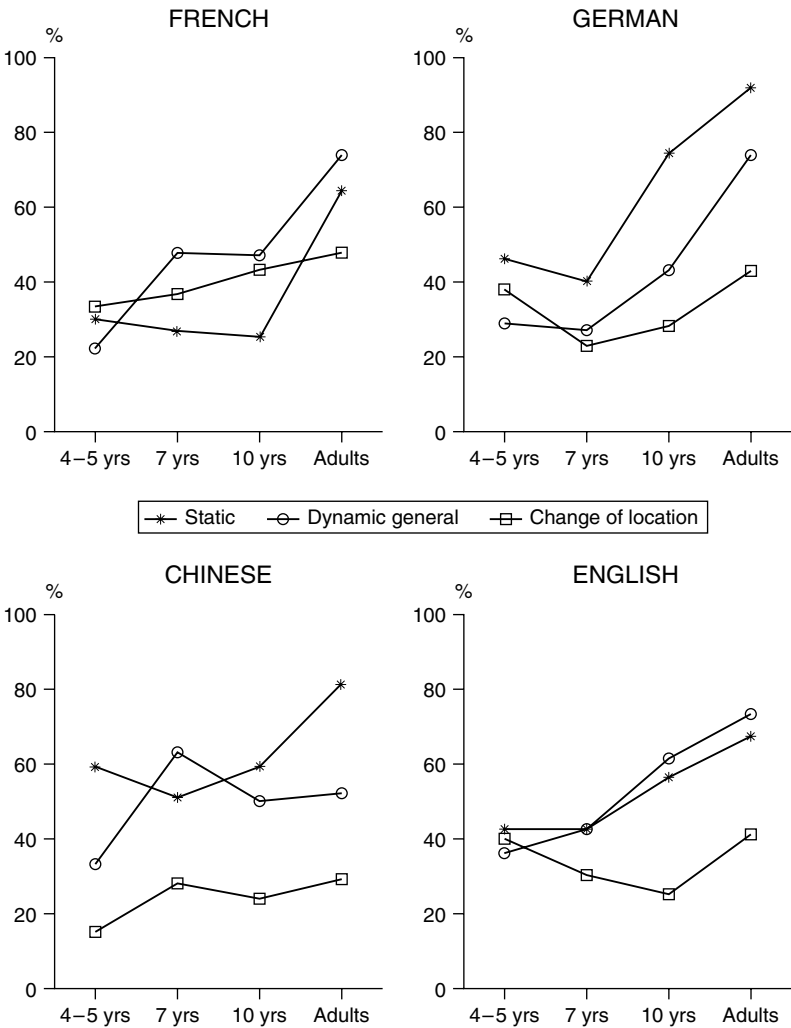


Figure 9.4 Explicit mentions of spatial grounds as a function of predicate types

- (9.47) Y'a un pré avec une barrière.
(‘There’s a meadow with a fence.’)
- (9.48) You3 yi1-pi2 ma3.
(have one-CL horse)
(‘There’s a horse.’)
- (9.14) Y'a un cheval qui court dans un pré.
(‘There’s a horse that’s running in a meadow.’)

Table 9.5 *Presentative constructions used with each predicate type in French and Chinese*

	4–5 years	7 years	10 years	Adults
FRENCH				
Static	.42	.54	.63	.40
Dynamic general	.13	.29	.14	.13
Dynamic change	.16	.15	.30	.02
CHINESE				
Static	.16	.32	.41	.12
Dynamic general	.05	.26	.31	–
Dynamic change	.01	.02	.03	.01

- (9.15) You3 yi1-pi2 ma3 zai4 cao3yuan2 shang4 pao3.
(have one-CL horse be meadow surface run)
(‘There’s a horse running in a meadow.’)
- (9.49) Y’a un oiseau qui est assis sur la barrière.
(‘There’s a bird that is sitting on the fence.’)
- (9.50) You3 yi1-zhi1 niao3 ma1ma1 zai4 niao3wo1 shang4 zhan4-zhe.
(have one-CL bird mother be/at bird nest on stand-IMP)
(‘There’s a mother bird standing on a nest.’)

Table 9.5 shows the proportions of each predicate type that are accompanied by such (simple or complex) presentative constructions in French and Chinese. In both languages these constructions are most frequent with static predicates. When motion is represented, it mostly involves dynamic general predicates in Chinese, but changes of locations are also frequent in French up to ten years (and they are particularly frequent at this age). Finally, these structures are more frequent overall in French, partly because they are used both to introduce referents and to reintroduce them, as shown in (9.51) and (9.52), whereas they are reserved mostly for referent introductions in Chinese. However, Chinese speakers provide more mentions of grounds in presentative constructions (with both static and dynamic general predicates) than French speakers.¹

- (9.51) Y’a une maman oiseau dans un nid.
(‘There’s a mother bird in a nest.’)
- (9.52) Y’a la maman qui revient.
(‘There’s the mother that comes back.’)

Presentative constructions were also frequent in German, but they were of two types: a few consisted of formally identifiable existential constructions such as

(9.53) (with dummy subject *es* 'it'); in the great majority of cases, however, they consisted of subject-verb inversions in utterances containing a sentence-initial adverbial (mostly *da*, sometimes *hier*), for example (9.54). In contrast to French and Chinese, these constructions were used throughout the narratives, not only to introduce or to reintroduce referents, but also to represent numerous and varied situations. Among the four languages, German is the only one in which sentence-initial pronominal adverbials occur massively. These uses differ from mentions of specific grounds in that reference is quite vague and may involve the pictures themselves and/or no particular referent at all, having in addition a temporal value as connector.² In some cases the utterances also contain the explicit mention of a specific ground such as (9.54) and (9.55), as compared to (9.56) to (9.60). All predicate types occur, including posture verbs such as (9.54), the copula *sein* as in (9.55) and (9.56), other static predicates such as (9.57), and various types of dynamic predicates such as (9.58) to (9.60).

- (9.53) Es war einmal ein Pferd auf einer Wiese.
(‘There was once a horse in a meadow.’)
- (9.54) Da sitzt ein Vogel in einem Baum.
(‘There sits a bird in a tree.’)
- (9.55) Da ist ein Vogel in einem Nest.
(‘There is a bird in a nest.’)
- (9.56) Da ist ein Pferd.
(‘There is a horse.’)
- (9.57) Da ist es tot.
(‘There is it dead.’)
- (9.58) Da kommt eine Katze.
(‘There comes a cat.’)
- (9.59) Da klettert sie hoch.
(‘There climbs she up.’)
- (9.60) Da laufen sie weg.
(‘There run they away.’)

Figure 9.5 shows the proportions of units that contain the sentence-initial pronominal adverbial *da* as a function of two variables: (a) predicate types; (b) whether the unit also contains the mention of a ground. Overall, sentence-initial pronominal adverbials are most frequent with static predicates and least frequent with dynamic general predicates. In addition, they are frequent with static predicates and changes of location at four/five years, as well as with static predicates at seven and ten years, decreasing with all predicate types thereafter. Finally, these uses are most frequent in units that do not contain any explicit mention of a ground, particularly in the

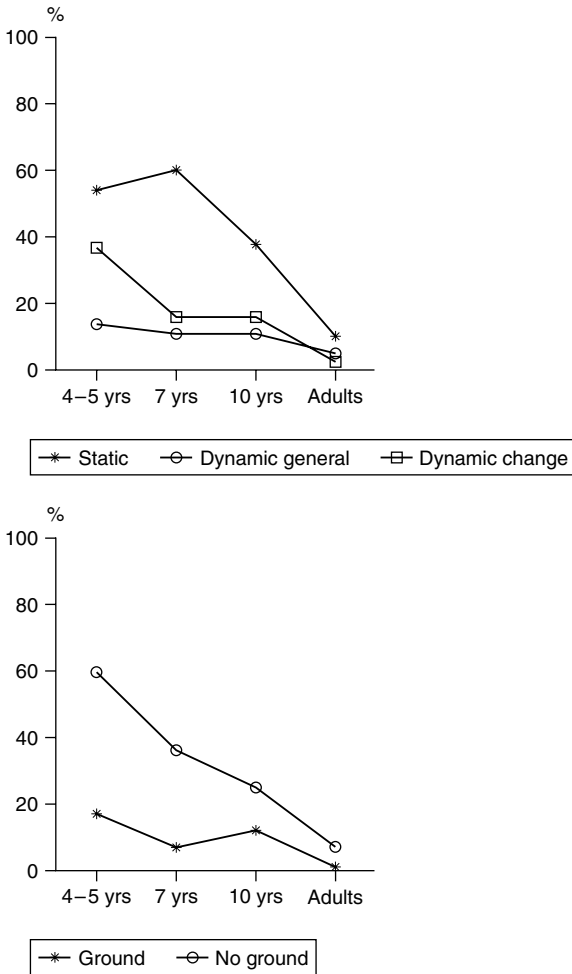


Figure 9.5 German sentence-initial pronominal adverbials

narratives of the younger children. Thus, the young German children frequently use vague pronominal adverbials to structure discourse, except with dynamic general predicates, and these adverbials are gradually replaced by explicit mentions of specific grounds with increasing age.

9.3 Spatial anchoring

Further analyses examined the noun phrases that first mentioned inanimate entities serving as spatial reference points to localise the animate protagonists throughout the story. Several properties of these noun phrases were examined: their

form and their position within their unit in relation to the marking of newness (Section 9.3.1); the predicate types with which they occur and their semantic role in relation to these predicates (Section 9.3.2); and their position in the narratives, with particular attention to whether they occur early enough to provide efficient anchoring (Section 9.3.3).

9.3.1 *Forms and positions of ground introductions within their unit*

Noun phrases that first mentioned spatial anchors were examined in order to determine whether they contained local markings of new information status, such as those previously analysed in relation to the animate characters (e.g. indefinite or numeral nominal determiners, see Chapter 8). As shown in Figure 9.6, the use of indefinite forms for the first mentions of grounds increases from seven years on in all three Indo-European languages. However, at four/five years indefinite forms are most frequent in French and least frequent in English. In addition, in Chinese and in French they decrease at seven years to increase thereafter.

Recall that postverbal position constitutes a global marking of newness, which is optional in the Indo-European languages, but obligatory in Chinese. As shown in

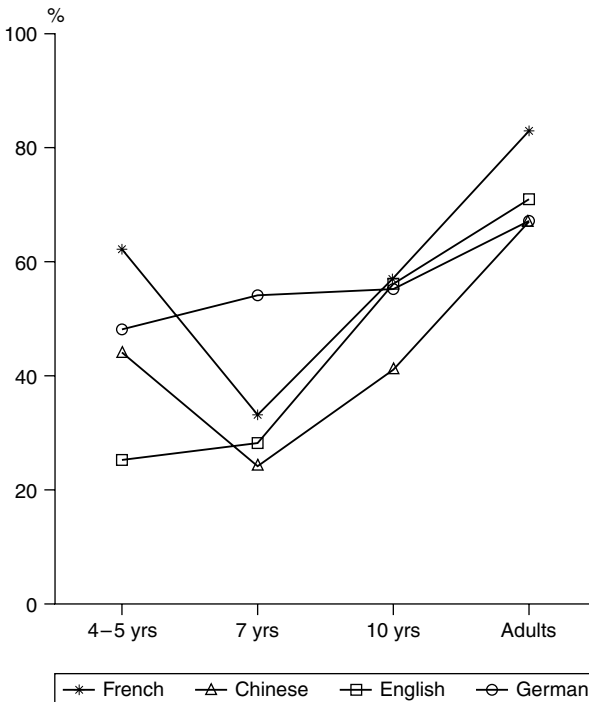


Figure 9.6 First mentions of spatial grounds with local newness markings

Table 9.6 *Postverbal introductions of inanimate referents serving as grounds*

	4–5 years	7 years	10 years	Adults
English	1.0	.98	1.0	.96
French	.96	.96	.89	.87
German	.95	.88	.97	.76
Chinese	.42	.27	.23	.34

Table 9.6, postverbal position is massively used for these introductions in the Indo-European languages, despite a decrease among the German adults. In contrast, preverbal position is most frequent in Chinese at all ages.

Two points should be noted in relation to Chinese. First, position in this language is partly related to the fact that the expression of general locations is typically preverbal with dynamic verbs, for example (9.61), while postverbal position indicates changes of locations with these verbs, for example (9.62) (relevant expressions in bold).

(9.61) **Zai4 yi1-ge cao3yuan2 li3** pao3-zhe yi1-pi2 ma3.

(At one-CL meadow in run-IMP one-CL horse)

(‘There is a horse running in a meadow.’)

(9.62) Ma3 tiao4-guo4 **lan2gan1** qu4.

(horse jump-cross fence go)

(‘The horse jumps over the fence.’)

Second, some relation between position and form can be observed in Chinese and this relation changes with age. Figure 9.7 shows the proportions of four types of Chinese NPs introducing inanimate referents: NPs that are preverbal and locally marked for newness (numeral determiners), NPs that are postverbal and locally marked, NPs that are preverbal and not locally marked for newness (no numeral determiner), and NPs that are postverbal and not locally marked. Two developmental patterns occur: an increase in preverbal NPs, particularly unmarked ones at seven and ten years; and an increase in marked NPs (numerals) at ten years and adult age, particularly postverbal ones.

9.3.2 *Predicate types and semantic roles in ground introductions*

Figure 9.8 shows the overall proportions of predicate types with which the first mentions of grounds are used, distinguishing static predicates, dynamic general predicates, changes of location, and all other cases. Static predicates are most frequent for these referent introductions in all languages. Dynamic predicates are also frequent in German and English (both general and changes), but only dynamic general ones in French, while dynamic predicates are infrequent in Chinese.

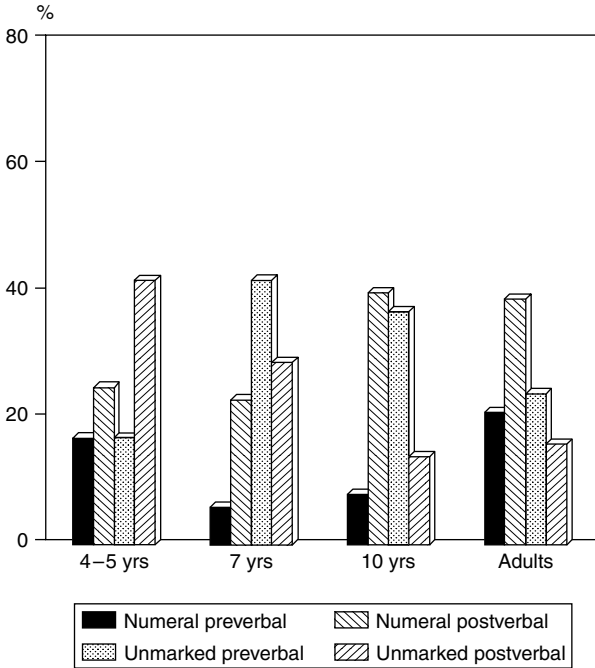


Figure 9.7 Forms and positions of Chinese first mentions of spatial grounds

As shown in Figure 9.9, two main variations occur with age. First, changes of locations drop sharply after seven years in all languages, but before this point they are less frequent in French and Chinese than in English or German. Second, static predicates drop at seven years in French and it is at this age that French children use the most dynamic general predicates. Finally, the forms of first mentions vary with predicate types, as summarised in Figure 9.9 by the symbols DEF and IND, roughly indicating where first mentions are mostly definite and indefinite. In all languages first mentions are more often indefinite with static predicates than with all dynamic ones. In addition, indefinite forms increase earlier with static predicates (from seven years on) than with dynamic general ones (from ten years on), being least frequent with changes of location (with which adults still use some definite forms as frequently as indefinite ones).

First mentions of grounds in the narratives were in three main role types (relevant NPs in bold): NPs in locative role, illustrated in (9.63); NPs in presentative constructions, illustrated in (9.64); and NPs in object or oblique roles, illustrated in (9.65) and (9.66). Figure 9.10 shows the proportions of NPs introducing spatial anchors in the stories that were in locative role. As expected, the great majority of these NPs were in locative role at all ages in all languages, despite some variations.

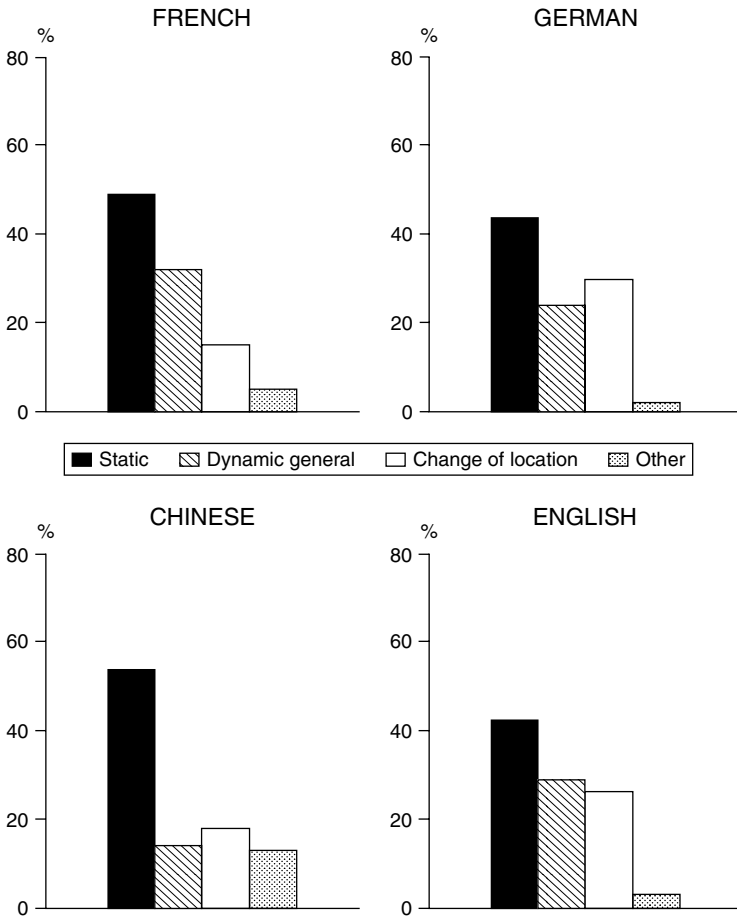


Figure 9.8 Predicates used for the first mentions of spatial grounds overall

In particular, locative NPs are more frequent on first mentions in English than in other languages at four/five years and they are least frequent in Chinese as compared to other languages, particularly at adult age.

- (9.63) There is a bird sitting in **a nest**.
 (9.64) There was **a fence**.
 (9.65) He saw **a fence**.
 (9.66) The bird is sitting with a nest.

Figure 9.11 shows the overall proportions of four types of first mentions as a function of role and local markings of newness (indefinite and numeral determiners): marked locative NPs (*loc ind*), marked NPs in other roles (*other ind*), unmarked

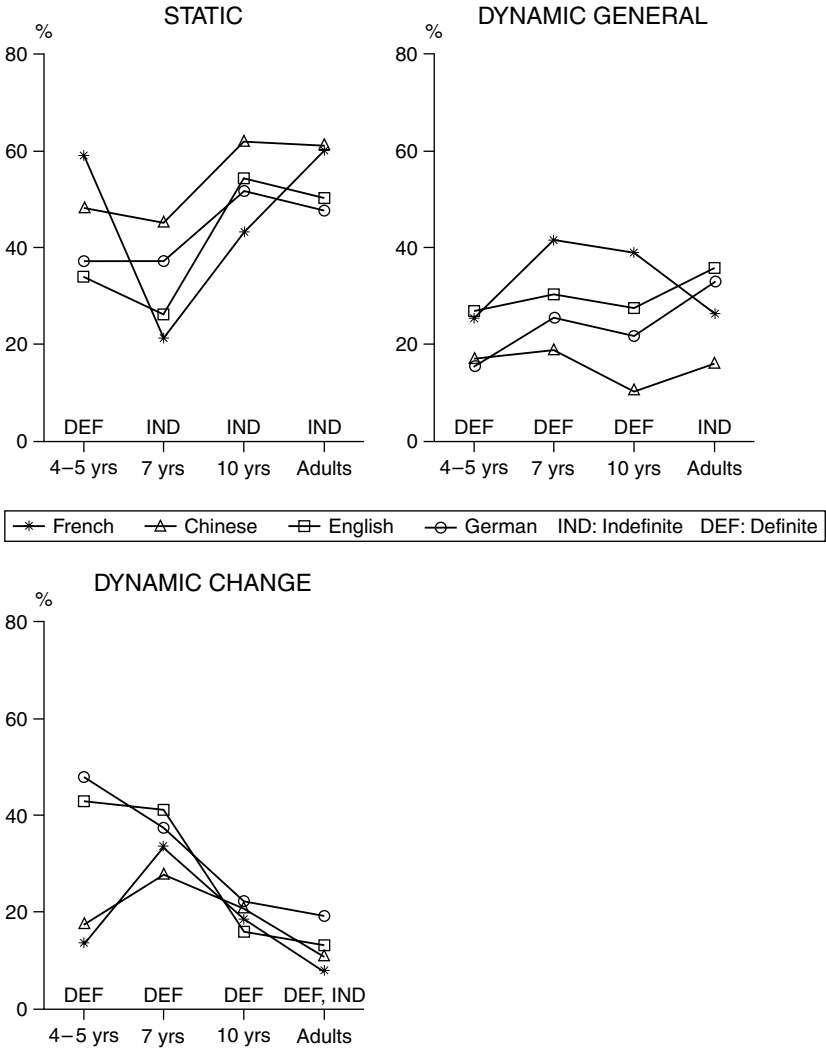


Figure 9.9 Predicates and NP types used for the first mentions of spatial grounds as a function of age

locative NPs (*loc def*), unmarked NPs in other roles (*other def*). Although in all languages the most frequent type of first mention consists of marked and unmarked NPs in locative roles, unmarked locative first mentions are much more frequent in Chinese than marked ones as compared to the other languages. In addition, in all languages marked non-locative NPs also constitute frequent first mentions, while unmarked ones are rare overall. Figure 9.12 further displays the distribution of

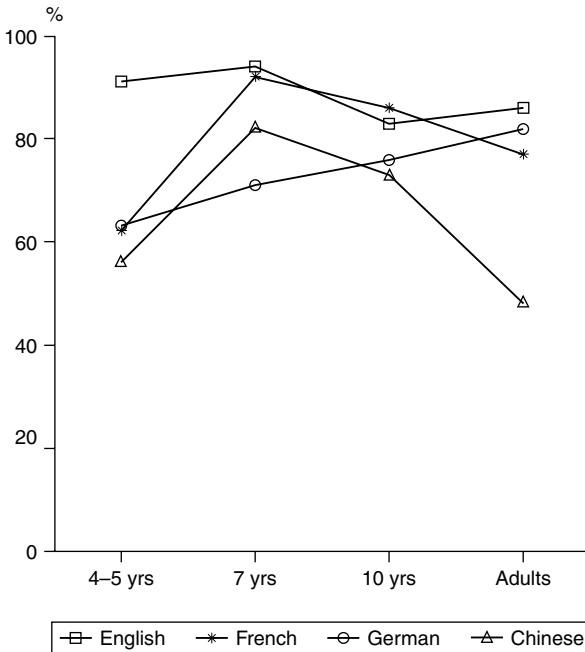


Figure 9.10 First mentions of spatial grounds in locative role across ages

locative and non-locative first mentions with local newness markings as a function of age within each language. In the three Indo-European languages it is mostly the marked locative first mentions that increase with age (from seven years on in French, from four/five years on in German and English), whereas in Chinese it is mostly the marked non-locative first mentions that do so (particularly after seven years).

Finally, Figure 9.13 shows the overall proportions of locative and non-locative first mentions of ground referents that were marked vs. unmarked. It can be seen that in all languages locally marked NPs are less frequent in locative role as compared to other roles. Thus, although locative first mentions are more frequent than non-locative ones in all languages and although marked locative first mentions increase with age, non-locative first mentions are much more likely to be locally marked than locative ones overall. This pattern holds across languages, ages, and stories.

9.3.3 Position of ground introductions in the narratives

A final set of analyses concerning spatial anchoring examined how early in the narratives speakers first mentioned the four inanimate referents that typically served as main spatial reference points in the stories. The following three

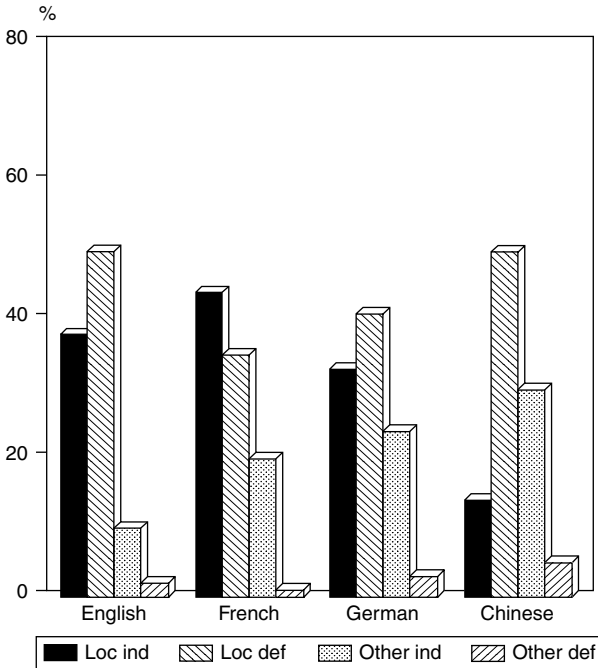


Figure 9.11 Semantic roles and forms of the first mentions of spatial grounds

types of cases occurred (sometimes combined in the same narrative, see below). In the first type of case (hereafter *early* first mentions), these referents were first mentioned at the beginning of the narratives, as narrators talked about the first or second picture. Examples from each story and each language are shown in (9.67) to (9.73) (relevant NPs in bold). In these cases early first mentions provide a general spatial frame for the entire narrative, anchoring subsequent situations mentioned throughout (departures, arrivals, climbing, jumping, etc.).

- (9.67) First there's a horse ... running around in **a field** ... and he comes to **a fence** and he looks at it. And there's a cow on the other side. And ... he decides to jump over the fence ... and he falls ... and the cow looks at him ... and then ... the cow helps him um ... bandage his leg. That's all. (10 years)
- (9.68) The mommy's sitting with the birds ... baby birds in **the nest** ... at – with **the big tree** ... and ... then a cat comes and the mommy goes away. [...] (7 years)
- (9.69) Alors c'est l'histoire d'un cheval qui est dans **un pré**, pis qui voit **une barrière** ... où y'a une vache de l'autre côté et il essaye de sauter par-dessus la barrière. [...] (10 years).

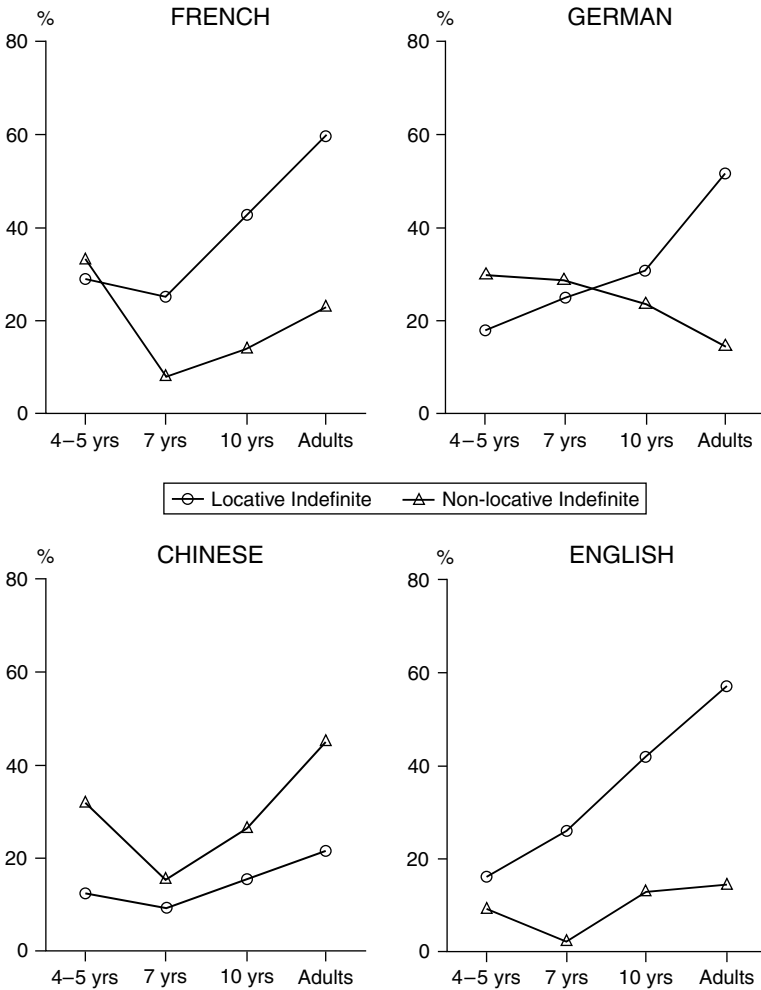


Figure 9.12 Local newness markings with locative vs. non-locative first mentions of spatial grounds across ages

(‘So it’s the story of a horse that is in a meadow and that then sees a fence where there’s a cow on the other side and he tries to jump over the fence.’)

- (9.70) Dans **un arbre** il y a un oiseau – **un nid** avec un oiseau et ses petits. Les petits ont faim, l’oiseau décide d’aller chercher de la nourriture. Pendant ce temps un chat s’approche et se poulèche les babines en regardant le nid et les petits. Profitant de l’absence des parents, il monte à l’arbre. [...] (Adult)

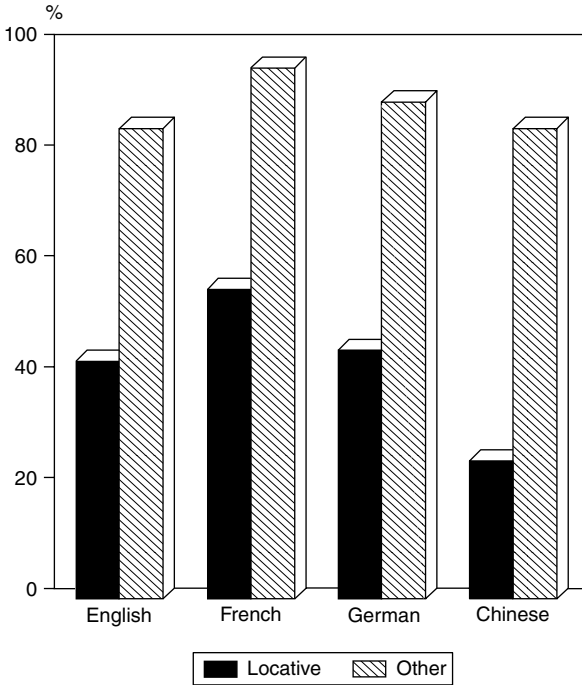


Figure 9.13 Local newness markings with first mentions of spatial grounds within each semantic role

(‘In a tree there is a bird – a nest with a bird and its little ones. The little ones are hungry, the bird decides to go fetch some food. In the meantime a cat comes nearby and licks its lips while looking at the nest and at the little ones. Making use of the parents’ absence, it climbs the tree.’)

- (9.71) Ein Pferd läuft in Richtung **eines Zaunes auf einer Wiese** entlang, auf der anderen Seite des Zaunes befindet sich eine Kuh, auf dem Zaun ein Vogel. Das Pferd springt schließlich über den Zaun [...] (Adult)
 (‘A horse is running along in the direction of a fence in a meadow, on the other side of the fence is located a cow, on the fence a bird. The horse finally jumps over the fence.’ [...])
- (9.72) Also hier ist **ein Baum** und dort ist **ein Nest** drauf. Dort ist die Mutter und dann sind zwei, drei Kücken drauf. Und dann fliegt die Mutter weg. [...] (7 years)
 (‘So here is a tree and there is a nest on it. There is the mother and then there are two, three chicks on it. And then the mother flies away.’ [...])

- (9.73) You3 yi1-zhi1 wu1ya1 zai4 **shu4** shang4 zuo4 le **yi1-ge wo1**
 (have one-CL crow be-at tree on make LE one-CL nest)
 ('There was one crow, it had made **a nest in the tree**')
 wo1 li3 you3 san1-zhi1 xiao3 wu4ya1 [...]
 (nest in have three-CL little crow)
 ('in the nest there were three little crows')
 zheng4 zai4 zhe4 shi2 – zheng4 zai4 zhe4 shi2 shu4 di3 you3 yi1-zhi1
 maol
 (just be-at this time – just be-at this time tree under have one-CL cat)
 ('just at this moment – just at this moment, there was a cat under the
 tree')
 ta1 kan4-jian4 lao3 ya1 fei1-zou3 le liu2-xia4 yi1 wo1 xiao3 wu1ya1
 (3p look-see old crow fly-leave LE remain-down one nest little crow)
 ('he saw that the old crow had flown away and that one nest with little
 crows was left behind.')
- jiu4 pa2-shang4 shu4 [...] (10 years)
 (then climb-ascend tree)
 ('then he climbed the tree.')

In the second type of case (hereafter *late* first mentions), the relevant referents are first mentioned later in the narratives, typically at a point where an event crucially involves one of these referents, such as the horse jumping over the fence (third picture of the HORSE story) or the cat climbing up the tree (fourth picture of the CAT story), for example (9.74) to (9.78) (relevant NPs are in bold).

- (9.74) Once there was a horse running and... he saw a cow and then he stopped and then he jumped over **the fence** and he broke the fence and got hurt. And then... a bird came along and... with a... doctor's kit and... bandaged the horse up. (7 years)
- (9.75) First... a bird was... getting ready to... fly and go get her... babies some food. And then... she went and... a cat came and looked up at the birdies. And then... um... she... kept on looking up at the birdies and then she um... then the dog came and um... she was climbing up **the tree** and then the dog got her tail. [...] (7 years)
- (9.76) C'est un cheval... i voit une vache... et i saute... par-dessus **la barrière**. [...] (7 years)
 ('It's a horse, he sees a cow and he jumps over the fence.')
- (9.77) Ein Vogel mit Kücken. Und da ist ne Katze, die sieht kleine Kücken und da ist ein Kuckuck. Und fliegt einfach davon. Da sitzt die Katze

und guckt sich die Kücken an. Jetzt klettert die auf **den Baum** hinauf, weil ein Hund kommt. [...] (4 years)

(‘A bird with chicks. And there’s a cat, it sees little chicks and there is a cuckoo. And simply flies away from there. There sits the cat and looks at the chicks. Now she climbs up on the tree, because a dog comes.’ [...])

- (9.78) Ge1... zhe4-ge... ge1zi he2 xiao3 ge1zi,
 (pigeon this CL pigeon and little pigeon)
 (‘The pigeon... this pigeon and little pigeons’)
- ran2hou4 ba, (o) ta1 [pause] zou3 le (e)
 (after BA 3p leave LE)
 (‘and after, he [pause] left (e)’)
- ran2hou4 xiao3 ge1zi, mao1 kan4-jian4 le
 (after little pigeon cat look-see LE)
 (‘and after, the little pigeons, the cat saw them’)
- Ta1 yao4... chi1
 (3p want... eat)
 (‘He wants to... eat’)
- Ta1 jiu4 pa4 **shu4**. [...]
 (3p then climb tree)
 (‘So he climbed up the tree.’)

Finally, in a third type of case, the relevant referents are never mentioned at all in the entire narrative, as illustrated in (9.79) to (9.83) below.

- (9.79) The horse is running... and sees the... cow and the bird. And the horse runs, jumped over, then he... fell. Then... the birdie got... bandage. Then he... puts it on. (4 years)
- (9.80) This is the bird... with chicks. And he’s flying away to get the chicks something to eat. And this is the chicks and the cat... and the dog right over here. And the cat trying to climb to try to get them. Then the bird flies back... with a worm... and then the cat and the dog. And the the dog... and the the birds chased... the dog and cat away. (4 years)
- (9.81) Y’a un oiseau qui regarde dans les nuages. Après y’a un chat qui vient, l’oiseau i s’envole. [...] Après le chat s’assit. Après le chat monte. Après le chien arrive. [...] (5 years)
 (‘There’s a bird that is looking in the clouds. Then there’s a cat that comes, the bird he flies away. Then the cat sits down. Then the cat goes up. Then the dog comes.’)

- (9.82) Da läuft das Pferd... und dann bleibt das Pferd stehen. Und... und dann guckt da die Kuh... und dann... ist da noch en Vogel. Un dann... wollte das... und dann wollte das Pferd da rüberspringen. Un... und dann... fällt das Pferd hin. Und dann kommt der Vogel mid nen... mit ner Schere, mit nen Verbandkasten. Und dann verbindet die Kuh den... den Fuß von – mit nem Verband. (7 years)
 ('There runs a horse and then the horse stands still. And then the cow looks and then there is still a bird. And then the horse wanted to jump over. And then the horse falls down. And then the bird comes with scissors, with a first-aid kit. And then the cow ties his foot with a bandage.')
- (9.83) Ya1 [pause] niao3 ma1 ma... sheng1 le san1-ge... xiao3 niao3men
 (duck [pause] bird mother... give birth to LE three CL... little bird PL)
 ('the duck [pause] the mother-bird... gave birth to three... little birds')
 ... niao3 ma1 ma... gei3 xiao3 niao3men qu4 cai3 guo3zi.
 (bird mother... give little bird PL go gather fruit)
 ('... the mother-bird... went out to gather fruit for the little birds.')
- You3 yi1-ge mao1 [pause] niao3 ma1 ma gang1 zou3 bu4 duo1huir1
 (have one CL cat bird mama barely leave not long)
 ('There was a cat when the mother bird had only barely left')
- na4 na4-ge hua1 mao1 xiang3
 (that that-CL spotted cat plan)
 ('that that spotted cat planned to')
- ba3 na4-ge san1-ge xiao3 xiao3 niao3 gei3 chi1 le.
 (BA that-CL three-CL little little bird give eat LE)
 ('eat those three little birds.')
- Hou4lai2... huang1gou3 yi2kou3 yao3zhu4 ta1de wei3ba1.
 (after... wild dog one CL bite 3p POS tail)
 ('But then... a wild dog bit at one bite in his tail.')
- Hou4lai2 ba [pause] hou4lai2 gei3 ta1de wei3ba1... zhuai4-lai2 le.
 (after BA after give 3p POS tail... pull-come LE)
 ('and then [pause] and then he... pulled him at his tail.')
- Hou4lai2... ta1 shuai1 yi1jiao1...
 (after... 3p tumble one fall...)
 ('And then... he fell down...')
- xia4-lai2 ta1 jiu4 pao3 le. (5 years)
 (down-come 3p then run LE)
 ('and after he had come down he ran away.')

As shown by some of these examples, a given narrative could combine these possibilities. For example, in (9.74) to (9.78) above, one referent is introduced late, but the other is not mentioned at all. Similarly, in (9.84) and (9.85) below one referent is introduced in the initial spatial frame, but the other is mentioned late. Note that, when referents are never mentioned explicitly in the entire narrative, some utterances presuppose a relevant dimension for spatial reference. For example, children mention the horse jumping over without any previous mention of the fence (e.g. (9.79) and (9.82)) or the cat climbing or falling without any previous mention of the tree (e.g. (9.80), (9.81), (9.83)). In the CAT story, however, the existence of the tree could be inferred from a previous mention of the nest and to some extent from the previous mention of birds (assumed to live in nests that are located in trees), although in this case inferences are massive on the part of the interlocutor.

- (9.84) Alors un jour c'était un . . . grand oiseau avec ses trois petits enfants. Ils étaient dans **un nid**, la maman elle s'en va chercher du manger pour ses petits enfants et y'a un chat qui arrive. Et il regarde un peu les trois petits enfants et il grimpe à **l'arbre**. [. . .] (7 years)
 ('So one day it was a big bird with its three little children. They were in a nest, the mother she goes to fetch food for her children and there's a cat that comes. And he looks a little bit at the three little children and he climbs the tree.')
- (9.85) Also hier is **ne Wiese** und da läuft ein Pferd. Und dann sieht der eine Kuh, dann ist auf dem . . . dann bleibt das Pferd stehen, und dann guckt die Kuh zu dem Pferd hin. Dann springt das Pferd **drüber – über den Zaun** und dann fällt er hin [. . .] (7 years)
 ('So here's a meadow and there runs a horse. And then he sees a cow, then the horse stands still, and then the cow looks at the horse. Then the horse jumps over – over the fence and then he falls down.' [. . .])
- (9.86) Alors c'est un oiseau . . . qui est sur **un nid** avec trois petits oiseaux à l'intérieur. Et puis l'oiseau il s'en va. Et il y a un chat qui arrive. Alors le chat il regarde le nid, il voit les oiseaux. Alors il commence à grimper et il y a un chien qui arrive. [. . .] (10 years)
 ('So it's a bird which is on a nest with three little birds inside. And then the bird goes away. And there's a cat that comes. Then the cat he looks at the nest, he sees the birds. So he starts to climb and there is a dog that comes.')

Figure 9.14 shows the overall proportions of these three different types of cases, summing up over the four inanimate referents as a function of age and language. In all languages there is a striking developmental progression in the setting of spatial

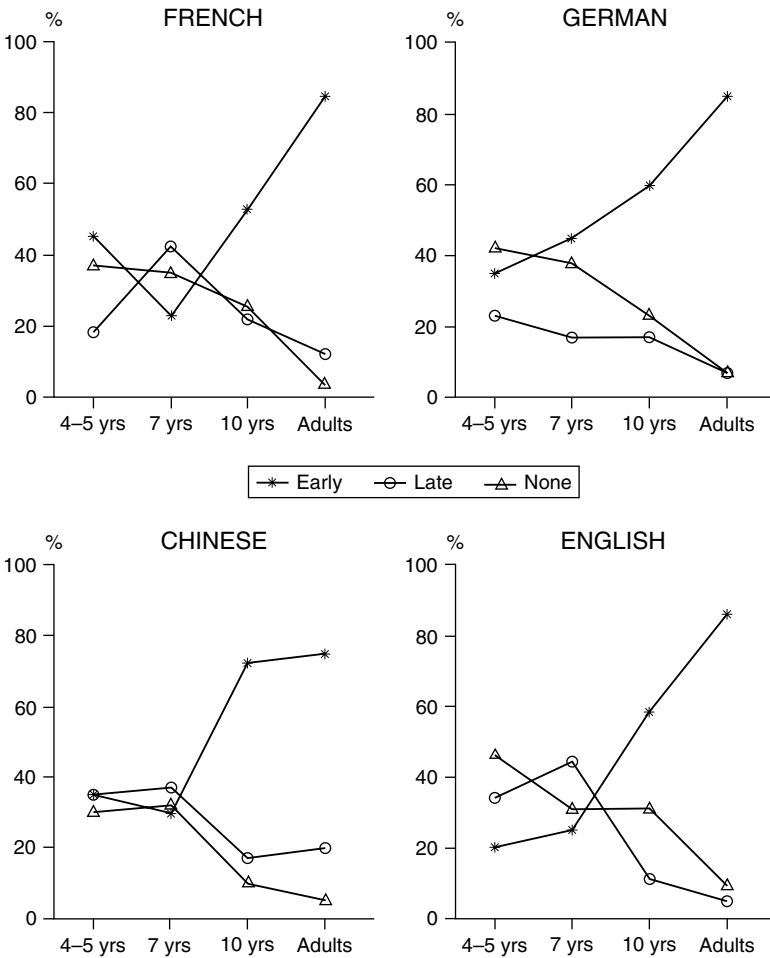


Figure 9.14 Early spatial anchoring, late first mentions, and omissions as a function of age

frames at the beginning of the narratives. Children at four/five years produce early first mention of the inanimate referents in less than 50% of the cases. At seven years late first mentions and the absence of mention are still frequent, but they decrease after this age, while early first mentions increase, becoming most frequent at the adult age.

Finally, the forms of early vs. late first mentions of ground referents differed with respect to local markings. Figure 9.15 shows the overall proportions of early first mentions that contain local markings within each story (collapsing ages) and Figure 9.16 shows how these proportions are distributed across ages (collapsing

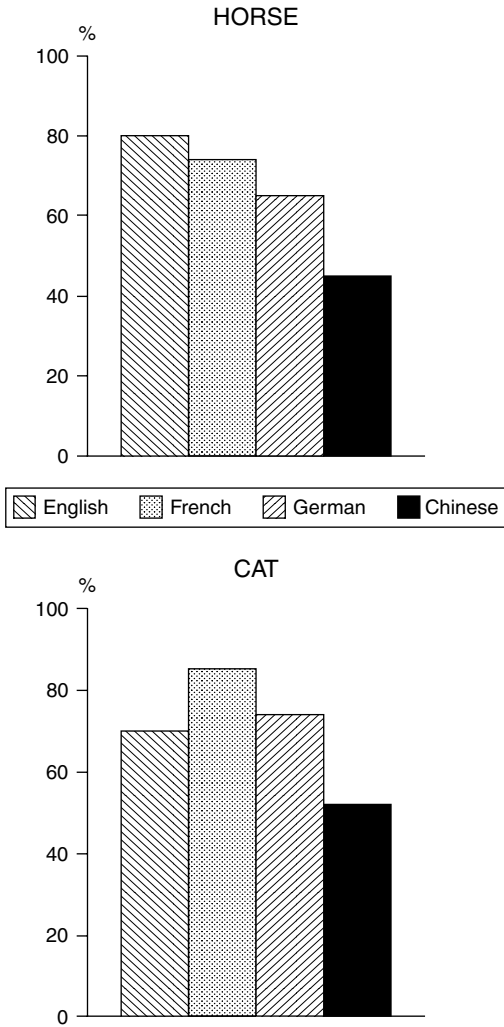


Figure 9.15 Forms of early spatial anchors in the CAT and HORSE stories overall

stories). It can be seen that when first mentions occur early in the narratives, they are most likely to be indefinite at all ages and in all languages, with the only exception of the Chinese narratives, particularly at seven and ten years.

It should be noted that several of the results discussed above concerning how the inanimate referents were introduced are related to the particular referents denoted. Such differences across referents raise the more general question of the ontological properties of the entities denoted across languages, particularly with respect to referents that are more likely to be represented linguistically as individuated entities

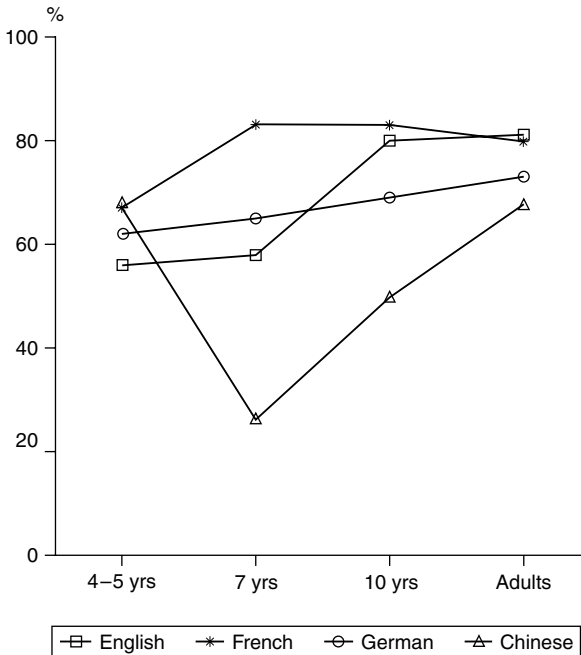


Figure 9.16 Forms of early spatial anchors across ages

or as locations. For example, in the HORSE story the meadow is more often omitted than the fence and it is more often introduced by locative definite forms than the fence, which is more often introduced by indefinite forms in existential or object role (e.g. the early first mentions in (9.87) and (9.88)). In addition, the choice of role, form, and predicate type is related to whether children introduced some of the relevant referents as part of the initial setting or later in the story. In particular, the fence in the HORSE story and the tree in the CAT story are more likely to be introduced with definite locative expressions when they are first mentioned as part of dynamic events occurring late in the story (e.g. the late first mentions in (9.89) and (9.90)) than when they are introduced at the beginning of the story, for example (9.88) and (9.91).

- (9.87) The horse is running in **the meadow**. (early first mention)
- (9.88) The horse is running and he sees **a fence**. (early first mention)
- (9.89) The horse jumps over **the fence**. (late first mention)
- (9.90) The cat climbs up **the tree**. (late first mention)
- (9.91) There is **a tree** with three baby birds. (early first mention)

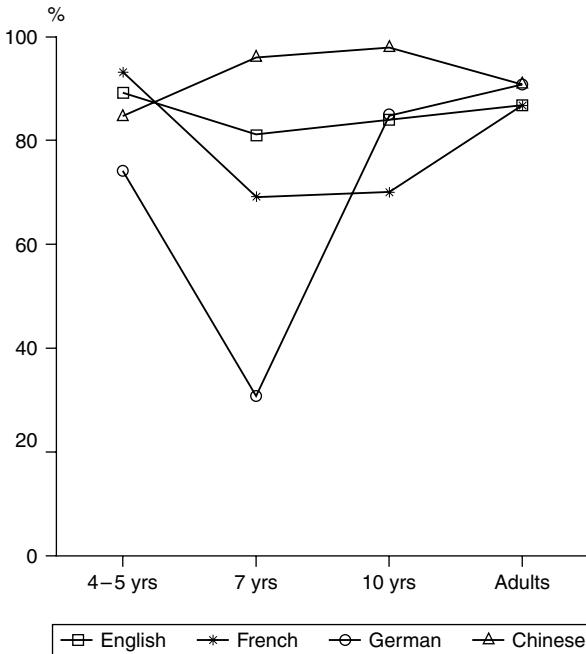


Figure 9.17 Nominal subsequent mentions of spatial grounds across ages

9.4 Maintaining reference to spatial grounds

I now turn to all subsequent mentions of spatial anchors that occurred after their first mentions in discourse. I examine the forms and roles of these mentions in relation to predicate types within the clause (Section 9.4.1), as well as the extent to which they participated in coreferential relations with other devices across clauses (Section 9.4.2).

9.4.1 *Forms and roles of subsequent ground mentions*

Subsequent mentions of grounds include full forms (nominals) and leaner devices (pronominals). As shown in Figure 9.17, the great majority consist of nominals in all languages (overall 80% to 92%), regardless of age, in contrast to references to the animate characters previously discussed (Chapter 8). One notable exception concerns the German seven-year-olds, who take advantage of the rich system of devices available for this type of reference maintenance in their language. They use frequent lean forms consisting of the adverbial *da* combined with a variety of particles, which provide rather specific information concerning locations and location changes in German, as compared to the devices available in other languages.

Figure 9.18 also shows the types of predicates with which subsequent ground mentions of ground referents were used across ages within each language (collapsing

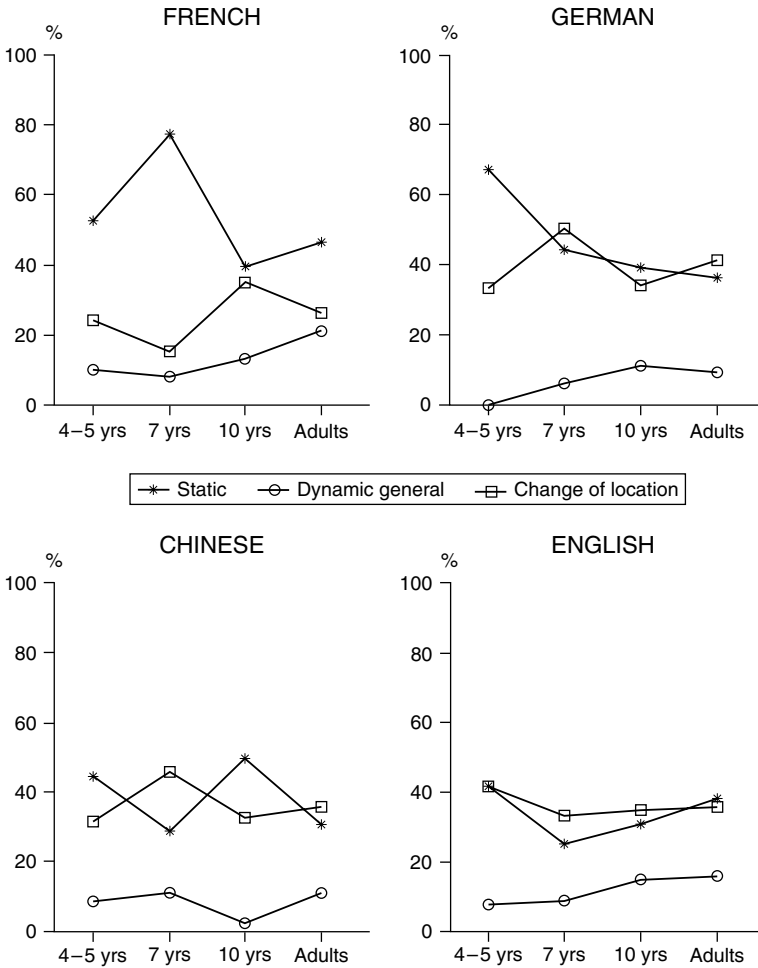


Figure 9.18 Predicate types used for the subsequent mentions of spatial anchors

stories). It can be seen that most subsequent mentions are used with static predicates and with changes of location, less frequently with dynamic general predicates. However, static predicates are more frequent in French at seven years and in German at four/five years. As shown in Figure 9.19, the great majority of these expressions are in locative role in all language groups and in all age groups, despite a lower proportion among the French four/five-year-olds. Most are locative nouns, despite some non-locative nouns and some leaner locative forms. In contrast, there are almost no non-locative lean forms in reference-maintenance to ground referents. Thus, once entities serving for spatial anchors have been introduced, reference is maintained to them mostly by means of locative nominals.

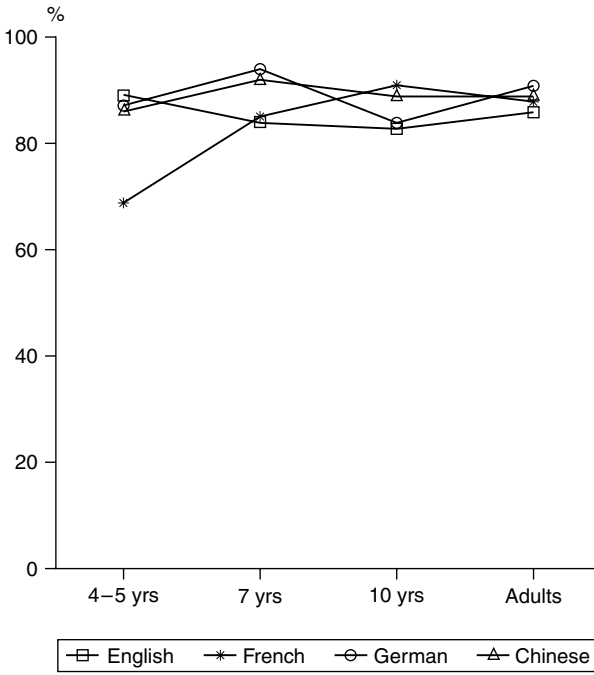


Figure 9.19 Locative subsequent mentions of spatial anchors

9.4.2 Coreference among ground mentions

Subsequent mentions of ground referents entered into immediate coreferential relations across clauses (English 40%, German and French 43%, Chinese 33%), although they did so much less often than the subsequent mentions of animate referents previously discussed (Chapter 8). As shown in Figure 9.20, some variations occur as a function of language and age. In particular, at four/five years coreference is least frequent in French, whereas at seven to ten years it is most frequent in French and least frequent in Chinese. Although lean forms are relatively rare in reference maintenance to grounds, as compared to the animate characters, these forms also vary as a function of coreference in all language and age groups. Thus, fewer nominals are coreferential as compared to leaner forms (English 33% vs. 82%, German 35% vs. 75%, French 34% vs. 92%, Chinese 30% vs. 79%).

9.5 Summary and discussion

In summary, analyses of predicate types show a striking contrast between French on the one hand and the other languages on the other hand. This contrast can be described in terms of the following four related dimensions. First,

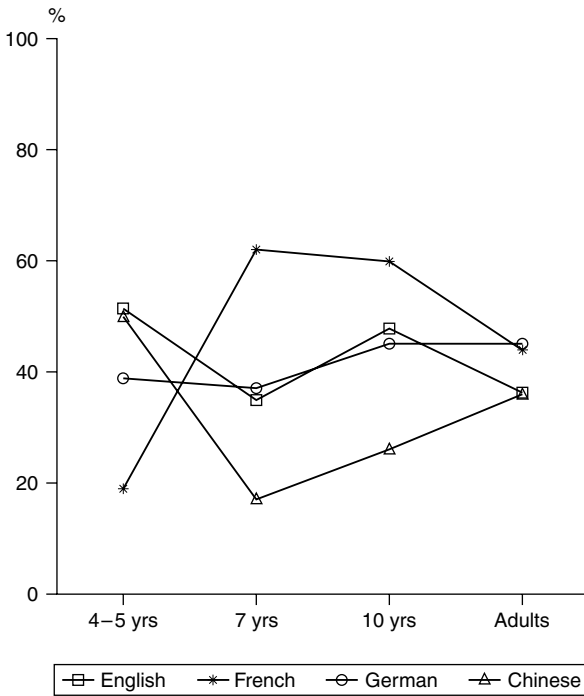


Figure 9.20 Coreferential mentions of spatial anchors across ages

the results show a different focus with respect to the information that is selected in the narratives. Young French children focus more on static situations (existence and/or location) and less on the details of motion, as compared to the other language groups. Nonetheless, in one respect Chinese and French children are alike in comparison to the other two languages in that they make frequent use of presentative constructions when organising spatial information in discourse, including complex constructions that combine the expression of existence and of motion. Second, the expression of motion differs in terms of the diversity of predicate types that are used. The set of dynamic predicate types in French is relatively restricted in comparison to the striking variety that occurs in the other languages. Third, French dynamic predicates typically encode only one piece of information at a time, with some exceptions involving lexicalised forms (e.g. *s'envoler* 'to take off flying', *grimper* 'to climb') or complex constructions (*partir en courant* 'to leave by running'), most of which increase with age (ten years). In contrast, in the other languages frequent dynamic predicates simultaneously and productively encode different pieces of information (motion, manner, cause, direction, deixis) by means of a combination of verb roots and verbal satellites. Finally, a related feature concerns the relative

compact or distributed nature of the information. When several pieces of information are provided about a motion event in French, the information is distributed across clauses in discourse, whereas multiple pieces of information are compactly packaged within the clause in the other languages.

In addition, in all languages children's choices of predicates expressing motion and location are partly determined by the discourse status of entities serving as spatial reference points for the localisation of the protagonists throughout the plot, suggesting that structural and discourse factors interact. For example, predicates implying changes of location differ from all others in that they contain fewer explicit grounds, as well as fewer and less appropriate ground introductions. More generally, children use some predicates more frequently for the first mention of grounds, while using others more frequently for subsequent mentions of these entities. Some cross-linguistic differences do arise in the management of spatial grounds, that is in the form, position, and role properties of the noun phrases used to set initial frames and to maintain reference to them subsequently at different ages. However, despite such cross-linguistic differences, results also show a similar pattern across languages with respect to how children denote the inanimate referents serving as spatial anchors. In all languages children's ability to set such anchors emerges relatively late (seven years) and continues to develop until after ten years. This developmental progression is striking in all languages, suggesting the role of underlying cognitive factors, such as children's growing ability to plan discourse in such a way as to provide initial spatial anchors for the subsequent interpretation of locations and changes of location throughout the narrative.

The results concerning uses of predicates are in line with recent findings reported by other studies that also compared verb-framed and satellite-framed languages (see Chapter 6). In particular, Berman and Slobin (1994) show that children's uses of predicates to represent motion events provide a greater diversity of information types in satellite-framed languages (English, German, Turkish) than in verb-framed languages (Spanish, Hebrew). Previous results also showed a greater focus on static situations in Spanish children's narratives, particularly a greater concern for static stage-setting in these narratives, as compared to a greater concern with dynamic path information in the other languages. In this respect, however, our results show especially more frequent static predicates in the narratives of the youngest French narrators, partly linked to their frequent use of presentative constructions for referent introductions (see also Chapter 8). In addition, note that previous results could have led to the hypothesis that speakers of verb-framed languages should be more concerned with establishing spatial anchors in discourse. Our results do not support this hypothesis, since they show a strikingly similar developmental progression across all languages in this respect.

Taking these new findings into account, the main cross-linguistic difference that appears to be most stable across studies is the strikingly different use of dynamic predicates: these predicates are less diverse and less compact in French, different types of information relevant to the representation of motion events being more scattered across utterances in discourse. This greater distributional scope of spatial information in the French narratives is also observed in a study in progress previously discussed (Hickmann 2002, see Chapter 6), comparing how French- and English-speaking subjects describe various types of displacements in other controlled experimental settings. As expected, the English-speaking subjects package both path and manner information compactly within the clause. In contrast, French subjects, particularly the children (three to six years), do so less often and, when they do so, they typically distribute the information across utterances in discourse.

A final point deserves attention in the light of the results discussed in the preceding chapter, particularly those concerning the introduction of animate referents in the stories (Chapter 8). A general comparison of these data with those presented in the present chapter shows that narrators mark newness less frequently with inanimate referents serving as spatial anchors than with the animate protagonists. They use fewer indefinite forms for spatial anchors in all languages, including at adult age, and the systematic use of these forms in the Indo-European languages appears later with the introduction of spatial anchors (ten years) than with the introduction of the animate referents (seven years). Furthermore, Chinese narrators use them systematically from seven years on to introduce the animate referents (as in the other languages), despite the fact that these forms are entirely optional, whereas they do not use them frequently for the inanimate spatial anchors, even at a later age.

Finally, the uses of these forms are directly linked to various properties of the noun phrases serving to introduce the inanimate referents, of the clauses in which they occur, and of the denoted referents, whereas no such relation was found in the case of the introduction of the animate referents. In particular, the use of definite or indefinite forms for spatial anchors depends greatly on the role of the noun phrase in its unit and on the semantic properties of the predicate with which it occurs. Roughly, three main types of cases were observed, as sketched in (9.92). When these referents are mentioned, a first type of introduction involves indefinite forms in non-locative roles and with static predicates, most typically provided early in the narrative (Type 1). A second type of first mention frequently involves the use of locative definite forms with dynamic predicates, most typically provided rather late in the narrative, particularly at younger ages (Type 2). Finally, these referents were sometimes never mentioned at all throughout the narrative (Type 3). As we saw, cases of Type 1 frequently characterise the introduction of some particular

referents, while cases of Types 2 and 3 are more typical of other referents (e.g. the fence vs. meadow in the HORSE story).

- (9.92) Type 1: indefinite, static, non-locative, early
Type 2: definite, dynamic, locative, late
Type 3: omitted

At least two reasons must be invoked to account for this pattern in comparison to the results concerning the introduction of animate referents. Both reasons are linked to the nature of the universe of discourse represented in these stories. First, the extent to which the inanimate referents were at all mentioned and the ways in which they were introduced partly reflects speaker's greater reliance on general world knowledge and on inferences based on this world knowledge in discourse. As discussed previously (see Chapter 3), reliance on world knowledge is greater in the spatial domain, for example it is often possible to infer the location of an entity given what we habitually know about this entity (and it is often not necessary to specify this information, see below). Some linguistic analyses suggest that languages provide a kind of 'ontology' of denoted entities, differentiating, for example, in various ways those that correspond more to individuated entities and others that correspond more to locations (see Aurnague 1996; Aurnague and Vieu 1993). In our data, the denoted grounds varied partially along this dimension. Thus, the meadow in the HORSE story is a good example of the latter type of entity, which was either entirely presupposed or typically mentioned as a location grounding other referents and events, while the fence in this story was more frequently introduced as an individuated entity.

Second, the inanimate referents, whether or not they are presented as individuated entities, are not at the centre of the narratives, which typically revolve around the animate protagonists. As noted previously (see Chapter 7), both of the picture sequences that elicited the narratives showed a number of varied displacements on the part of the protagonists, which were central to the plot, such as entries and departure from the scene, climbing up and down the tree, jumping over the fence, and so on. Given the focus of discourse on these characters, the inanimate referents mainly serve to locate the protagonists throughout the plot, making it possible for the interlocutor to interpret the represented space as the narrative unfolds. As a result, not all of the information concerning locations and changes of location needs to be specified or even mentioned at all. In contrast to the animate referents, then, the inanimate referents are not in the foreground of the narratives, with only one possible momentary exception, namely during that particular portion of the narrative where they are introduced, particularly when they are introduced as individuated entities. Taken together, both of these reasons account for the important differences

that were found in how narrators introduced these two types of referents in their narratives. As we saw, such constraints affect how different types of referents are treated in discourse and they operate in all languages, as well as in all age groups, despite some major developmental differences observed in all languages in both domains. I take up the question of foregrounding in the next chapter, which directly focuses on uses of temporal-aspectual devices for the grounding of information in the narratives.

10 *Time*

As previously shown (Chapter 6), the available research concerning children's uses of temporal-aspectual markings presents several claims concerning acquisition in this domain. Some studies argue that universal properties of verb semantics and/or concepts of situations determine how these devices are used, further putting forth the hypothesis that young children mark situation aspect rather than tense. In contrast, other studies show the impact of language-specific and/or of discourse functional determinants on acquisition, which are not taken into account by this hypothesis. In the analyses of the corpora below, I first describe the general distributions of all temporal-aspectual devices in the narratives (Section 10.1). I then examine whether the semantic properties of predicates affect the uses of verbal morphology, with particular attention to the presumed universal impact of boundedness on the uses of past and/or perfective markings (Section 10.2). Finally, I turn to discourse determinants of these uses (Section 10.3), examining different types of temporal anchoring in the narratives, as well as temporal-aspectual shifts and uses of connectives. In conclusion (Section 10.4), the presented evidence partly supports the defective tense hypothesis, suggesting that situation aspect affects children's uses to some extent. However, it also shows the need to modify this hypothesis for two reasons: the gradual loosening of this association partly results from the requirements of discourse organisation and the language to be acquired has an impact on the strength of this original association, as well as on the subsequent loosening process.

10.1 Distribution of all temporal-aspectual devices

I begin with an overview of all of the temporal-aspectual devices that were used in the narratives across languages and ages. I first consider the overall distributions of verbal devices (Section 10.1.1) and connectives (Section 10.1.2) across languages and ages. I then examine how verbal and other types of devices are related in the narratives, showing that some conjoined uses of these two types of devices increase with age in all languages (Section 10.1.3).

Table 10.1 *Verbal inflections in the Indo-European languages*

	4–5 years	7 years	10 years	Adults
ENGLISH				
Simple present	.26	.32	.31	.50
Present progressive	.15	.13	.04	.14
Simple past	.40	.45	.57	.17
Past progressive	.08	.05	.03	.03
Untensed progressive	.04	.04	.04	.10
Other*	.07	.01	.01	.06
FRENCH				
<i>Présent</i>	.86	.85	.70	.73
<i>Passé composé</i>	.11	.07	.04	.04
<i>Passé simple</i>	–	.01	.10	.04
<i>Imparfait</i>	.02	.07	.10	.08
Other	.01	.01	.06	.13
GERMAN				
<i>Präsens</i>	.77	.75	.80	.88
<i>Perfekt</i>	.15	.13	.16	.07
<i>Präteritum</i>	.07	.10	.04	.04
Other	.01	.03	.01	.01

* The Other category includes: ambiguous forms and occasional future, modal conditional, or subjunctive forms in all languages; the present perfect in English; the *plus-que-parfait* and participial forms in French; and the *Plusquamperfektum* in German.

10.1.1 Verbal devices

10.1.1.1 Verbal morphology in the Indo-European languages

Table 10.1 displays the detailed distributions of all verbal inflections that were found in English, French, and German narratives. Separate entries show the most frequent inflections, while all other scattered uses are grouped together in an additional *other* category (pluperfect forms, conditionals, modals, subjunctives, future forms, the present perfect, as well as some ambiguous and idiosyncratic forms). In all three languages most inflections mark either the non-past or the past. Some additional cases shown in Table 10.1 consist of untensed forms, such as some noticeable untensed progressive forms in English (shown separately) or rare untensed participial forms in French (included in the *other* category). At all ages non-past markings include mostly the *non-progressive present* in English, with some less frequent *present progressive* forms, the French *présent* and the German *Präsens*, both of which neutralise aspect. Most past inflections in English consist of the *preterite* (non-progressive past) at all ages, with some less frequent uses of the

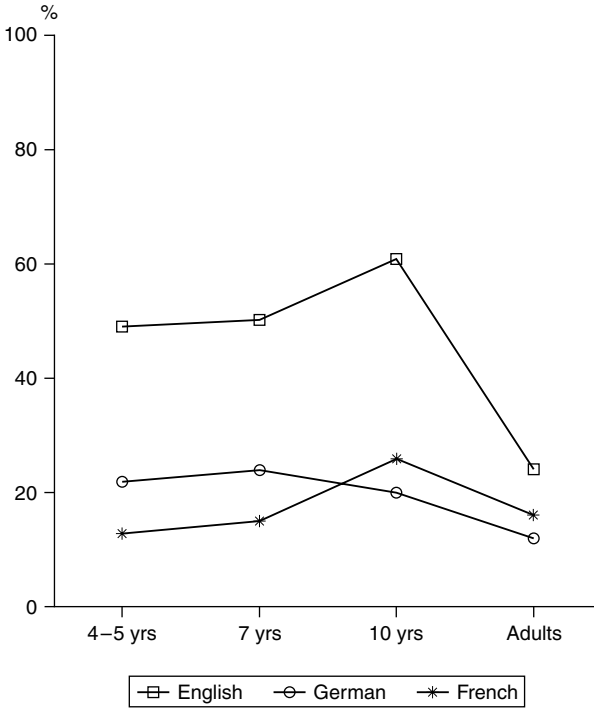


Figure 10.1 Overall proportions of past inflections

progressive past, as well as rare uses of the *pluperfect* and *present perfect* (mostly at adult age). In French past forms include the perfective past (*passé composé*, *passé simple*) and the imperfective past (*imparfait*), with some less frequent uses of the *plus-que-parfait* (mostly at adult age). In German past markings include the *Präteritum*, the *Perfekt*, and the *Plusquamperfektum*.

A first glance at these distributions shows very different uses of past vs. non-past markings. Figure 10.1 summarises these differences by further displaying the proportions of all past inflections in each language as a function of age. It can be seen that the French and German subjects in all age groups mostly use the non-past. In contrast, English-speaking children from four/five to ten years clearly use more past inflections than the French and German children. This difference, however, disappears at the adult age, where the non-past becomes predominant in English.

10.1.1.2 Aspectual markers in Chinese

Aspectual markers in the Chinese narratives include the following: the particle *le*, which marks perfectivity and/or current relevance; the particle *zhe* and the less frequent particle *ne* and adverbial *zai4*, which mark imperfective aspect.

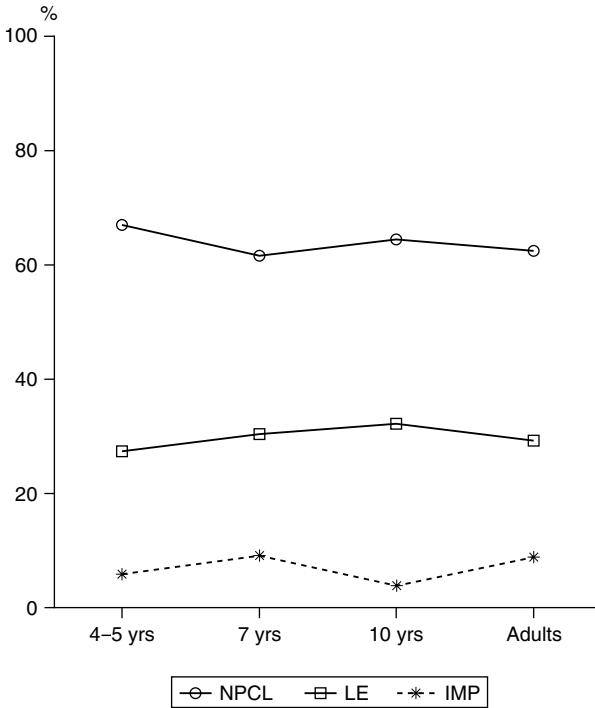


Figure 10.2 Uses and non-uses of aspect particles in Chinese

Figure 10.2 first shows the proportions of clauses in the Chinese corpus that do vs. do not contain one of these aspectual markers. It can be seen that the majority of units contain no aspectual markers at all (NPCL), regardless of age. In addition, when markers are used, the particle *le* is more frequent than imperfective markers. Among the clauses that do not contain aspect markers, two main types must be distinguished: cases with special verb or clause types, which can never take these markers (see Hickmann *et al.* 1994 for more details); and cases that were not constrained in any way and where some marker would be expected (at least if the sentence is considered in isolation, see below). Although both types of cases occur, unconstrained ones are by far the more frequent. This first result indicates that speakers do not systematically mark aspectual distinctions across clauses, often relying on other markings and more generally on information in the preceding discourse. I return to this point below.

As previously discussed (Chapter 3), linguistic analyses have proposed different meanings for the particle *le*: *perfectivity*, particularly when it is placed directly after the verb; and *current relevance*, particularly when it is placed at the end of the sentence. Further analyses therefore examined in more detail uses of this particle, differentiating the following cases: uses that are verb-final, but not sentence-final;

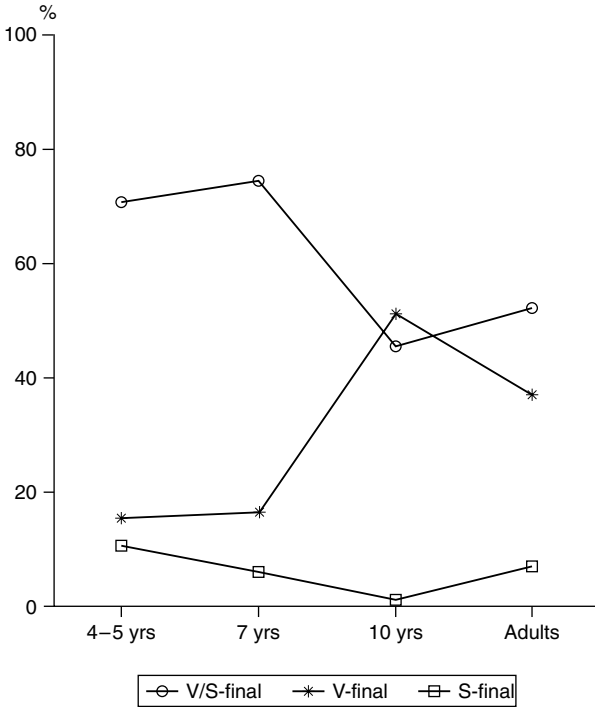


Figure 10.3 Different uses of the aspect particle *le* in Chinese

uses that are sentence-final, but not verb-final; and uses that are both verb-final and sentence-final. As shown in Figure 10.3, most uses of the particle *le* were formally ambiguous between its two possible readings (at least on the basis of position alone), since they were both verb-final and sentence-final. These uses are frequent at all ages, although they strongly decrease after seven years. Unambiguous perfective markers (verb-final, not sentence-final) are also frequent, but only after seven years, when they increase drastically to become as frequent as verb/sentence-final uses at ten years and adult age. Other uses presumably marking unambiguously current relevance (sentence-final, not verb-final) are rare at all ages.

Although particle use is relatively rare when it is calculated over the total number of utterances in the narratives, a more qualitative analysis shows that practically all narratives did contain some aspectual markers. This analysis examines each narrative in order to determine its overall density of aspectual markers by differentiating the following four types of cases: narratives without any aspect marker at all (NMK); narratives with a majority of utterances containing such markers (MK>NMK) or with a majority of utterances containing no such marker (NMK>MK); and narratives with as many utterances that do and do not contain such markers (NMK=MK).

Table 10.2 *Uses and non-uses of Chinese aspect markers within each narrative*

	4–5 years	7 years	10 years	Adults
CAT STORY				
NMK	1	—	—	—
NMK > MK	7	5	7	5
MK > NMK	2	2	3	4
NMK = MK	—	3	—	1
HORSE STORY				
NMK	—	—	—	—
NMK > MK	7	10	8	9
MK > NMK	2	—	1	1
NMK = MK	1	—	1	—

Table 10.2 shows the number of subjects who produced narratives of these types for each story in each age group. Only one narrative at four years contains no aspect marker at all. The most frequent type of narrative contains a majority of utterances without aspect markers, but some narratives contain a majority of utterances with such markers and a few cases contain as many utterances with as without them. I return to these different types of narratives when I focus on the discourse contexts in which uses and non-uses of aspectual particles were embedded.

10.1.2 Connectives

The connectives that were used in the narratives include a number of devices with different formal properties: co-ordinating and subordinating conjunctions, as well as adverbial expressions. Uses of these devices were of several types, such as forms serving to link grammatically main and complement clauses (e.g. English *that*, German *daß*, French *que*), to express causal relations (e.g. English *because*, German *weil*, French *parce que*), or to mark explicit or potential temporal-aspectual distinctions. The analysis below focuses on the devices belonging to this last subset, which fell into three main types, illustrated below: *sequential* devices, *regional* devices, and other *all-purpose* devices.

- (a) **Sequential devices:** devices that mark a relation of temporal succession between events, such as the following:

English: *then, and then, before, after*

German: *und da/dann* ('and there/then'), *dann* ('then'), *danach* ('after that'), *nachdem* ('after')

French: *et puis* ('and then'), *puis* 'then', *avant/avant que* ('before'), *après/après que* ('after')

Chinese: *hou4lai2* ('afterwards'), *yi3hou4* ('later', 'after'), *ran2hou4* ('then')

- (b) **Regional devices:** devices that express that one situation is in the 'temporal region' of another, thereby indicating an explicit or potential relation of partial or total overlap, or merely a vague relation of close temporal proximity, such as the following:

English: *while, meanwhile, when, (just) as*

German: *in der zwischenzeit* ('in the meantime'), *(gerade) als* ('just when'), *wenn* ('when')

French: *pendant que* ('while'), *pendant ce temps-là* ('in the meantime'), *quand* ('when'), *(juste) au moment où* ('(just) at the moment where'), *à ce moment-là* ('at this moment')

Chinese: *zhei4 shi2hou4* ('at this moment'), *de shi2hou4* ('while')

- (c) **Other all-purpose devices:** these devices mainly correspond to the uses of all-purpose co-ordinating conjunctions, when they were used alone in the Indo-European languages (English *and*, French *et*, German *und*).

All-purpose devices are most frequent at all ages in English (occurring in 59% to 65% of units), while they are somewhat less frequent in French and German, where they also gradually increase from four/five years (33% and 27%, respectively) to adult age (50% and 61%, respectively). In addition, as shown in Figure 10.4, regional devices increase with age, whereas sequential ones decrease in all four languages. However, the rate of this progression varies across languages. In particular, in the three Indo-European languages regional devices mostly increase between seven and ten years (French) or between ten years and adult age (English, German). In comparison, this increase begins earlier and it is more striking in Chinese, where regional devices first increase between four and seven years and steadily continue to do so thereafter until adult age. Overall, although regional devices are infrequent at four/five years in all languages, Chinese subjects use them more frequently than other language groups thereafter, especially at seven and ten years.

10.1.3 Relation between verbal and other devices

Table 10.3 shows the proportions of the different inflections and particles that were used with regional vs. sequential devices at each age in the four languages. In English the simple present, the present progressive, and the simple past are most frequent with regional devices. The past increases with these devices until ten years as to a lesser extent do the simple and progressive present at adult age. The progressive is rare with sequential devices. In French all inflection types occur with sequential devices at seven and ten years, but the present is mostly used

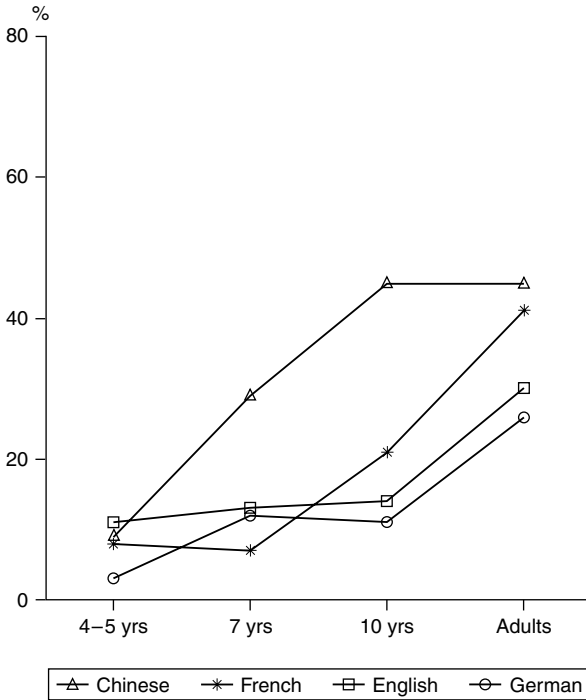


Figure 10.4 Proportions of regional connectives across ages

at the adult age. In German the present mostly occurs with regional devices at all ages. In addition, regional devices also co-occur with the *Präteritum* at seven years and with the *Perfekt* at ten years. In both French and German the present mostly occurs with sequential devices. Chinese clauses that contain no aspect particles (NPCL) frequently contain regional devices, although there is an increase in the conjoined uses of these devices and of the particle *le*. Clauses without particles and with the particle *le* both occur frequently with sequential devices at all ages, although conjoined uses involving *le* increase at the adult age.

Figure 10.5 further shows the overall proportions of inflections or particles that were used in conjunction with regional devices, while Figure 10.6 shows these proportions across ages for the most frequent forms within each language. In the Indo-European languages aspectually unmarked present inflections (all present inflections in French and German, simple non-progressive ones in English) are less frequently used with regional devices than with sequential ones at all ages except at adult age. There is an increase in conjoined uses of regional devices and of past perfective inflections (English simple past, French *passé composé* and *passé simple*, German *Perfekt*), although this increase occurs earliest in French (seven years on).

Table 10.3 *Connectives as a function of inflections and particles*

	4–5 years		7 years		10 years		Adults	
	Reg	Seq	Reg	Seq	Reg	Seq	Reg	Seq
ENGLISH								
PR	.24	.26	.14	.33	.19	.42	.38	.63
PRPG	.38	.06	.23	.03	.02	—	.31	.11
PAST	.24	.52	.51	.57	.74	.56	.15	.15
PAPG	.05	.06	.08	.06	.05	—	.07	—
OTHER	.09	.09	.03	—	—	.02	.09	.11
FRENCH								
PR	1.0	.80	.50	.91	.42	.79	.75	.64
PC/PS	—	.15	.25	.06	.25	.15	.08	—
IMP	—	.03	.25	.04	.25	.06	.17	—
OTHER	—	.01	—	—	.08	—	—	.36
GERMAN								
PR	.80	.53	.61	.82	.67	.87	.90	.81
PFK	.10	.21	.08	.06	.22	.09	.10	.06
PTT	—	.13	.23	.11	.05	.02	—	.06
OTHER	.10	.13	.08	—	.05	.02	—	.06
CHINESE								
LE	.29	.27	.31	.34	.16	.32	.36	.45
IMP	—	.06	—	.13	.04	.06	.08	.04
NPCL	.71	.57	.69	.53	.80	.61	.56	.50

Among the rare imperfective inflections that occur, the English present progressive co-occurs with regional devices, rather than with sequential ones, from four/five years on. The conjoined use of regional devices with the French *imparfait* increases across all ages, while conjoined uses increase until ten years (to decrease thereafter) in the case of the German *Präteritum*. As for Chinese, regional devices increase with clauses containing *le* from four/five years on, but they increase even more with clauses containing no particle or imperfective markings from four/five and seven years on, respectively.

10.2 Impact of predicate types on verbal devices

In order to determine the impact of verb semantics on the uses of verbal inflections or particles, further analyses examined the relation between perfectivity and boundedness. On the basis of a variety of criteria borrowed from Vendler's analysis (Vendler 1967, discussed in Chapter 3, see also Chapter 7 and Hickmann *et al.* 1994), all predicates that were used in the narratives were grouped into three main categories as a function of whether or not they implied an inherent endpoint: *bounded*

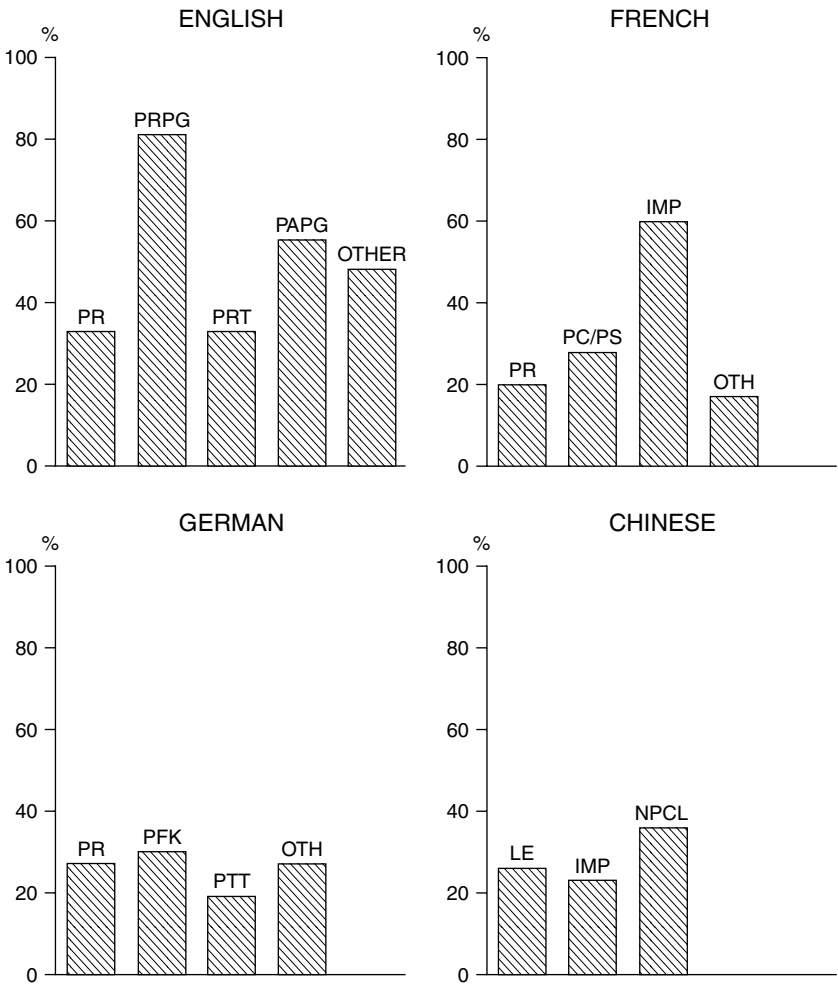


Figure 10.5 Temporal-aspectual markings used with regional connectives

predicates necessarily involved such an endpoint; *unbounded* predicates did not imply such a terminal point; a third category included all ambiguous cases. The analysis below examines uses of past and/or perfective markings (mostly the Chinese particle *le*, the French *passé composé* and *passé simple*, the English *preterite*, the German *Perfekt*, along with other rare forms) that occurred with bounded vs. unbounded predicates.

Figure 10.7 shows the results of this analysis. In all languages, past and/or perfective markings are more frequent with bounded predicates than with unbounded

Time

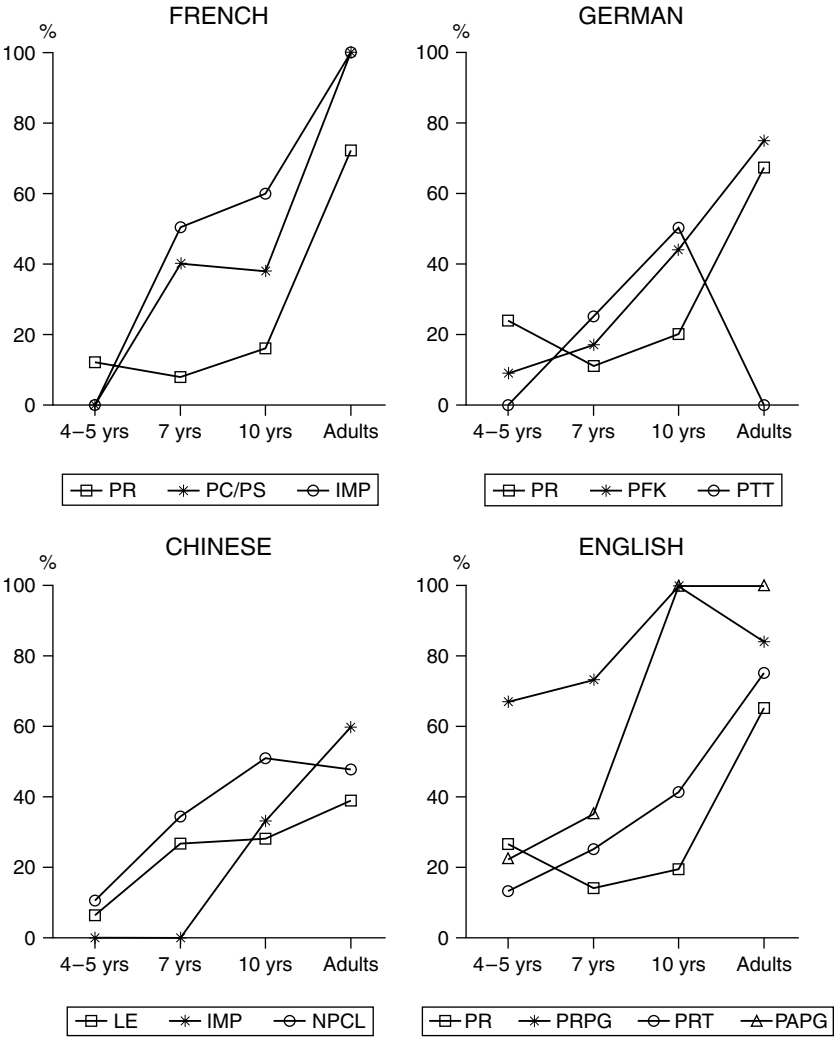


Figure 10.6 Most frequent temporal-aspectual markings used with regional connectives across ages

ones. However, the strength of this relation also varies with age and language. The predicted association is strongest in Chinese, where the particle *le* clearly occurs most often with bounded verbs at all ages. In addition, the non-uses of particles is more frequent with unbounded predicates. A strong association can also be observed in English, but mostly up to seven years. The young English-speaking children differentiate bounded and unbounded predicates the most, using the simple past with

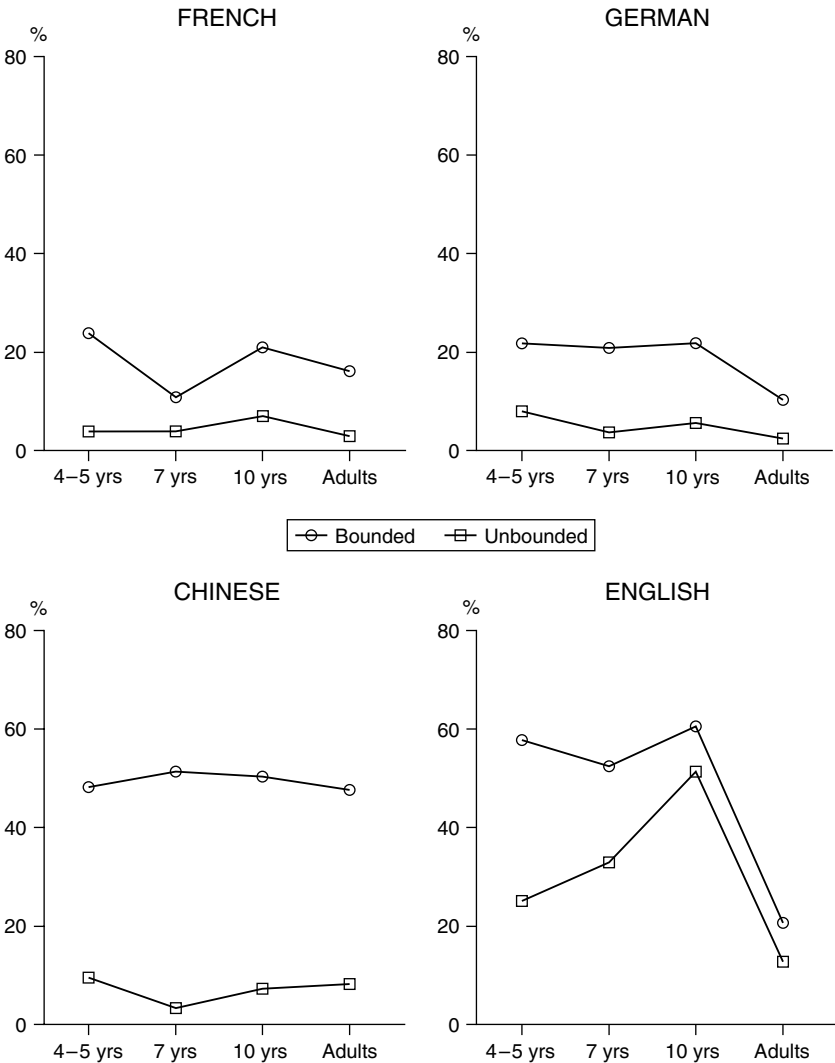


Figure 10.7 Proportions of past and/or perfective markers with bounded vs. unbounded predicates

bounded predicates and the simple present with unbounded ones. With increasing age, however, this association disappears: the same inflections are as frequent with both predicate types at ten years (frequent past perfective forms) and at adult age (frequent present forms). As for German and French, although this association can also be observed, it is particularly weak at all ages, since past perfective inflections are rare overall, irrespective of predicate types.

10.3 Discourse determinants of temporal-aspectual devices

A further series of analyses aimed at determining whether the uses of temporal-aspectual markings were determined by discourse functional factors. These analyses involved two steps. A first step consisted of determining different strategies in speakers' overall use of inflections in the Indo-European languages, where narratives were distinguished as a function of their temporal anchoring (anchoring in the past vs. non-past). A second step consisted of examining more closely a subset of the narratives, namely those in which children alternated different inflections (Indo-European languages) or the uses and non-uses of different particles (Chinese). The aim of these more specific analyses was to determine whether the temporal-aspectual shifts in these narratives occurred in particular types of discourse contexts that could indicate their discourse-internal functions in the grounding of information across clauses.

10.3.1 *Temporal anchoring in the Indo-European languages*

The analyses concerning temporal anchoring in the Indo-European languages first determined for each narrative the extent to which the past vs. non-past was the predominant tense used (independently of aspectual distinctions). The narratives fell into the following three main types, as summarised in (A) to (C) below: narratives that exclusively contained either non-past or past tenses and a third category of mixed narratives in which both tenses co-occurred. Furthermore, the last category of narratives contained several types of cases, depending on whether or not the past or non-past was more frequently used. Among these cases, some clearly contained more past forms and others clearly contained more non-past forms (75% or more of one inflection type), while very few narratives showed no predominance of one or another type of form (50% of each inflection type).¹

(A) Exclusive use of the non-past:

narratives that only contained non-past inflections.

(B) Exclusive use of the past:

narratives that only contained past inflections.

(C) Mixed narratives:

narratives that displayed the conjoined uses of both past and non-past inflections and which included three types:

(C1) non-past-based mixed narratives:

narratives that were anchored in the non-past, i.e. that contained more non-past inflections than past ones (at least 75% non-past inflections);

(C2) past-based mixed narratives:

narratives that were anchored in the past, i.e. that contained

more past inflections than non-past ones (at least 75% past inflections);

(C3) mixed narratives with no predominant tense:

narratives in which there were as many past as non-past inflections (50% of each).

It can be seen that two main patterns emerge, as summarised below. The first one involves anchoring in the non-past and corresponds to two types of cases: narratives that are exclusively anchored in the non-past (type A) and mixed narratives that are non-past-based (type C1). In contrast, the second pattern involves anchoring in the past and corresponds to two other types of cases: narratives that are exclusively anchored in the past (type B) and mixed narratives that are past-based (type C2). The remaining category (type C3) includes a few cases that do not show any particular strategy with respect to temporal anchoring.

- **Pattern 1: anchoring in the non-past:**
 - exclusive use of the non-past (type A)
 - non-past-based mixed narratives (type C1)
- **Pattern 2: anchoring in the past:**
 - exclusive use of the past (type B)
 - past-based mixed narratives (type C2)
- **No temporal anchoring:**
 - mixed narratives with no predominant tense (type C3).

These different cases are illustrated below from the corpora of the different languages. Examples from the French and German corpora illustrate narratives that are characterised by temporal anchoring in the non-past. The first two examples (10.1) and (10.2) correspond to cases of exclusive anchoring in the non-past (type A):

- (10.1) Alors c'est un cheval qui court... dans un pré... et mum... après i s'arrête... i regarde un taureau... (pause) et i se remet à courir pour sauter par-dessus la barrière pour essayer de – d'aller dans le champ du taureau... (pause) et en sautant... i mum... c'que – ses jambes elle cognent contre la barrière... (pause) i tombe... et mum... après y'a le taureau, y'a... un oiseau qui amène une fin – une boîte... d'infirmierie... (pause) il amène... une bande, le taureau lui met une bande... et... après il se – il guérit. (10 years)
 ('So there's a horse that's running in a meadow and then it stops, it looks at a bull and it starts running again to jump over the fence to try to go to the field of the bull and in jumping its legs they hit against the fence... he falls and then there's the bull, there's a bird that brings a

nurse's box, it brings a bandage, the bull puts the bandage on him and then he gets better.')

- (10.2) Da is ein Vogel mit drei Kücken. (pause) Eh . . . der Vogel fliegt weg, weil er für die Kücken Futter holen will. (pause) Da steht eine Katze, die will die Kücken fressen. Sie klet – die let – die Katze klettert dann am Baum hier hinauf. (pause) Da kommt ein Hund. Und der Hund will nicht, daß die Katze die Kücken frisst. Da kommt der Vogel zurück. Da beißt der Hund der Katze in den Schwanz und zieht sie runter. Da kommt wieder der Vogel wieder mit em Wurm und der Hund jagt die Katze davon. (10 years)

(‘There is a bird with three chicks. uhm . . . the bird flies away because it wants to get food for the chicks. There stands a cat, it wants to eat the chicks. Then the cat climbs up the tree. There comes a dog. And the dog does not want the cat to eat the chicks. There the bird comes back. There the dog bites the cat in the tail and pulls it down. There the bird comes back again with a worm and the dog chases the cat away.’)

Examples (10.3) and (10.4) also show the predominant use of the non-past for anchoring. However, in contrast to (10.1) and (10.2), these cases correspond to non-past-based mixed narratives, where a few uses of past tenses occur (type C1, past forms are shown in bold):

- (10.3) Alors un jour c’**était** une – un grand oiseau avec ses trois petits enfants. Ils **étaient** dans un nid. La maman elle s’en va chercher du manger pour ses petits enfants et y’a un chat qui arrive. Et il regarde un peu les trois petits enfants et il grimpe à l’arbre. Et . . . après y’a un autre chien qui arrive, y’a un chien qui arrive et qui lui tire la queue. Et la maman elle vient avec le manger et le manger c’est un ver de terre. Un petit ver de terre. Et après le chat, dès qu’il a **vu** la maman, il part et le chien . . . il court après. (7 years).

(‘So one day it **was** [IMP] a big bird with its three little children. They **were** [IMP] in a nest. The mother she goes away to fetch some food for her little children and there’s a cat that comes. And he looks a little bit at the three little children and he climbs up the tree. And then there’s another dog that comes, there’s a dog that comes and that pulls its tail. And the mother she comes with the food and the food it’s a worm. A little worm. And then the cat, as soon as he **has seen** [PC] the mother, he leaves and the dog . . . he runs after him.’)

- (10.4) Ein Pferd ist auf seiner Weide und freut sich und springt herum. Da sieht sie am gegnersichen Zaun ein Stier – oder ist das ne Kuh? ne Kuh . . . sie

will zu ihr und springt ü – über den Zaun. Da bleibt sie hängen und fällt runter. Sie **hat** sich **wehgetan**. (pause) Danach kommt en Vogel . . . mit m Verbandskasten und hilft ihm. Und die Kuh verbindet . . . das ist aber noch – verbindet den Fuß. Eh . . . und bald geht es ihr besser. (10 years) ('A horse is in its meadow and has fun and runs around. There it sees on the other side of the fence a bull – or is it a cow? A cow . . . it wants to go to her and jumps over the fence. There it is hanging and falls down. She **has hurt** [PFK] herself. Afterwards a bird comes with a first-aid kit and helps him. And the cow ties . . . but this is still – ties the foot. Uhm . . . and soon he gets better.')

Examples (10.5) to (10.8) show narratives from the English corpus characterised by an anchoring in the past. The following two examples (10.5) and (10.6) correspond to narratives that exclusively contain past forms (type B):

- (10.5) Once there was this horse [...] named Fudge. And Fudgie was running and he came up to this fence . . . and there was a cow. And he stopped . . . and then he decided he'd jump over the fence. So Fudgie came up and he jumped over. The one mistake . . . his leg . . . hit the fence and it broke the fence and his leg got hurt. So then . . . the cow (pause) decid – the bird that was sitti – there was a bird sitting up on the fence, he noticed. And the bird came down with the first-aid kit. And then the cow started wrapping a bandage around his leg (pause) so it would get better. And that's the end. (10 years)
- (10.6) Once there was a bird in her nest and a cat came along and the bird was flying and the cat was looking up at the nest and the cat – and a dog came along and the cat was trying to climb up the tree and he was almost there and the dog bit the dog – bit the cat's tail . . . and the cat . . . ran away. (7 years).

Examples (10.7) and (10.8) also show an anchoring in the past, but these cases correspond to past-based mixed narratives (type C2), that is narratives with a predominant use of past forms, but in which a few non-past forms occur (shown in bold):

- (10.7) There was a horse running . . . then he stopped. So he star – then he started running and jumped over the fence . . . then he **jumps** . . . and cracked the fence and he hurt his leg. (pause) And they . . . and they helped him bandage it up. That's all. (7 years)
- (10.8) Well, **there's** a horse an' **he's walking** by this fence . . . and then he **sees** a cow . . . and I guess he wanted to – he was his friend or

something . . . an' he tried to jump over the fence to see the cow. And he broke the fence . . . 'cause he hit the fence and bro – and he broke his leg or . . . hurt his leg . . . and all through this **there's** a bird on the fence . . . and while – the minute he fell, the bird started to fly away . . . then he came back with a tool box in his hand to fix the . . . horse's leg. And that's all. Then the cow helped . . . put it on . . . to put the band-aid on. He put a ban – a cast. (10 years)

Finally, example (10.9) shows one of the few mixed narratives that were found in the English corpus, in which no predominant tense is used (as many past and non-past inflections):

(10.9) The horse is running . . . the horse came to a fence . . . the horse is jumping over the fence. The horse fell. (4 years)

We first examine the distribution of narratives that displayed the exclusive use of the non-past, the exclusive use of the past, and mixed uses of both past and non-past forms. Figures 10.8 and 10.9 show for each story (HORSE and CAT stories,

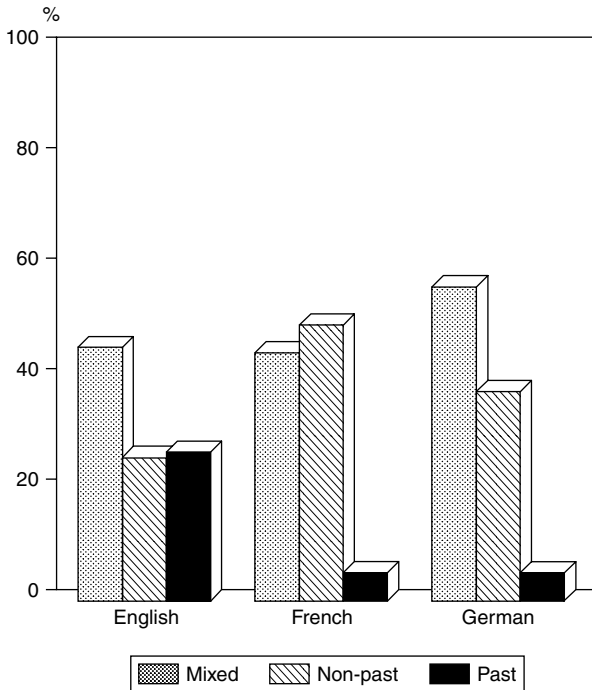


Figure 10.8 Overall temporal anchoring in English, French, and German HORSE stories

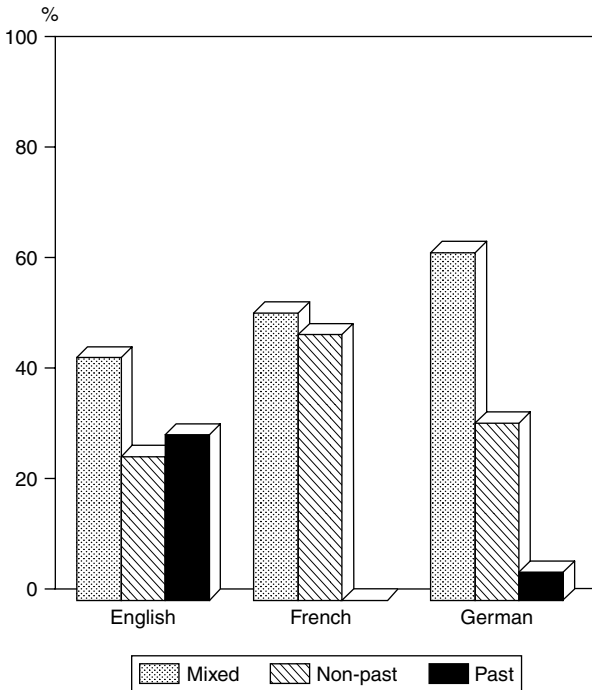


Figure 10.9 Overall temporal anchoring in English, French, and German CAT stories

respectively) the proportions of subjects who used these different strategies within each Indo-European language (collapsing ages). Overall, the narratives in each language group are roughly equally divided between those that were mixed and those that were exclusively anchored in one tense (past or non-past). However, exclusive anchoring in the past is more frequent in English than in French or German, where such a strategy is very rare as compared to an exclusive anchoring in the non-past. A similar pattern can be observed in both stories.

Figure 10.10 further shows the distribution of these types of anchoring across ages within each language (collapsing stories). It can be seen that the same overall distribution holds at all ages within each language group, with the following notable exceptions. First, exclusive anchoring in the past increases from four/five to ten years in English to decrease at adult age. Second, mixed uses of past and non-past forms tend to be most frequent in German at all ages as compared to English or French, although this difference is more marked at seven years.

We now turn to the different types of mixed narratives as a function of whether they were predominantly past-based, non-past-based, or not based either in the past or in the non-past. Figures 10.11 and 10.12 show the distribution of these

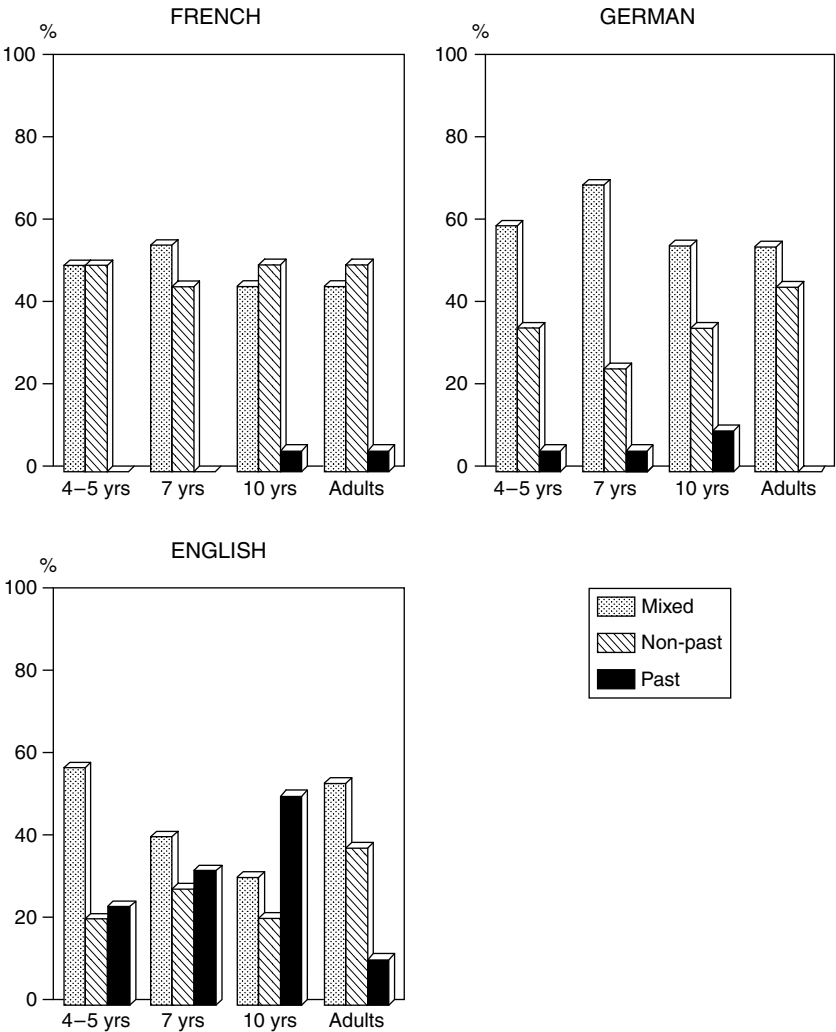


Figure 10.10 Temporal anchoring in English, French, and German across ages

mixed narratives within each story and language group (collapsing across ages). In all languages most mixed narratives are non-past-based, although two differences across stories are notable in this respect. In English, non-past-based mixed narratives are more frequent in the CAT story than in the HORSE story, whereas the reverse pattern occurs in French. Only a few mixed narratives show no temporal anchoring in English. As for German, non-past-based mixed narratives are predominant in both stories.

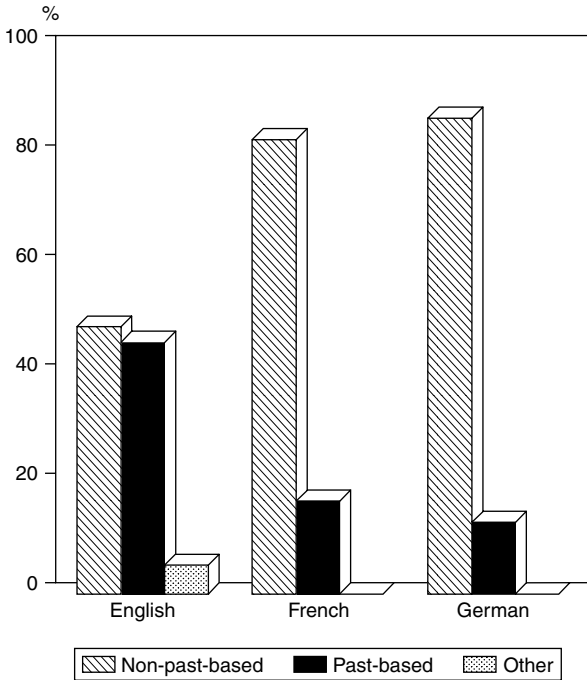


Figure 10.11 Overall temporal anchoring in English, French, and German mixed HORSE stories

Figure 10.13 shows the distribution of these different mixed strategies across ages within each language group (collapsing stories). Some differences across age groups can be observed in this respect, particularly in French and in English. In French, mixed non-past-based narratives are most frequent at all ages, except at ten years where mixed past-based narratives are even more frequent. In English mixed non-past-based narratives increase with age, becoming more frequent than mixed past-based narratives at ten years and at adult age. The few cases of mixed narratives containing as many past as non-past inflections occur at four/five and seven years in English (a total of five narratives) and in two of them the children used frequent idiosyncratic forms. As for German mixed non-past-based narratives are predominant at all ages, while mixed past-based narratives are rare (four/five years, seven years, adults) or do not occur at all (ten years).

In summary, relatively few children in the English corpus anchor their narratives in the non-past (exclusive non-past strategy or mixed non-past-based strategy), although this type of anchoring increases with age. Most English-speaking children anchor their narratives in the past, either relying exclusively on past inflections or producing past-based mixed narratives until ten years. In contrast, very few subjects

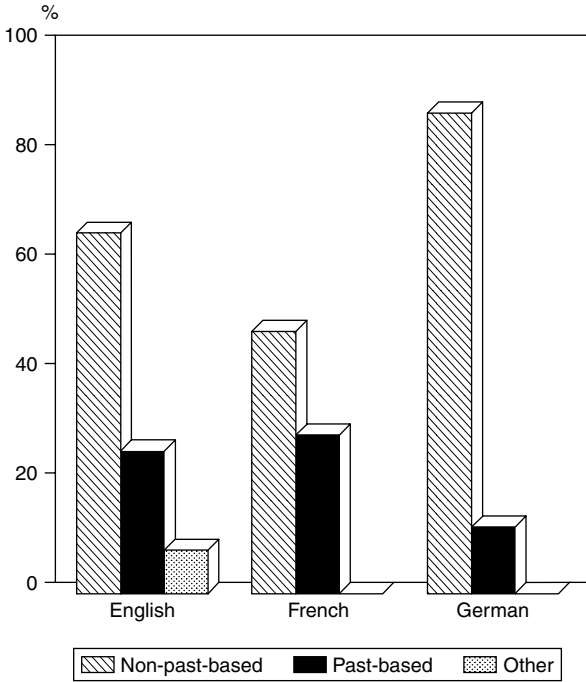


Figure 10.12 Overall temporal anchoring in English, French, and German mixed CAT stories

use an exclusive past anchoring in French or in German, while most use either an exclusive non-past anchoring or a mixed strategy with non-past anchoring. The same pattern holds for both stories, despite a few variations that were noted across them in English and French.

10.3.2 Temporal-aspectual shifts

We now examine the discourse contexts in which temporal-aspectual shifts occurred in the narratives. By *shift* is meant here the following phenomena. In the Indo-European languages shifts correspond to all uses of tense markings that did not correspond to the main anchoring (shifts from the past to the non-past or vice versa) in a given narrative (mixed narratives, by definition). In Chinese we saw that, although most utterances contain no aspect markers, almost all narratives contain some utterances with aspect particles (see Table 10.2 above). As shown in more detail below, these narratives contain two types of shifts: shifts from the use to the non-use of particles or vice versa, and shifts from one type of particle to another. In all languages, temporal-aspectual shifts occur in the context types described under (a) to (f).²

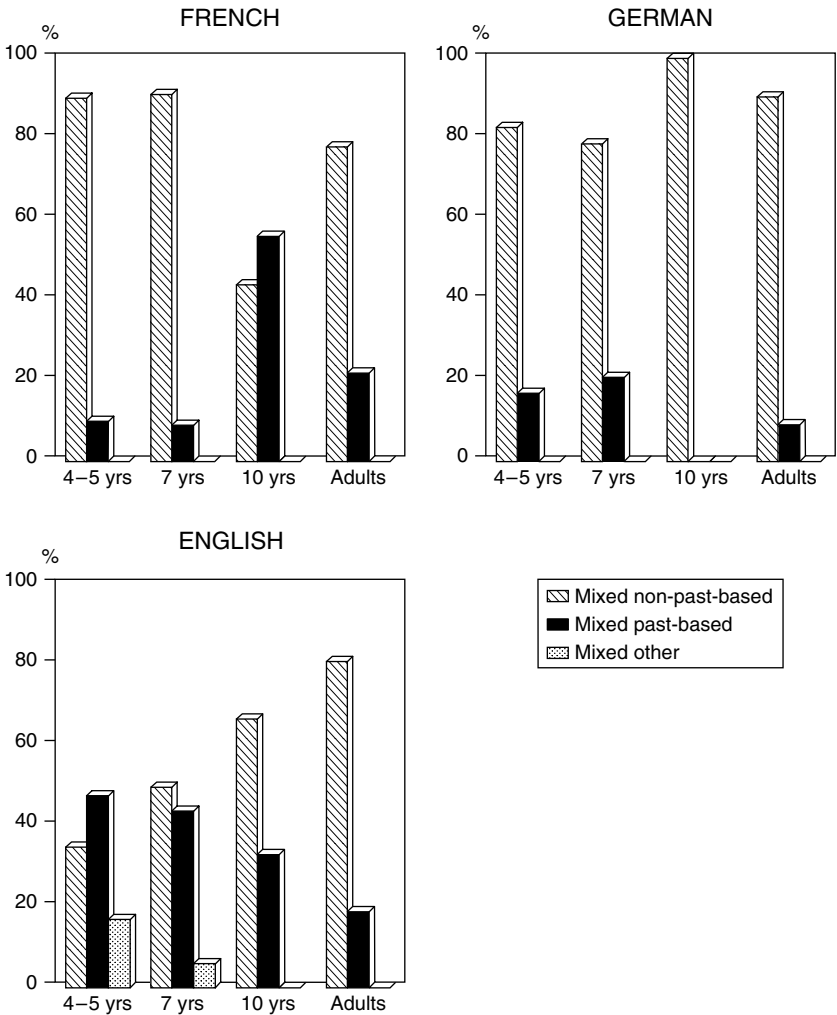


Figure 10.13 Temporal anchoring in English, French, and German mixed narratives across ages

- (a) **Overlaps:** utterances that represent events or states as being in some relation of simultaneity, partial anteriority/posteriority, or temporal proximity with other situations.
- (b) **Referent introductions:** utterances that introduce referents either at the very beginning of the story (setting) or later into the plot, regardless of whether these first mentions are marked by indefinite forms and/or special constructions.

- (c) **Narrator's comments:** utterances in which the narrator provides a comment upon his or her own narrative, e.g. typically when returning retrospectively to complement an earlier part of the narrative or to provide a summary of a sequence of events previously described.
- (d) **Explanations:** utterances that provide explicit reasons or causes (other than mere internal states below) for events or states described in the story.
- (e) **Internal states:** utterances in which the narrator describes cognition, volition, or desire on the part of a protagonist, thereby implicitly providing a reason for subsequent states or actions.
- (f) **Descriptions:** other utterances that describe events and/or the results of events (other than internal states) in the absence of any evidence indicating that they are part of a larger discourse context (e.g. part of overlaps) or that they belonged to another category (e.g. referent introductions).

Figure 10.14 provides a global overview of the discourse contexts of all shifts as a function of language, collapsing ages and stories, as well as different types of anchoring strategies, to which we return below. Overall, the majority of shifts occur in three types of discourse contexts: descriptions, referent introductions, and overlaps, while other discourse contexts are less frequent. This distribution can be observed in all languages, despite small differences, such as the somewhat more frequent descriptions and less frequent introductions in French and Chinese as compared to other languages.

Figure 10.15 further displays the relative proportions of temporal-aspectual shifts that occurred in the most frequent discourse contexts (descriptions, introductions, overlaps) as a function of age within each language (collapsing stories). In all languages shifts in descriptions decrease with age and those in overlaps increase with age, despite some fluctuation (e.g. in German). In French descriptions are most frequent and introductions least frequent at four/five years. In Chinese descriptions are most frequent, but introductions remain relatively infrequent at all ages.

Figure 10.16 summarises the proportions of all shifts that involved some potential grounding distinction in discourse (all contexts excluding descriptions) as a function of age (collapsing stories). In all languages, these shifts increase with age. In the Indo-European languages, this increase occurs particularly after four and five years, then again between ten years and adult age. In Chinese, however, this increase is more gradual from four and five years to adult age and shifts with a grounding function are generally less frequent than in the other languages, except at ten years.

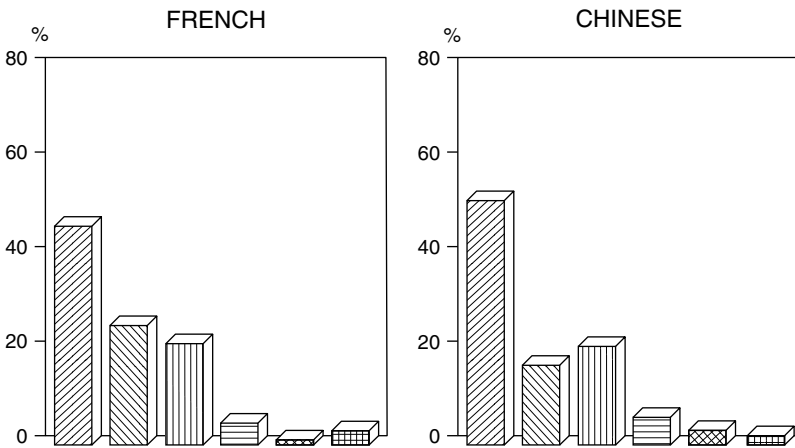
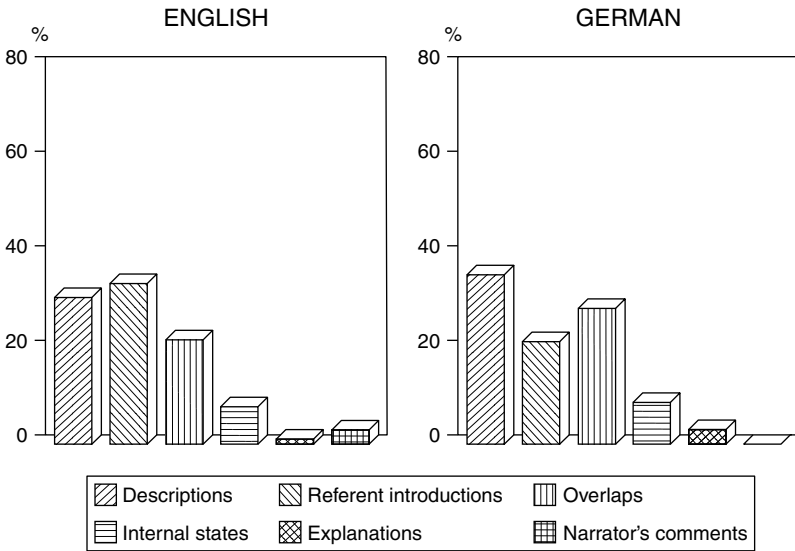


Figure 10.14 Discourse contexts of temporal-aspectual shifts overall

As shown below, however, more detailed analyses of temporal-aspectual shifts indicate that the discourse contexts in which they occur vary as a function of story and as a function of anchoring strategies. We turn to a more qualitative discussion of these shifts in each of the two stories by focusing on the two major types of temporal shifts that occurred in mixed narratives in the Indo-European languages (shifts to the past in non-past-based mixed narratives and shifts to the non-past in past-based narratives).

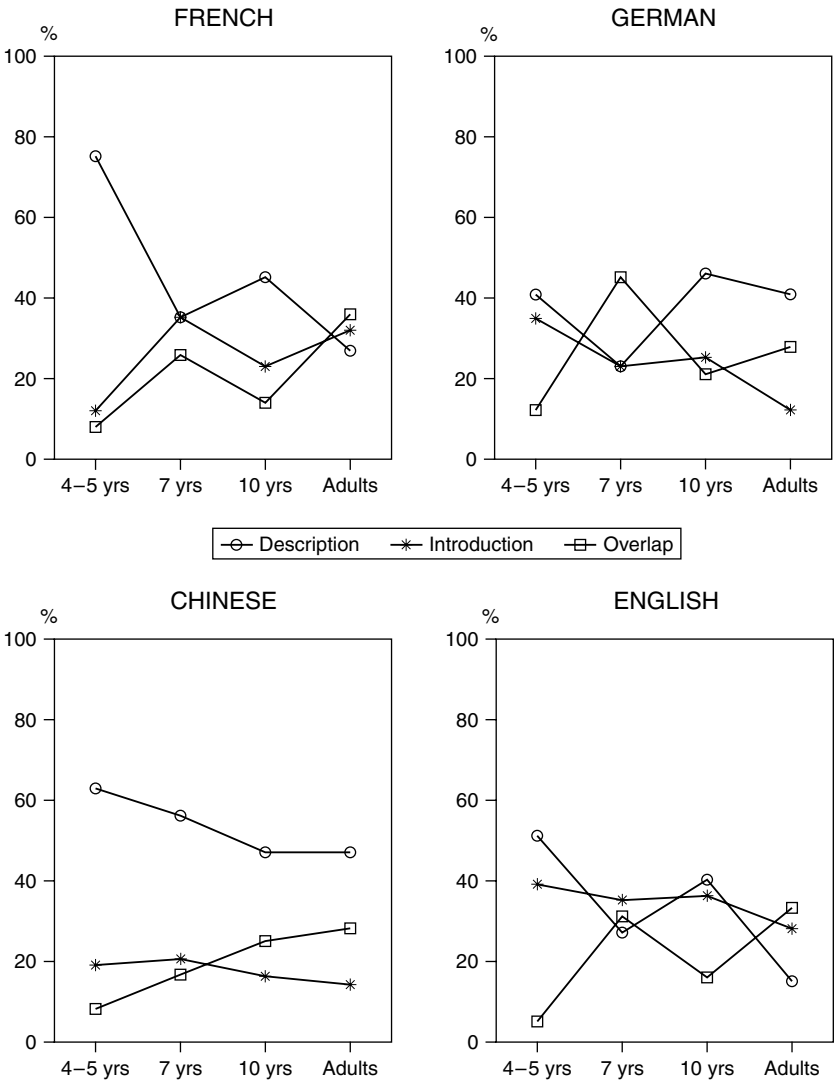


Figure 10.15 Most frequent discourse contexts of temporal-aspectual shifts across ages

10.3.2.1 Indo-European languages: the use of the past in mixed non-past-based narratives

Overall, in all languages shifts to the past in non-past-based narratives occurred from seven years on most frequently in the context of overlaps and/or of referent introductions. Such contexts are illustrated in excerpts (10.10) to (10.14)

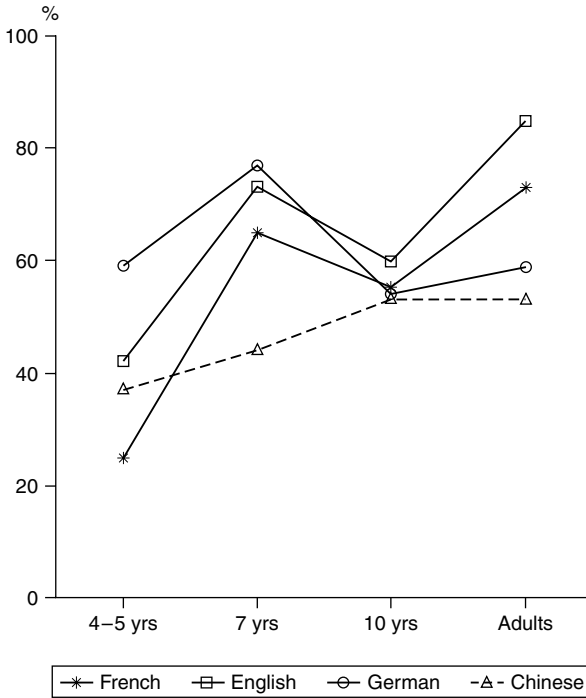


Figure 10.16 All temporal-aspectual shifts marking a grounding distinction

in each language (forms corresponding to uses that depart from the predominant anchoring tense are shown in bold). Temporal shifts marking overlaps are shown in German (10.10) (*war*), in English (10.11) (*got up*), and in French (10.12) (*a atteint, reposait*). Shifts marking referent introductions in the CAT story are illustrated in German (10.10) (*hat bekommen*) and in English (10.11) (*got born*). Similar uses for referent introductions in the HORSE story are illustrated in French (10.13) (*était, avait*) and in German (10.14) (*kam*).

- (10.10) Ein Vogel **hat** Kinder **bekommen** und der Vogel fliegt weg und die Katze will ein Vogel essen und da läuft die Katze hoch, un dort schaut der Hund un dann **war** die Katze fast aufm Baum und der Hund zieht se mit Schwanz runter, und dann kommt en Vogel mit ner Raupe. (7 years)

(‘A bird **has gotten** [PFK] children and the bird flies away and the cat wants to eat a bird and there the cat runs up and there the dog looks and then the cat **was** [PTT] almost on the tree and the dog pulls it down with the tail and then a bird comes with a caterpillar.’)

- (10.11) It starts out like one day some birds just **got born [PAPF]** and the bird's starting to fly off to get some worms. The cat comes to the tree [...] and the dog bites the cat's tail when the cat just about – **got up [PRT]** there, and the bird's coming. And then the dog chases away the cat and the bird's... has the worm at the nest. (7 years)
- (10.12) Puis il essaye de grimper à l'arbre pour attraper les oiseaux dans le nid mais à ce moment là on voit un chien qui approche... au moment où le chat **a atteint** la branche sur laquelle **reposait** le nid et qui s'y agrippe avec ses griffes... le chien le tire par la queue... (Adult)
 ('Then he tries to climb up the tree to catch the birds in the nest but at this very moment one sees a dog that is approaching at the moment when the cat **has reached [PC]** the branch on which the nest **was resting [IMP]** and who clutches to it with its claws... the dog pulls him by the tail.')
- (10.13) Un jour c'**était** un cheval dans une écurie et il y **avait** une vache dehors et le cheval veut attraper la vache. (7 years)
 ('One day it **was [IMP]** a horse in a stable and there **was [IMP]** a cow outside and the horse wants to catch the cow.')
- (10.14) dann liegt es da auf der Wiese. Da **kam** der Ochs... (7 years)
 ('then it lies there on the meadow. There **came [PTT]** a cow.')

Overlaps were most frequent in the CAT story, for example in cases such as (10.10) to (10.12), while referent introductions were more frequent in the HORSE story, for example in cases such as (10.13) and (10.14). The majority of shifts to the past involved the perfective past (mostly English simple past and present perfect, French *passé composé* and *passé simple*, German *Perfekt*), but some imperfective pasts also occurred in these two contexts, for example French *imparfait* in (10.12) (*reposait*) and (10.13) (*était, avait*) and German *Präteritum* in (10.14) (*kam*).

In comparison, other shifts occurred mainly in descriptive utterances, particularly descriptions containing perfective past forms focusing on results that did not belong to larger discourse contexts such as overlaps, for example (10.15) to (10.17). Some of these cases occurred at all ages, but they were most frequent in the narratives of the four/five-year-olds, when these children switched to the past at all.

- (10.15) There's a horse running. And... and he – and he's trying to catch a cow. But he's outside the fence. And – but the horse... **broke [PRT]**... the fence but he's hurt. Then a bird flies down and he has a kit... to fix his leg up. That's the end. (4 years)

- (10.16) [...] ça commence avec l'oiseau. Il est dans son nid et après il va s'envoler. Il **est parti** et puis les petits oiseaux ils la voient plus. Après y'a un chat qui vient. (5 years)
(‘It begins with the bird. It is in its nest and then it is going to fly away. It **is gone [PC]** and then the little birds they don't see it anymore. Then there's a cat that comes.’)
- (10.17) Das Pferd rennt ... über ne Wiese. Un da bleibt es am Zaun stehn ... un dann will es rüber rennen und dann **is es gestolpert**, dann hat – dann verbindet die Kuh ... vom Pferd das Bein. (7 years)
(‘The horse is running over a meadow. And then he stands still at a fence and then he wants to run over and then he **has tripped [PFK]**, then the cow binds the leg of the horse.’)

10.3.2.2 *Indo-European languages: the use of the non-past in past-based mixed narratives*

In all languages shifts to the non-past in past-based narratives were more frequent for referent introductions and to a lesser extent for descriptions. With respect to descriptions, shifts to the non-past described ongoing unbounded situations (as compared to shifts to the past which described results) and therefore they involved more progressive forms in English, for example (10.18). In the English corpus, however, the great majority of such shifts involved the simple present in presentational utterances that introduced referents and/or described the setting at the beginning of the story. These uses occurred at all ages, although they were more frequent at four years (both stories) and at seven years (HORSE story) than in any other age group. Example (10.19) shows a four-year-old's narrative in which only the very first utterance of the narrative is in the present, while all others are in the past.

- (10.18) The horse **is running** and then he saw a cow. And then he jumped over the fence ... the birds **are sitting** there [...] (7 years)
- (10.19) The bird **is** on the tree. The kitty cat came to the tree. The cat looked back. The cat went up the tree ... the dog was standing ... the dog was pulling the cat down by his tail. Mouse was sitting and the dog was running and the birdie was on the tree. (4 years)

In French a few cases occurred in presentational utterances as shown at the beginning of (10.20) (*c'est* ‘it is’). The remaining cases consisted of various utterances representing other major events of the plot, for example the bird flying away, the cat climbing, the dog grabbing and chasing the cat, as shown at the end of (10.20).

- (10.20) C'**est** un jour des petits oiseaux qui avaient faim. Alors leurs mamans sont allées les chercher. Et puis y avait un chat qui les regardait après.

Le chat montait à l'arbre et y'avait un chien. Alors le chien tira la queue au chat et le chat retomba [...] parce que y'avait leur maman qui revenait. Alors vite le chat **redescend** avec le chien et leur maman leur **donne** à manger. (7 years)

('One day it's some little birds that were hungry. So their mothers went to get them. And then there was a cat that was looking at them after. The cat was climbing up the tree and there was a dog. So the dog pulled the tail of the cat and the cat fell back down [...] because there was their mother that was coming back. So quickly the cat **comes back down** with the dog and their mother **gives** them to eat.')

Switches from the past to the non-past were least frequent and systematic in German, mostly consisting of descriptions at all ages and of a few other occurrences at the adult age, for example the generic statement embedded in an explanation in (10.21).

- (10.21) [...] Aber in der Zeit schlich sich eine Katze an, sah, daß die Mutter weg ist und wollte sich auf die Jungen ranmachen. Aber die Katzen **sind** ja hinterhältig darum hat sich diese Katze erst mal eine Zeit lang das Nest angeguckt und auch sich außer Gefahr geglaubt. (Adult)
('[...] But in the meantime a cat crawled up, saw that the mother is gone and wanted to get to the young ones. But cats **are** careful, so this cat first looked at the nest for a while and also thought it was out of danger.')

10.3.2.3 Chinese: shifts in the uses and non-uses of aspectual markers

Temporal-aspectual shifts in Chinese fell into the following four types, depending on whether they involved alternating between different aspect particles or alternating between the presence and absence of such particles. These different types are illustrated in the four excerpts (10.22) to (10.25) below (relevant devices are shown in bold):

- (a) NPCL to PCL: shifts from the absence of any aspectual particle to the use of some such particle, as illustrated in excerpt (10.22);
- (b) PCL to NPCL: shifts from some aspectual particle to the absence of such a particle, as illustrated in excerpt (10.23);
- (c) LE to IMP: shifts from the particle *le* marking perfectivity and/or current relevance to a particle marking imperfective aspect, as illustrated in excerpt (10.24);

- (d) IMP to LE: shifts from a particle marking imperfective aspect to the particle *le* marking perfectivity and/or current relevance, as illustrated in excerpt (10.25).
- (10.22) **NPCL to PCL**
 Dang1 niao3 ma1 ma gang1 fei1 zou3 de shi2hou4,
 (just as bird mother just fly leave while)
 ('Just when the mother bird was leaving,')
 jiu4 lai2 **le** yi1-zhi1 lao3 mao1. (5 years)
 (then come **LE** one-CL old cat)
 ('an old cat arrived.')
- (10.23) **PCL to NPCL**
 Tiao4-bu4-guo4-qu4 **le**.
 (jump-not-pass-go **LE**)
 ('He couldn't make it over.')
- Lao3 niu2 tai1 jiu4 zai4 nei4bian chi1 cao3. (4 years)
 (old cow 3p then be-at side eat grass)
 ('The old cow was eating grass on the other side.')
- (10.24) **LE to IMP**
 Nei4 gou3 lai2 **le**.
 (that dog come **LE**)
 ('That dog came.')
- Nei4 gou3 yao3-**zhe** nei4-ge mao1 de wei3ba. (7 years)
 (that dog bite-**IMP** that-CL cat POS tail)
 ('That dog bit that cat's tail.')
- (10.25) **IMP to LE**
 Dao4-**zhe** shu4-shang4,
 (arrive-**IMP** tree-on)
 ('[When] he was arriving at the tree top,')
- yi4-zhi1 gou3 lai2 **le**. (7 years)
 (one-CL dog come **LE**)
 ('a dog arrived.')

Figure 10.17 shows the overall proportions of these different types of shifts in each story (collapsing age). At all ages shifts from no aspectual particle to some such particle (NPCL to PCL) are roughly as frequent as shifts from some particle to no particle (PCL to NPCL). In addition, these two types of shifts are clearly more frequent than shifts among different types of particles (IMP to LE or LE to IMP). Figure 10.18 further summarises this distribution of shifts as a function of age (collapsing the least frequent IMP-to-LE and LE-to-IMP shifts), showing a very similar pattern at all ages in both stories.

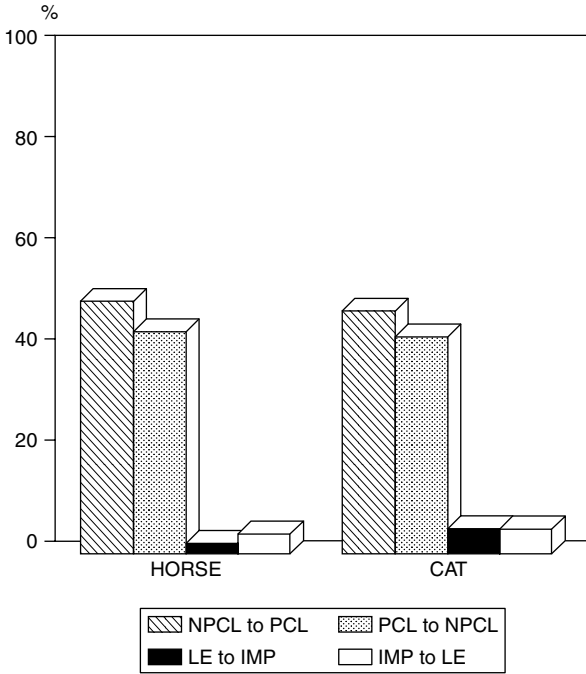


Figure 10.17 Temporal-aspectual shifts in Chinese overall

10.3.3 A closer look at the marking of overlaps

Shifts marking overlaps in the narratives deserve some attention. In all languages such shifts are most frequent in the CAT story, and in the Indo-European languages they are most typical of shifts to the past in non-past-based mixed narratives. Figure 10.19 shows the proportions of all temporal-aspectual shifts that marked overlaps in the narratives elicited with the CAT story (all Chinese shifts marking overlaps are included). It can be seen that the marking of situational overlaps clearly increases with age in all languages already between four/five and seven years. Thereafter, this increase is followed either by a continuing increase (French), by a decrease (German, English), or by the absence of further change (Chinese), depending on whether shifts take on other functions from seven years on. Among the Indo-European languages overlaps are more frequent in German at four/five years, a result that was not expected.

However, the increased marking of situational overlaps by means of shifts to and from particles or among particles in Chinese is less striking than in the other languages. This result is partially due to the fact that Chinese speakers rely more on connectives than on particles to mark relations among situations in discourse, as already shown above. Note also that the quantitative analyses presented for the

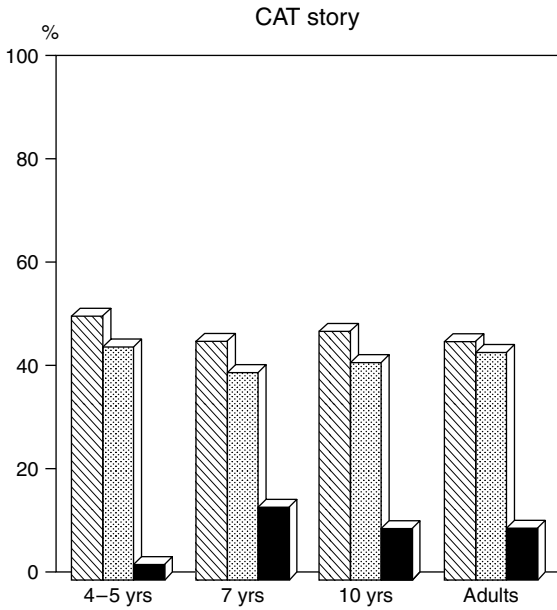
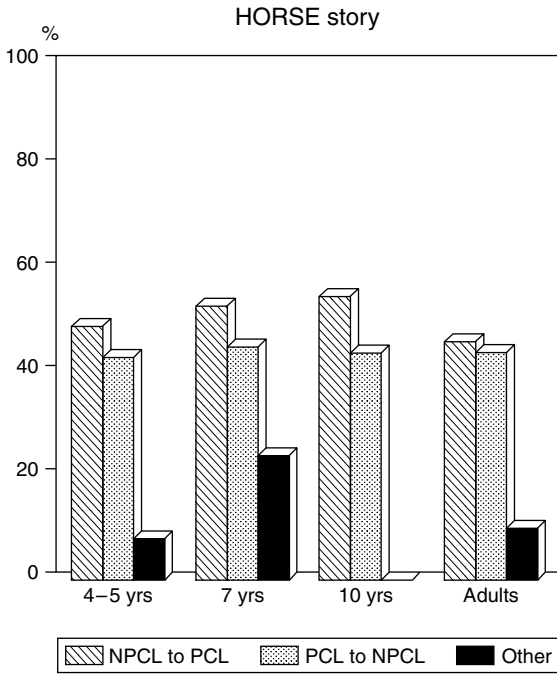


Figure 10.18 Temporal-aspectual shifts across ages in Chinese

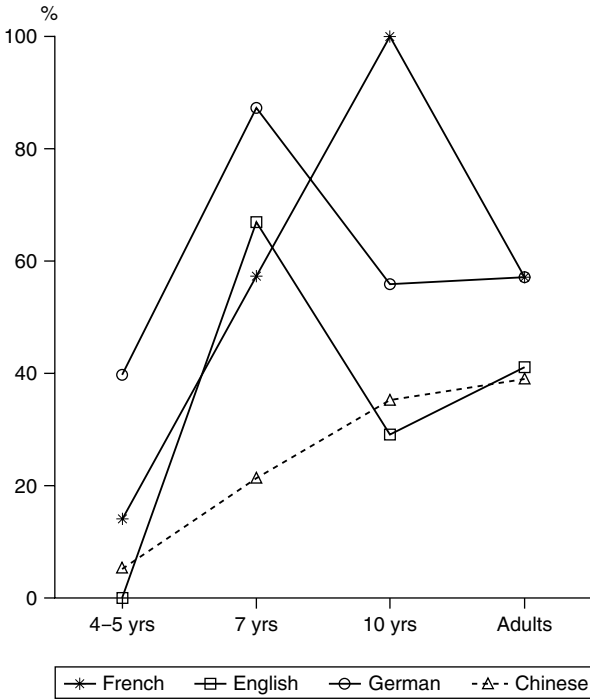


Figure 10.19 Inflection and particle shifts marking situational overlaps in the CAT story

Indo-European languages only focused on tense shifts (past to non-past and vice versa), whereas the ones presented for Chinese included all types of shifts (NPCL to PCL, PCL to NPCL, LE to IMP, IMP to LE). Further analyses in the Indo-European languages are necessary to focus on aspect shifts within a given temporal anchoring, that is past progressive to past non-progressive or vice versa in English, imperfective to perfective past or vice versa in German or French. However, tense shifts show the development of the ability to ground information in discourse, since all of the above uses of temporal-aspectual devices (with the only exception of those used in descriptions) contribute implicitly or explicitly to establishing a distinction between the foreground and background of discourse.

10.4 Summary and discussion

In summary, then, the analyses presented in this chapter show three main results. First, the analyses concerning the relation between verb semantics and verbal temporal-aspectual devices show that perfectivity markings are partially linked to boundedness in all four languages. As discussed below, this association

might indicate the universal impact of verb semantics on children's uses of temporal-aspectual devices. However, some clear differences in the strength of this association occur across ages and languages. In particular, the predicted association is tightest in Chinese at all ages and it is tighter in English than in French or German, partly because of a different temporal anchoring (non-past and/or past in English, mainly non-past in French and German). Finally, this difference among the Indo-European languages is particularly obvious at four/five years. At this age, the young English narrators differentiate bounded and unbounded predicates, reserving past tenses for the former type. With increasing age, this difference disappears in English, as a result of an increasing use of the past with unbounded predicates (at ten years) and of the present tense with all verb types (adults).

Second, from around seven years on children in all language groups learn to use temporal-aspectual shifts to mark relations among situations in various discourse contexts. The precise nature of these relations varies across stories, as a function of the content to be described. It also varies as a function of the particular type of anchoring strategy that is used in the Indo-European languages (past vs. non-past). Thus, in all languages and despite differences among them, there is a clear increase in the marking of situational overlaps from seven years on, particularly in one of the stories (CAT). However, from seven years on, other uses of temporal-aspectual devices can be observed in the other story (HORSE), for example tense shifts for the marking of referent introductions. Taken together, these results show that children gradually learn to use these devices to differentiate the foreground and background of discourse.

Third, with increasing age children make increasing use of other temporal-aspectual devices, such as a variety of connectives and adverbials. The results in this respect show an increasing use of 'regional' devices indicating that situations denoted across clauses in discourse occur in the same temporal region. The uses of such devices partially co-occur with verbal devices marking temporal-aspectual distinctions. Discourse analyses of the contexts of such temporal shifts show that the conjoined uses of verbal and other devices for the marking of temporal-aspectual distinctions is related to processes of grounding information in discourse. Finally, uses of connectives and adverbials occur earlier in Chinese (after four years) than in the Indo-European languages (after seven or ten years). This result must be related to the properties of Chinese, which provides no temporal morphology at all and marks both temporal-aspectual distinctions by means of particles and adverbials. As we saw, Chinese speakers do not use aspectual particles as much as we would have expected, relying more heavily on the discourse context, as well as on other devices from a young age onwards in order to relate events temporally.

Let us now consider the present results in the light of several of the hypotheses that have been formulated in different accounts of the acquisition of

temporal-aspectual devices. In particular, several main approaches were previously discussed (see Chapter 6) concerning the impact of several factors on the development of verbal morphology: the defective tense hypothesis, claiming the impact of universal cognitive factors; various functional approaches showing the impact of discourse factors; and 'relativistic' approaches showing the impact of language-specific factors. The data support to some extent the defective tense hypothesis in showing an association between boundedness and perfectivity across all languages. Such an association is predicted by the defective tense hypothesis, according to which verb semantics should have a universal impact on the uses of temporal-aspectual devices, reflecting children's uses of universal concepts of situations. In particular, the claim is that children first associate past and/or perfective forms with particular situation types, namely situations involving results (otherwise known as resultative, bounded, or telic situations, depending on the authors). This association would result from children's cognitive immaturity, leading them to focus on and to mark results, particularly when they are perceptible in the immediate speech situation.

However, the variations that were found in this respect are only partially predicted by this hypothesis. These variations are of two types: variations across ages and across languages. The variations across ages are most evident in the English corpus, where the youngest narrators differ from all others in strongly displaying the predicted association. This particular variation need not falsify the defective tense hypothesis, which should predict more of an association at younger ages than at older ages. Nonetheless, we saw that the different studies that support this hypothesis have made different claims in this respect. Some authors claim the existence of a strong association between boundedness and perfectivity only at very young ages (the very emergence of language, see Chempaud 1993, 1994, 1996b), while others find this association at much later periods of development (until six years, Bronckart and Sinclair 1973). Despite this divergence concerning the rate or rhythm of acquisition, it is reasonable to say that at least some versions of the defective tense hypothesis can generally account for a decrease in the strength of the expected association, as children's cognitive maturity increases, regardless of how early this change is claimed to occur. In contrast, the variation that was observed across languages is more problematic from this point of view, at least for authors who expect the predicted association beyond the point of emergence. If children's uses of temporal-aspectual morphology should be determined by universal concepts of situations and even if this determinant should only or mostly operate at certain points in development, there is no reason to expect differences across languages in this respect if age is held constant. Cross-linguistic differences such as the ones observed here are in line with other studies that have also cast some doubt on a strong version of the defective tense hypothesis (Berman and Slobin 1994;

Weist *et al.* 1984). As discussed previously, such differences across languages presumably reflect the impact of language-specific factors during the acquisition of temporal-aspectual morphology.

In the present study, it is likely that these factors are linked to at least two properties of the morphological systems across languages: the richness and the transparency of the particular markings provided. Thus, the systems compared in the present study include a language such as Chinese, which provides very few markings (aspect particles, but no temporal morphology), a language such as English, which provides rich and transparent markings (past vs. non-past tenses, progressive vs. non-progressive aspect in all tenses), and languages such as German and French, which provide rich but asymmetric markings (past vs. non-past tenses, perfective vs. imperfective morphological markings only in the past). As a result, French and German speakers rely more on the (aspectually unmarked) present tense for narration at all ages, thereby benefiting from fewer 'degrees of freedom' with respect to morphological variations as a function of verb semantics, in comparison to English speakers, who alternate more frequently past and non-past inflections. As for Chinese speakers, they mainly use adverbials and connectives for temporal distinctions and their use of the perfective marking is highly correlated with particular situations. However, a striking finding is that the absence of aspect markings is predominant in all other cases, so that this relation actually does not apply to the majority of utterances produced in the narratives.

Finally, some of the results are in line with a number of functional approaches to the acquisition of verbal morphology, according to which discourse pragmatic factors should play an important role during the developmental process (see Bamberg 1987, 1990; Berman and Slobin 1994). Thus, despite cross-linguistic differences, the data show a similar developmental progression in children's ability to rely on the discourse-internal functions of these markings to organise information, and particularly to ground this information, across clauses as a function of the focus in the narratives. As previously noted, this approach is not incompatible with the claim that verb semantics could also affect the uses of temporal-aspectual morphology. Previous studies within this approach, however, have typically only focused on the impact of discourse determinants, neglecting to examine the potential simultaneous impact of verb semantics, as well as the possible relation between these two types of factors. The present study shows that both sentence-internal semantic factors and discourse functional factors are necessary for an adequate account of how temporal-aspectual devices are acquired during first language acquisition.

11 *Conclusions*

This chapter synthesises the results of the study just presented (Chapters 8 to 10) and compares them with those of previous studies discussed in the developmental literature (Chapters 4 to 6). After a summary of the main findings within each domain (Section 11.1), four general conclusions are drawn across all three domains (Section 11.2). First, the findings show that the development of discourse-internal functions is late and gradual. Second, acquisition is determined by two types of interrelated factors: sentence-internal syntactico-semantic factors and functional determinants governing the regulation of information flow in discourse. Third, although these general aspects of the developmental process can be observed in all languages, others are language-specific, showing the impact of the particular systemic organisation of each language. Finally, a comparison of the findings across domains highlights particular properties of each domain, as well as interrelations among them suggesting that conjoined developments occur in all aspects of discourse cohesion. More general implications are then drawn in the context of available models of language acquisition (Section 11.3). It is argued that language acquisition is a gradual process, which requires that the child relate two levels of linguistic organisation, the sentence and discourse, accounting for invariant as well as variable patterns. This type of multifunctionality is universal and central in explaining how language becomes its own context, despite cross-linguistic variations due to the fact that children must confront the particular ways in which their native language maps sentence and discourse functions onto forms. Suggestions are also made for future cross-linguistic research that would further address some of the questions that remain unanswered.

11.1 Summary of findings in each domain

Given the theoretical and methodological questions raised by the developmental literature reviewed in this book, I presented a cross-linguistic study comparing the narrative productions of adults and children between four and ten years in four language groups: English, German, French, and Mandarin Chinese. These narratives were elicited by means of two picture sequences (HORSE and CAT stories, see the Appendix) in a situation that was characterised by the absence

of mutual knowledge (blindfolded addressee). Before turning to the general conclusions and implications that emerge from this study, I first briefly summarise the main findings in each of the three domains that were analysed: reference to the animate story characters (Section 11.1.1); the expression of motion and location (Section 11.1.2); and uses of temporal-aspectual devices (Section 11.1.3).

11.1.1 Animate entities

The analyses concerning references to the story characters (Chapter 8) examined how these animate entities were mentioned for the first time in the narratives (referent introductions) and how they were subsequently denoted in discourse (reference maintenance). Particular attention was placed on the uses of local and global markings of information status across language and age groups. In particular, we examined the types of referring expressions (nominal determiners, overt pronouns, null elements) and the types of clause structure (position of the NP in relation to the verb, presentative or dislocated structures) that were used as a function of various factors (semantic and syntactic roles of the NPs, coreference relations, referents denoted). Although all languages provide both local and global markings of information status, these markings and the constraints that are placed on them vary from language to language (see Chapter 3). In particular, languages rely to different degrees on one or the other type of devices for the marking of information status and they vary along several other dimensions, such as their morphological complexity and reliance on null elements.

11.1.1.1 Referent introductions

Among the languages compared in the present study, oppositions among nominal determiners constitute an obligatory marking of newness in English, French, and German (indefinite forms must be used for new information), while clause structure is merely an additional optional marking in this respect (e.g. existentials). In contrast, nominal determiners are optional in Chinese (numeral determiners and specific classifiers can be – but need not be – used for newness), while position in the clause constitutes an obligatory marking of information status (new information must be postverbal). Given these linguistic properties and given the available previous literature, hypotheses were tested concerning the impact of the local vs. global and obligatory vs. optional nature of these markings on the development of discourse cohesion in this domain.

Four main points concerning the introductions of the characters in the narratives emerge. First, the results show the late mastery of obligatory newness markings in all languages. Indefinite determiners are used systematically at around seven years in the Indo-European languages, postverbal position at around ten years in

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Chinese. Among the Indo-European languages the English-speaking four/five-year-old children are the ones who use the fewest indefinite forms in comparison to the French and German groups. Second, Chinese children frequently use two types of local markings to mark newness from six/seven years on, despite the fact that these devices are optional: nominal determiners and specific classifiers. Although classifiers are obligatory with the use of nominal determiners, the selective use of specific classifiers (as opposed to the general classifier *ge*, most frequent in reference-maintenance) shows that children use these markings systematically to mark newness. Third, children do not use global newness markings to the same degree across languages. Such markings are least frequent in English and most frequent in French (until adult age). Chinese is intermediary in this respect, since global markings fluctuate, but are not systematically used before about ten years. As for German, position as such is not directly tied to information status in children's narratives, despite the fact that it nonetheless follows from functional determinants. In particular, children frequently use sentence-initial temporal and/or spatial elements to structure discourse, resulting in obligatory subject-verb inversions (with both first and subsequent mentions). Fourth, local and global markings of newness are strongly related in all languages. In particular, there is a strong attraction between local newness markings and postverbal position, such that most locally marked introductions are postverbal and most postverbal ones are locally marked. This attraction is predicted by the general tendency for new information to occur towards the end of the sentence (obligatory in Chinese, optional in the other languages) and it emerges with the advent of local markings at around seven years.

11.1.1.2 Reference maintenance

With respect to reference maintenance, recall that the languages compared in the present study differ in several respects. These differences include parametric variations in the uses of zero elements, given that most analyses treat English and French as [-pro-drop] languages, but Chinese and German as [+pro-drop] or [zero-topic] languages. In addition, French grammaticalises the given/new distinctions in that preverbal position is obligatory with all clitic pronouns (which denoted given information in the present corpora). Finally, the languages compared also differ with respect to clause-structure variations in discourse organisation, allowing more or less flexibility in the uses of different structures as a function of both sentence-internal grammatical factors and discourse pragmatic factors.

A main finding is that form variations in reference maintenance are massively determined by discourse factors (coreference across clauses and thematic status) in all languages and at all ages, despite cross-linguistic and developmental differences that are otherwise observed. In comparison, the position of subsequent mentions in the clause depends on a combination of sentence-internal factors (semantic roles,

verb-argument structures) and discourse pragmatic factors (information status). Two main types of cross-linguistic differences also occur, reflecting language-specific properties of the systems that are acquired by children. First, in accordance with the predictions of Universal Grammar, children rely more or less on zero elements for reference maintenance depending on the structural properties of their languages (more in Chinese and in German than in English or in French). Nonetheless, the discourse contexts for the uses of these devices and of other types of referring expressions are identical in all languages. Despite the different grammatical options provided across languages, speakers of all ages and languages select forms of reference maintenance as a function of discourse functional factors on a given occasion. Second, clause-structure variations are most frequent in French, taking on discourse-internal functions quite early, despite developmental progressions in this respect.

11.1.2 Space

Analyses in the domain of spatial reference (Chapter 9) focused on the devices used to express motion and location in discourse. Particular attention was placed on how children represented the locations and displacements of the animate characters in relation to a set of inanimate referents that mainly served as spatial anchors. Recall that the languages compared in this study belong to different linguistic families, particularly with respect to how they represent motion events (Talmy 1983, 1985, 2000). Satellite-framed languages (English, German, Chinese) encode manner information in the verb root and provide a large number of verb satellites (spatial prepositions and particles, verbal particle-like components in Chinese resultative verb constructions) to encode path information. In contrast, verb-framed languages (French) encode path information in the verb root, expressing other types of information peripherally (adjuncts marking manner or complex causative constructions). These typological differences were expected to have an impact on two main aspects of the narratives: the selection and the distribution of spatially relevant information in relation to different predicate types; the ways in which the narratives were anchored with respect to space (mentions of inanimate referents serving as spatial reference points).

11.1.2.1 Predicate types

As expected, major cross-linguistic differences were found with respect to the predicates that were used in the narratives. First, static predicates are more frequent in French as compared to other languages, but most particularly at the youngest age. Second, analyses of the dynamic predicates show wide differences in how narrators represent motion events across languages. Overall, the French

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children use a relatively small set of verb roots, which encode few types of information, while the other children produce a large number of combinations among verb roots and satellites, thereby productively and compactly combining multiple types of information simultaneously. Third, speakers rely to different degrees on presentative structures, which contain a variety of predicate types. These structures frequently introduce animate and inanimate referents in French and Chinese, while they have other functions in connecting discourse in German and they are rare in English.

11.1.2.2 Spatial anchoring in discourse

The analyses focusing on spatial anchoring focus on how information status was marked for the introductions of the inanimate spatial grounds and for the maintenance of reference to these entities in discourse. Results show strikingly similar patterns across languages with respect to the ways in which children marked information status (given, new) for spatial anchors. In all languages there is a simultaneous increase with age in the following aspects of spatial reference: the overall explicit and unambiguous mentions of grounds, the setting of spatial frames to provide spatial anchors early in discourse, and the use of appropriate markings of newness. In addition, both explicitness and information status are related to predicate types in all languages. Static and dynamic general predicates differ from predicates representing changes of location in that they contain more explicit grounds, more first mentions of grounds, and more appropriate introductions of grounds. Differences across languages concern some properties of the noun phrases (form, position, role) and of the predicates that are used for these introductions. For example, the young French children use static predicates most frequently and Chinese children use newness markings least frequently. Finally, the degree of leanness in reference maintenance to these entities varies across languages. In particular, German children of seven years use the leanest forms, relying heavily on particles, which provide rather specific locative information.

11.1.3 Time

Analyses in the domain of temporal reference (Chapter 10) focused on the impact of two main factors on the uses of a variety of temporal-aspectual markings (verbal morphology and particles, adverbials and conjunctions): the semantic properties of different predicate types (particularly boundedness) and discourse contexts (foreground vs. background). As previously discussed (Chapter 6), both verb semantics and discourse factors have been shown to be major determinants of temporal-aspectual markings in adult systems. Furthermore, verb semantics have been associated with universal concepts of situations presumed to

exclusively determine children's temporal-aspectual morphology until a relatively late age. However, various types of evidence have raised questions about this claim, such as cross-linguistic variations and/or discourse functional factors.

11.1.3.1 Temporal anchoring and predicate types

The results show first that perfectivity and boundedness are indeed related in all languages. However, the nature of this relation varies as a function of age and language. The tightest relation was found in Chinese. Although the majority of utterances in this corpus do not contain any aspectual markers (optional in many contexts in this language), the particle *le* (perfective and/or current relevance marker), when it is used, co-occurs mostly with bounded predicates at all ages. In addition, a stronger relation was found between past perfective inflections and bounded predicates in English than in French or German, particularly at younger ages. At first (four/five years) English-speaking children mainly use the simple past with bounded verbs and the present with unbounded ones, but then begin to use both the past and non-past (seven years), mainly the past (ten years) or mainly the non-past (adults) with all verb types. In French and German, the present is most frequent with all verbs at all ages. These differences result from a more general difference in how children anchor their narratives across the Indo-European languages: anchoring in the past is frequent in English (up to the adult age), whereas anchoring in the present is frequent in French and German (at all ages).

11.1.3.2 Temporal-aspectual shifts in discourse

In all languages tense-aspect shifts were shown to take on discourse functions with increasing age. In particular, they are frequently used to differentiate the discourse background and foreground in contexts of overlapping events and of referent introductions, as well as in some other varied contexts (e.g. descriptions of internal states, explanations, backtracking). Such a grounding function appears clearly from seven years on in all languages. However, this progression is least marked in Chinese, due to the fact that these children systematically use other devices (connectives) with the same function earlier (first increase at seven years) than children from the other language groups (increase at ten years and adult age). At all ages shifts also serve to describe events or the results of events, but such uses are more frequent at four/five years in all languages and they are more frequent at this age in French and Chinese than in the other languages. These results suggest that, despite differences across languages, the 'loosening' of the past/perfective-bounded association after four years partly results from the requirements of discourse organisation and its timing is variable across languages.

11.2 General conclusions across domains

On the basis of these findings, it is possible to draw three general conclusions concerning the acquisition of the linguistic devices necessary for discourse cohesion across domains: the timing and rhythm of acquisition (Section 11.2.1); the impact of sentence-internal and discourse functional determinants (Section 11.2.2); and the impact of universal vs. language-specific factors (Section 11.2.3). I take each of these conclusions in turn, pointing out how different findings bear on them in each domain, before turning to some similarities and differences that can be observed across domains (Section 11.2.4).

11.2.1 *The timing and rhythm of acquisition*

The first general conclusion concerns issues revolving around the relatively precocious or delayed timing of first language acquisition. The findings across domains show that discourse-internal uses of linguistic devices are a rather late development, which emerges at about six to seven years of age and continues to evolve until at least ten years of age or even thereafter. This first conclusion suggests a delayed unfolding of the acquisition process, at least if one seriously takes into account contextual constraints affecting the uses of linguistic devices. Such a conclusion apparently goes against the conclusions of some previous developmental studies, although such conclusions are often based on insufficient evidence that does not allow us to differentiate discourse-internal uses of linguistic devices from earlier deictic uses of the same forms.

11.2.1.1 *Animate entities*

The analyses of how children mark information status for referent introductions show that systematic uses of various markings of newness do not occur before about six to seven years of age in all languages. The first newness markings to occur at this age are local ones (indefinite or numeral determiners, specific classifiers), including in Chinese where they are optional, whereas global markings emerge yet later on, even in Chinese where they are obligatory (see further discussion in Section 11.2.2 below). Clause structure variations serving discourse functions do occur early, mostly in French (e.g. uses of presentative existential constructions and dislocated structures from four years on). However, these structures are not used with discourse-internal functions until a later age, when children become able to vary clause structure in order fully to differentiate newness from givenness. For example, dislocations are at first used for all types of topic promotion, including with the first mention of referents (for which they are inappropriate), and they are later on reserved for reference maintenance (as required by the adult system), once appropriate markings of newness are acquired. Finally, we also observed deictic

uses of these markings. In comparison, the analyses concerning reference maintenance show fewer changes with age, as a result of strong discourse constraints on the uses of referring expressions across languages from the youngest age on (also see further discussion in Section 11.2.2 below).

11.2.1.2 Space

The findings in the domain of spatial reference show the early impact of the typological properties of the languages compared. Cross-linguistic differences can be observed at all ages tested in relation to predicate use for the expression of motion. I return to this point below, when I turn to language-specific factors in acquisition (Section 11.2.3). At this point, note that this finding shows children's early knowledge of the structural properties of their native language (satellite-framed vs. verb-framed orientation). In sharp contrast to this early knowledge, the findings also show their very late mastery of principles governing spatial anchoring in discourse. In this respect, the introduction of spatial anchors presented children with some difficulties, resulting in a very late developmental progression. Roughly, only the adults in the present sample provided adequate spatial anchoring for locations and displacements in their narratives. Children only begin to do so at about seven years and they have not mastered spatial anchoring even at ten years. This developmental progression is strikingly similar in all languages, contrary to the original hypothesis, given the expected cross-linguistic differences that are indeed observed in other respects. I attributed it to the development of children's ability to plan discourse in such a way as to anticipate their interlocutor's task in reconstructing the locations and location changes of the characters in the story. In addition, anchoring in this domain shows a later developmental progression as compared to the marking of information status for animate referents (see Section 11.2.4 below).

11.2.1.3 Time

With respect to children's uses of temporal-aspectual devices, uses of verbal inflections (Indo-European languages), of aspectual particles (Chinese), and of connectives (all languages) by young children differ from those that are observed in the older children's and adults' narratives. Analyses of temporal-aspectual shifts in the narratives show that it is only at about seven years in the present sample that children begin to use verbal morphology and particles for the grounding of information in discourse, and this development continues until ten years and thereafter. In addition, uses of connectives evolve with increasing age in conjunction with these morphological distinctions. In particular, regional devices marking various types of temporal relations among denoted events increase with age, particularly after seven years. However, such devices can be observed earlier in Chinese, where they

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constitute a major means of discourse organisation. The particular contexts for the discourse-internal uses of both verbal devices and connectives from seven years on show that they serve a number of functions, such as the marking of overlaps among events and of referent introductions. Before this age, temporal-aspectual devices are mainly used for the description of successive events, with little differentiation between the discourse foreground and background.

11.2.2 Determinants in language acquisition: sentence vs. discourse factors

The evidence from the three different domains shows the impact of two main determinants: syntactic and semantic factors operating within the utterance and functional pragmatic factors operating across utterances in discourse. The particular functional factors that were considered in the present study concerned two discourse-internal principles governing the regulation of information flow across utterances: the marking of information status and the grounding of information (see Chapter 2). A more complete account of functional determinants should of course also consider other functional aspects of linguistic devices. The data presented, however, do show that children's acquisition of linguistic devices in all three domains and across several languages results from an interplay among some factors that affect how they learn to represent events in well-formed utterances (who did what to whom when and where) and others that affect how they learn to organise these utterances in a well-formed stretch of discourse (what is in focus or presupposed across utterances).

11.2.2.1 Animate entities

Both clause-internal and interclausal factors have an impact on how children referred to the story characters. In this domain, clause-internal factors concern the expression of syntactic and semantic roles (subject vs. object, agent vs. patient), while interclausal factors concern the marking of information status in discourse (new vs. given information, thematic status). These two determinants jointly affect children's uses of referring expressions (nominal determiners, pronouns) and of clause structure (word order, clause types). Thus, syntactic roles are the main determinants of NP position in reference maintenance (preverbal subjects, postverbal objects). They also determine to some extent the position of referent introductions before the point where global markings of newness emerge, but after this point introductions tend to be postverbal (although to various extents across languages, see Section 11.2.3 below). Syntactic roles are also seemingly related to form variations (pronominal subjects, nominal objects), although this relation was shown to be merely the by-product of discourse factors, particularly the presence/absence of immediate coreference and the particular types of coreference relations involved.

Discourse factors are in fact the main determinants of form variations, overriding most other factors. These factors determine the forms of first mentions, at least after the emergence of newness markings, as well as the forms of subsequent mentions in all languages, particularly the choice of lean vs. full forms. Finally, uses of global markings of information status are less likely in languages that heavily rely on these markings for the expression of grammatical relations. As discussed below (Section 11.2.3), this finding not only suggests the impact of language-specific factors in language acquisition, but it also shows that the availability of some linguistic devices for the organisation of discourse is partly the result of the functions served by the same devices for the organisation of grammatical relations at the sentence level.

11.2.2.2 Space

With respect to space, clause-internal factors include mainly the structural properties of the languages (satellite-framed vs. verb-framed) and therefore the extent to which information is grammaticalised or lexicalised in different components of the clause. These typological properties clearly affect the information that is selected and the ways in which this information is organised within or across clauses. This effect is most evident in the analyses of the different predicates that are used in the narratives, particularly in relation to the representation of motion events (see Section 11.2.3 below). Interclausal factors in this domain include the distribution of some information across clauses (e.g. the compact vs. distributed representation of manner vs. path information), as well as the information status of spatial grounds at different points in discourse (first vs. subsequent mentions, beginning vs. end of story). Given the semantic properties of various types of static vs. dynamic predicates, children's choices of one or the other predicate type partially depend on whether and how spatial reference points have been set in discourse. Children's uses of different forms to set these reference points and to maintain reference to them also partly depend on the semantic role of the noun phrases used in relation to predicates for first and subsequent mentions. However, the findings also show a general reliance on world knowledge in this domain and the role of grounding processes in relation to the story characters (see Section 11.2.4 below).

11.2.2.3 Time

Finally, in all languages both verb semantics and interclausal discourse factors affect children's uses of temporal-aspectual devices. The bounded vs. unbounded nature of predicates partly determines uses of past and/or perfective verbal devices. Shifts in verbal devices also serve to mark relations among events (overlaps), information status (referent introductions), and more generally the distinction between the foreground vs. background of discourse. Furthermore, uses of

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connectives (conjunctions and adverbials) were shown to co-occur with particular verbal inflections or aspect particles as a function of these two factors. In general, uses of bounded predicates and of perfective markings are more likely in the foreground, while uses of unbounded predicates and imperfective (or aspectually unmarked) markings are more likely in the background.

11.2.3 Universal vs. language-specific aspects of acquisition

The results also show similarities and differences across languages in all domains, suggesting two facets of acquisition: some aspects of development can be generalised to all languages, presumably reflecting universal aspects of language acquisition, while others are clearly language-specific, showing the impact of the particular properties of children's language on acquisition. I illustrate these two facets of development, before turning to their implications below (Section 11.3).

11.2.3.1 Animate entities

With respect to how children denoted the story characters, some important differences were found across seemingly related languages, as well as some similarities across typologically distinct languages. For example, referring expressions and clause structure are not used to mark information status at the same rate across languages. In English and Chinese, where local markings are less complex than in French and German, young children do not rely on clause structure at all to mark referent introductions, 'reserving' this type of device for the marking of grammatical relations. This finding complements the results of studies focusing on sentence comprehension showing that English speakers (including adults and children as young as two years) heavily rely on word order to interpret grammatical relations, as compared to other languages such as Italian or French (MacWhinney and Bates 1989; Charvillat and Kail 1991). Although the Chinese four/five-year-olds use postverbal position more than the English group, they use it less than expected, given that NP position constitutes an obligatory marking of information status. Thus, regardless of the optional vs. obligatory nature of different newness markings, local markings are cognitively less complex than global ones, as is also the case in sentence comprehension (Ammon and Slobin 1979; Slobin and Bever 1982; Slobin 1982, 1985a). In this study the greater functional complexity of global markings results from their simultaneous contribution to different levels of organisation: the sentence and discourse. Indeed, the main function of Chinese determiners is to mark information status (in addition to their numerical function), whereas position marks both information status in discourse and grammatical relations in the clause. Again, these results complement other studies of sentence comprehension in Chinese (MacWhinney and Bates 1989; Chang 1992).

Furthermore, children's heavy reliance on word order to mark grammatical relations in English might explain why local newness markings are used least frequently by the four/five-year-olds in comparison to the same age groups in all other languages. In particular, I found a strong association between postverbal position and indefinite forms in the referent introductions of all languages. I also noted an association between preverbal position and definite forms, but mostly among the young English speakers. That is, these children used frequent preverbal definite forms to denote referents in subject role within the clause, in comparison to other children of the same age who relied more on clause structure to introduce referents. At four/five years the French children turned out to be the ones who used clause structure the most for referent introductions (e.g. frequent existentials). Young French children who do not introduce referents appropriately also frequently use definite left-dislocated forms, whereas older children use these constructions in conjunction with appropriate introductions, thereby promoting NPs to topic status before pronominalisation. This and other results suggest that French might be more akin to 'topic-oriented' languages than to 'subject-oriented' ones in some respects, as has been pointed out by other researchers (see Lambrecht 1981; Bates and Devescovi 1989; Dasinger and Toupin 1994). Finally, some similarities in reference-maintenance were attributed to universal discourse pragmatic factors that override the cross-linguistic differences observed with both referent introductions and reference maintenance (e.g. uses of zero elements and of other referring expressions as a function of coreference).

11.2.3.2 Space

As shown above, spatial anchoring follows a very similar developmental progression, which was attributed to universal cognitive factors. In sharp contrast, the results also show that children's organisation of spatial information in discourse from four/five years on is influenced by the particular ways in which their language grammaticalises or lexicalises spatial information. Children's productions clearly reflect the typological distinction between satellite-framed and verb-framed languages. In English, German, and Chinese dynamic predicates are extremely varied, frequently and productively combining multiple pieces of information that are compactly packaged within the clause by means of verb roots and satellites. Such predicates provide information concerning manner, deixis, direction, and causativity, thereby showing a concern for representing motion in great detail. In contrast, French dynamic predicates are much less varied, they rarely encode multiple types of information within the clause, and the few distinctions encoded are marked in the verb roots. As a result, less information is provided about motion and some information is frequently left to be inferred by the interlocutor (e.g. particularly manner and causativity in the case of changes of location). Finally, when multiple types of

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information are provided, they are typically distributed across clauses in discourse, rather than compactly packaged within the clause as in the other languages. Such differences clearly follow the pattern that is found in the adult languages, reflecting the satellite-framed vs. verb-framed nature of the system to be acquired by the child. Similar differences have been reported in other studies. For example, the patterns observed in the present study are in line with those reported by Berman and Slobin (1994), who contrast three verb-framed languages (Spanish, Hebrew, and Turkish) and two of the satellite-framed languages represented in our study (English and German). I return below (Section 11.3) to the relativistic views of development that have emerged from such results.

11.2.3.3 Time

With respect to temporal-aspectual markings, language-specific patterns suggest the need to qualify the defective tense hypothesis (see Weist 1986; Weist *et al.* 1984). In the present study predicate types have a different impact on tense/aspect markings across languages. Children's use of the past seems to depend on the relative complexity and transparency of the markings available in the particular system they are acquiring. It is likely that children's reliance on the present in French and German is related to the fact that this tense neutralises aspect, while the past tenses are more complex, since they require a choice between perfective and imperfective forms. In contrast, no such difference in cognitive complexity occurs in English, where the aspectual opposition progressive vs. non-progressive is independent of tense. As a result, the *historical present* is functionally more marked in English than in German or French and it is therefore more frequent in the English narratives of the adults than in those of the children. The greater effect of verb semantics in English is also partly due to this factor, since children use a greater range of inflections and therefore have more 'degrees of freedom' in comparison to the French or German children.

In addition, although discourse context is a major determinant for the use and non-use of perfective markers in all languages, the relative impact of this factor varies among the young children across languages. From seven years on these markings are used to relate events in various ways, thereby differentiating the background and foreground in discourse, whereas the four-year-olds' uses of these markings coincide mainly with descriptions of events and/or of results. This pattern at four/five years, however, is most salient in French and Chinese. In Chinese this pattern is presumably linked to the tight association between bounded predicates and perfective markers, resulting in frequent perfective uses with the resultative predicates that are typically involved in such description contexts. In French the high frequency of temporal-aspectual shifts in event and/or result descriptions may be related to the fact that French sharply opposes perfective and imperfective aspect in the past (and only in

the past), providing past perfective inflections that clearly mark resulting states. In comparison, German also provides a grammaticalised aspectual opposition only in the past (like French and unlike English), but this system does not present such a sharp distinction between the past perfective and imperfective. Consequently, although children in both languages mostly rely on the non-past, result descriptions are more frequent in French, in comparison to other types of discourse contexts in German (e.g. overlaps).

11.2.4 Differences and interrelations among domains

Finally, a number of findings suggest some differences across domains, as well as interrelations among them, that were not discussed among the general conclusions above. These points deserve some attention, since they further highlight the specific nature of each domain, as well as show that conjoined developments occur in all domains, suggesting a more general view of the development of discourse cohesion. I compare in turn results across domains concerning story characters vs. spatial anchors, information status and information grounding, as well as space and time.

11.2.4.1 Story characters and spatial anchors

Some of the results concerning how children denoted animate and inanimate referents are tightly related. In particular, mentions of the story characters and of the referents serving as spatial anchors both simultaneously involve general discourse principles governing the marking of information status (new vs. given information) and the grounding of information (background vs. foreground). Recall that children frequently introduce these two types of referents in relation to each other: they either introduce the story characters in relation to the spatial anchors serving to locate them (e.g. describing the horse in the meadow) or they introduce spatial anchors in relation to story characters (e.g. mentioning that the horse sees the fence). In addition, similar types of predicates were used in both cases, that is mostly presentative clauses (e.g. *there's a horse in a meadow*, *there's a meadow with a fence*), particularly in French and Chinese, and various (SV or VS) clauses where the subject NP was introduced by means of either a motion verb (*a dog comes along*, *a horse is running in a meadow*) or a static predicate (*a bird is in a nest*). Important differences were nonetheless found across these two domains. For example, it was shown that children's ability to use various linguistic devices to mark newness when introducing the story characters emerged earlier than in the case of spatial anchors. More generally, children were able to anchor references to the story characters at around six/seven years, well before they were able to do so with spatial anchors, which were not fully provided even by ten years.

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These differences result from several factors linked to the nature of the denoted referents and to their relation in discourse. Among the different entities denoted in discourse, story characters and spatial anchors (at least those anchors that were mainly denoted in the present study) differ first with respect to animacy. Animacy is clearly a major variable affecting how information is organised in discourse (e.g. Silverstein 1987b). Among other implications of animacy, animate and inanimate referents have a different status in discourse. Roughly, the animate referents in the present study are clearly in the foreground of the narrative, whereas the inanimate ones, which only serve to locate them, are typically in the background, except momentarily for special purposes, such as their introduction in some discourse contexts. Furthermore, the set of inanimate spatial anchors displayed in the stories were heterogeneous from an ontological point of view. In particular, some corresponded to potentially well-individuated entities (e.g. the fence), while others corresponded more to locations (e.g. the meadow). As discussed previously, languages make such ontological commitments, reflected in how different referents are denoted and related to each other in space (e.g. Aurnague 1996; Aurnague and Vieu 1993; Vandeloise 1986, 1991). In the present sample, some referents serving as spatial anchors were immediately introduced as locations (locative forms, e.g. *a horse is running in a meadow*), while others were first introduced as individuated entities before they served as locations (e.g. *There's a fence/He sees a fence and he decides to jump over*).

Finally, given these various factors, reference to spatial anchors often involves massive inferences on the basis of world knowledge. Thus, we rarely specify locations in great detail on first mention, unless it is necessary to do so for the purposes of discourse, typically providing only the minimal information that is sufficient to anchor other referents (e.g. the first mention of the nest need not be preceded by a mention of the tree). From a developmental point of view, children focus more on the story characters that are in the foreground of discourse than on the inanimate referents serving to locate them in the background. They therefore begin to provide appropriate markings of newness for story characters before they do so for spatial anchors and they begin to provide spatial anchors by first introducing those inanimate referents that were more easily individuated. This process requires some capacity to plan discourse in order to first foreground entities for referent introduction before they can serve as the background of other entities.

11.2.4.2 *Information status and information grounding*

Furthermore, some of the patterns that were observed in children's uses of temporal-aspectual devices are related to their developing ability to mark information status in discourse. In particular, temporal-aspectual shifts and connectives, which were shown to take on discourse functions for the grounding of information,

also participate in the marking of new information in relation to the introductions of story characters. Among the different uses of temporal-aspectual shifts for the grounding of information, shifts to the perfective or imperfective past occur in two main discourse contexts: contexts of referent introductions and contexts of overlaps among situations. Shifts that occur in the former type of discourse contexts mostly involve the introductions of the story characters and they are more typical in one of the two stories (HORSE story). However, they also occur in the other story (CAT story), although referent introductions are usually parts of larger overlap contexts in this case. In particular, recall that this story involves gradual appearances of different story characters throughout the plot, whereas all story characters appear towards the beginning of the HORSE story. As a result, some late entries onto the scene, which require referent introductions deep into the narratives (e.g. the entry of the dog on picture 4), had to be related to other overlapping events involving referents that had been already introduced (e.g. the cat climbing the tree on picture 4). As noted previously (Chapter 6), the interrelations among temporal-aspectual devices and information structure in discourse have been noted by other developmental studies (e.g. Bamberg 1987; Bamberg and Marchman 1991, 1994). Previous linguistic analyses have also shown that information status and grounding interact in discourse. For example, referential links (referent introductions, reference maintenance) and temporal-aspectual markings can be combined as indications of episode boundaries (Ehrlich 1987, 1988). Backgrounding information can occur throughout narratives, including in the initial setting, where the spatial, temporal, and personal parameters of the plot are established. Conversely, there is a strong tendency for highly presupposed information to occur in foregrounded clauses, for example human main protagonists mentioned with pronominal forms in highly transitive clauses (see Hopper 1979a, 1979b, 1982; Hopper and Thompson 1980).

11.2.4.3 Space and time

Finally, a comparison of the results pertaining to space and time shows that these two domains are intricately related. In particular, the patterns that were observed in the expression of motion and location, on the one hand, and in the uses of temporal-aspectual morphology, on the other hand, show that spatial and temporal properties of predicate structure result from the same general underlying dimensions. The dimension of boundedness, which was central to the analysis of predicates in the temporal domain, partly determines the spatial properties of these predicates. Boundedness is inherently related to whether predicates involve general locations or changes of location, since static predicates and dynamic predicates implying a general location are necessarily unbounded, in comparison to changes of location, which necessarily involve the use of bounded predicates. Depending on the language, bounded vs. unbounded dynamic predicates in the spatial domain are

typically differentiated by means of predicates (French), complex verbal constructions (Chinese), or satellites such as prepositions or particles (German, English). As previously discussed (Chapter 3), this close interrelation between space and time has led some authors to highlight the general implications of the central dimension of 'state changes' in language (e.g. Klein 1994). I also noted (Chapter 6) that some authors suggest connections among results concerning temporal-aspectual markings (e.g. the focus on results) on the one hand, and the expression of motion and location (verb-framed vs. satellite-framed orientation), on the other hand. Such a relation has been highlighted for early phases of development (e.g. Champaud 1993, 1994), as well as for later phases (e.g. Berman and Slobin 1994). Similarly, in the present study, French children differ from other children in related ways across the two domains of space and time. They focus more on static situations and/or on the results of events, while the other children focus more on dynamic situations and/or on processes. Again, such a contrast has also been reported in other studies comparing languages of the same families (e.g. Slobin 1991; Berman and Slobin 1994).

11.3 Implications and concluding remarks

In conclusion, let us consider some of the implications of these conclusions in the light of existing controversies opposing different types of models that have been proposed to account for language acquisition. I focus below (Section 11.3.1) on the need to take into account two aspects of language acquisition that emerge from the findings: the multifunctionality of language, particularly the contribution of various forms to different functions at the sentence and discourse levels of linguistic organisation; and recurrent and variable aspects of the acquisition process across languages, whereby children come to terms with this type of multifunctionality. I close (Section 11.3.2) with a few concluding remarks concerning future research that is necessary to address further questions concerning the relation among different determinants of language acquisition and the relation between language and cognitive development.

11.3.1 *Relevance for available models of language acquisition*

The previous review of the literature in linguistics and developmental psycholinguistics contrasted different dimensions along which models of language acquisition diverge. Among them, we saw that models focus on two different levels of linguistic organisation: some focus mostly on the sentence level (*sentence-based* models), while others focus mostly on the discourse level (*discourse-based* models focusing on cohesion or on coherence). As we saw, little has been undertaken in order to combine the contributions of these models in a more complete view that takes both sentence-internal and discourse functional determinants into account. However, as

they learn to produce well-formed utterances to represent events, children are also learning to regulate the flow of information across utterances in discourse as a function of various contextual constraints linked to presuppositions and focus. One of the aims of this book was to show that this type of multifunctionality is a central part of children's language acquisition.

I have argued that discourse provides children with a developmental mechanism for the acquisition of linguistic devices in all three domains of reference. The timing and course of this acquisition process are partly determined by the functional properties of these devices, which result from their simultaneous contribution to the organisation of the sentence and of discourse. This contribution to two levels of organisation follows some universal principles, as well as some language-specific ones. An adequate model of acquisition in this domain, then, requires an account of how discourse and sentence-internal functions both contribute to acquisition within a cross-linguistic perspective. As discussed below (Section 11.3.2), further research is necessary to determine precisely how these two levels of organisation interact during the acquisition process. However, the research presented does show that both levels of organisation clearly have an impact on the acquisition of the same linguistic devices. In all three domains, analyses that focus only on one or the other type of factor therefore provide a partial and insufficient account of language acquisition. Furthermore, in all domains clause-internal and interclausal factors interact, resulting in some mutual influences of the sentence and discourse levels, so that such a partial account might be misleading.

In addition, universal and language-specific factors both affect acquisition in different domains. Several types of universal determinants have been proposed, including at least the following: formal universals, reflecting the nature of Universal Grammar; semantic universals, potentially reflecting some cognitive universals; functional pragmatic universals, such as discourse principles regulating information flow, reflecting universals of human communication; and other cognitive universals, reflecting general properties of human cognition. With respect to cognitive universals, general language-independent processes presumed to apply to all domains of child development have been most frequently invoked by previous studies to account for language acquisition. For example, it is likely that some general cognitive process akin to decentring might play a role in children's ability to regulate information flow in the absence of mutual knowledge, enabling them to take the perspective of others when it differs from their own and to adapt linguistically their discourse accordingly when necessary in particular communicative situations. We also saw that some general ability to organise discourse representations might be involved in the development of discourse cohesion, for example enabling children to plan ahead the necessary initial anchoring of personal, spatial, and temporal information and the further regulation of this information in subsequent discourse. Finally, it has

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been argued that various types of cognitive schemata for complex event sequences underlie children's verbal performance in narrative situations after the emergence of language (scripts, story schemata), as well as their capacity for temporal sequencing at an even younger age.

However, it remains to be seen whether such general processes provide sufficient explanatory principles for two reasons: it is unclear whether all cognitive processes involved in language development are entirely domain-independent and/or whether they are all independent of specific properties of the language to be acquired. I would first argue that some of these cognitive processes might be more specific to language use, being universally specialised for the production, comprehension, processing, and construction of language. Thus, the particular type of perspective-taking, planning, or more generally organisational capacity that is necessary for children's mature participation in discourse activity might be highly constrained by the properties of language, and particularly by its organisation into a system of multiple form–function relations. As put forth by Vygotsky (see Chapter 2), language in this respect provides children with a very special multifunctional tool, which mediates higher mental activity. I would further argue that the discourse-internal functions of language provide children with the potential to decontextualise their representations or, more precisely, to 're-contextualise' them in this semiotic medium. In this process, then, children learn to rely maximally on discourse, rather than merely on non-linguistic context, when discourse cohesion and coherence are necessary for communication. They thereby become able to use language as its *own* context in all kinds of situations, including those that are not strictly speaking communicative (e.g. problem-solving situations). Although other uses of language, such as script-like discourse types and/or deictically anchored face-to-face conversation, also obviously play a crucial role throughout children's social and cognitive development, this new semiotic context further allows them to manipulate their representations, thereby simultaneously providing a huge cognitive flexibility and constraining this potential flexibility by new organisational principles. For example, the development of discourse cohesion allows children to go beyond the principle of chronological order for the purposes of information grounding or to temporarily foreground some otherwise backgrounded information for the purpose of marking information status. I also previously argued (see Chapter 4) that narrative coherence is intricately related to the use of language as its own context and that the development of discourse cohesion could be partially constitutive of how children construct complex forms of cognitive macrostructures during the course of development.

Other types of universal determinants have been proposed, which may or may not be reducible exclusively to language-independent processes that would apply equally to all domains of development. These factors include syntactic and semantic categories (e.g. concepts of specific vs. non-specific reference, agency, subjecthood,

boundedness, kinesis). They also include other factors affecting cognitive complexity, which might be general enough to apply to all domains, but seem to be predominant for language learning and perhaps even specialised for it. For example, consider the greater functional complexity of global markings in comparison to local ones in the domain of reference to entities. Clause structure participates in the marking of distinctions at two levels: grammatical relations at the sentence level and information status at the discourse level. Although languages differ with respect to their relative reliance on global vs. local markings for the first level (e.g. morphology is richest in German, but weak in English and especially in Chinese), global markings are functionally more complex than local ones and are acquired with more difficulty than local ones in all languages. This conclusion applies to Chinese, despite the fact that global markings constitute obligatory markings of information status, while local ones are merely optional. This type of result does suggest that some cognitive factors influence the rate and course of language acquisition. However, relative cognitive complexity is in this case tied to a very domain-specific learning process, one that is imposed on the child by virtue of the very special properties of language, namely its multifunctionality. Although multifunctionality is a property that may apply to any tool engaged in human action, the particular form of multifunctionality displayed by language is not to be found in any other domain, and it requires that the child pay attention to phenomena that are specifically linguistic in the course of his or her varied activities. If universal cognitive processes are involved, some are at least highly constrained by the fact that language has to become 'its own problem-solving space' (see Karmiloff-Smith 1992).

Whatever the case may be, language-specific factors also affect the rate and course of development, as shown by the different developmental patterns that were found in all three domains across languages: referring expressions and clause structure are not used to mark information status at the same rate across languages; children are clearly influenced by the ways in which their language structures spatial information; and cross-linguistic variations throw some doubt on the claim that the acquisition of tense-aspect systems should be entirely determined by language-independent concepts of situations. Such language-specific factors partially result from the different systems of devices available and from the different ways in which languages map sentential and discourse functions onto these devices, accounting for the cross-linguistic differences that were observed in different domains. Thus, despite some striking similarities in the developmental patterns that were observed in all domains with respect to discourse organisation (e.g. general principles of anchoring and of grounding personal, spatial, and temporal information), some results show that language-specific factors affect either the rate or the course of development. In some cases, the course of development for particular devices is similar across different languages, while the rate of development differs from language

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to language (e.g. the use of newness markings when denoting animate entities). In other cases, differences in the course of development appear from the very beginning (e.g. the structure of utterances representing motion events, the relation between predicates and past or perfective markings), while the rate of development is similar in other related respects (e.g. spatial anchoring, temporal grounding).

As we saw in previous chapters, the more general question of cross-linguistic variability in language acquisition has led to a partially 'relativistic' view of development, according to which language has an impact on how children categorise the world, on which aspects of the incoming information are most salient to them, and/or on how they organise information when they engage in the activity of communicating in discourse. Such an impact has been observed in children's uses of language during the emergence of language, as well as during later phases of development, particularly on the basis of the implicit categorisation of spatial relations (Bowerman 1996; Bowerman and Choi 2001), the representation of motion events (Berman and Slobin 1994; Choi and Bowerman 1991), and the temporal organisation of discourse (Berman and Slobin 1994). One such relativistic view focusing particularly on the type of narrative activity studied in preceding chapters (Slobin 1996) proposes that from very early on speakers learn to engage in the activity of *thinking for speaking* on the basis of the patterns that are provided by their specific native language.

If the impact of language could be further observed on children's perceptual, attentional, and cognitive processes in non-verbal situations, including during the prelinguistic period and during the periods that follow the emergence of language, such results would raise fundamental questions about major assumptions in some approaches, such as assumptions of innateness and modularity (also see Section 11.3.2 below). Such results would also cast doubt on models postulating only general cognitive abilities (such as Piagetian theory) and on models (such as Karmiloff-Smith 1992) postulating that development only proceeds from general (language-independent) capacities to modular (domain-specific) ones. In particular, they would show the structuring impact of language from the earliest period onwards, for which such models cannot account so far. The results from the present study do not resolve this question, but they nonetheless show the need to relate three types of capacities, all of which seem to be involved during language acquisition: (1) general all-purpose (language-independent) cognitive and/or communicative capacities; (2) domain-specific (syntactico-semantic) capacities for linguistic organisation at the sentence level; (3) domain-specific (semantico-pragmatic) capacities for linguistic organisation at the discourse level. Different models have focused primarily on one or the other types of capacity, but no adequate account has been proposed so far to explain how all of them might simultaneously play a role across behavioural domains and across languages during child development.

11.3.2 *Open questions and future research*

This book has hopefully convinced the reader that adequate models of acquisition must take into account sentence and discourse determinants of acquisition, as well as universal and variable aspects of the acquisition process across languages. It has been argued that the exclusive focus on only one level of linguistic organisation clearly leads to an incomplete and perhaps misleading view of acquisition, while controlled cross-linguistic comparisons are indispensable tools to validate claims in the light of recurrent and diverging patterns in acquisition across languages. However, among other areas to be explored in the future, at least three further lines of cross-linguistic research would be essential to pursue some of the questions raised by this book: research relating more precisely the sentence and discourse determinants of language acquisition; research linking linguistic and non-linguistic behaviour throughout development; and research allowing us to articulate early capacities during the prelinguistic period and later capacities emerging with language during child development.

First, more research needs to be carried out in order to show the precise ways in which the sentence and discourse levels of organisation are related during development. Although our results and other studies show the impact of both sentence and discourse determinants, there are at least two different and complementary ways in which these levels might be related. On the one hand, syntactic and semantic factors determine which aspects of situations children focus on, thereby influencing how they organise information across utterances in discourse (see also Berman and Slobin 1994). On the other hand, discourse provides children with a developmental mechanism for the acquisition of linguistic devices, which influences how they organise their sentences. The present study suggests that these influences presumably involve a two-way process, such that discourse factors influence some aspects of sentence organisation, while semantic and syntactic ones influence some aspects of discourse organisation. Thus, the structure of the spatial semantics in a given language, as well as the nature of its temporal-aspectual morphology, have a strong impact on the selection and organisation of spatio-temporal information across clauses in discourse. Similarly, the degree to which a language invites speakers to rely more or less heavily on word-order for the marking of grammatical relations may influence their relative reliance on clause structure for the purpose of marking information status in discourse. However, we also saw that functional pragmatic factors linked to presupposition and focus in discourse strongly determine local and global form variations in all languages, for example affecting how speakers denote characters and spatial anchors in discourse (forms of referring expressions, clause structures) and partially determining various aspects of the spatio-temporal information represented (choices of predicates and of temporal-aspectual markings). Although different strands of evidence show the impact of each of these levels of

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linguistic organisation on the other, little is known about how to relate these two possible types of influences during the course of development. Some of the results indicate that the direction of these two types of influences may differ across domains and perhaps across languages, but that both types of influences can occur within the same domain and within the same language.

Second, within a cross-linguistic perspective, it is likely that variable aspects of language development have implications on all types of behavioural domains. If one takes the Whorfian view seriously, the prediction is that the properties that are specific to each linguistic system should affect not only how speakers organise their thoughts for the purposes of communication in interpersonal discourse situations (*thinking for speaking* in Slobin 1996), but also their perceptual, attentional, and cognitive processes more generally, including those that have been previously assumed to be independent of language structure and of language use. As previously noted (Chapter 2), such a prediction is supported by adults' performance in various classification tasks, even though such tasks have been typically presumed to be non-linguistic in much previous research, showing that language may have a more pervasive structuring role on cognition than has been assumed so far (e.g. Lucy 1992a, 1992b). However, it is still unknown whether this impact can be observed in similar tasks with children, although some studies have begun to show differences in young children's behaviours (from infancy onwards, see below) that may be related to language-specific factors. For example, Gopnik and Choi (1990) compare children's linguistic productions and their performance in non-verbal cognitive tasks across several languages (English, Korean, French), showing a correlation between cognitive differences and a heavier reliance on verbs in Korean and in French as compared to English. Such correlations are interesting, but must be explored further in order to determine how precisely verbal and non-verbal behaviours might be related.

For example, it would be revealing to test the hypothesis that the strikingly heavy reliance on verbs that characterises some child languages from the earliest phases of development onwards (e.g. see Bassano 2000 for French; Choi and Bowerman 1991 for Korean) is related to the verb-framed orientation of these languages and that the impact of this typological property may have general implications that go beyond the spatial domain examined in preceding chapters. More generally, the variable ways in which languages grammaticalise or lexicalise information leads to some predictions concerning the impact of language on cognitive processes. In this respect, Talmy (2000) makes a set of specific proposals concerning the implications of languages' relative reliance on different devices for the relative salience of the coded information in cognitive functioning. For example, he proposes that different open-class and closed-class items can be ranked along a hierarchy that characterises the degree to which the encoding of information within the sentence is automatized

(backgrounded) or salient (foregrounded) in attention. In this view, nouns provide the most foregrounded type of encoding, followed by verbs, then by closed-class items. Further assumptions in this view are that backgrounded information is less costly to process cognitively than foregrounded information and therefore more likely to result in the simultaneous encoding of multiple types of information in the sentence. Such predictions could be systematically tested with children and with adults in order to determine if and how early in child development language has a structuring impact on cognition, including not only in areas such as spatial representation, but also in other domains of language (see also discussions in Berman and Slobin 1994; Hickmann 2002; Slobin 1996). Furthermore, such predictions should be tested in the light of results showing that many important functional pragmatic factors simultaneously influence how information is selected and organised across clauses in discourse. Thus, Talmy's predictions only concern the foregrounding and backgrounding of information within the sentence and the implications of such structural determinants on cognition. In line with the remarks above concerning the need to relate structural and functional determinants of acquisition, I would predict that, all other things being equal and despite the different structural options provided by languages, these two levels of linguistic organisation interact and simultaneously determine how information is backgrounded or foregrounded on any given discourse occasion within and across languages.

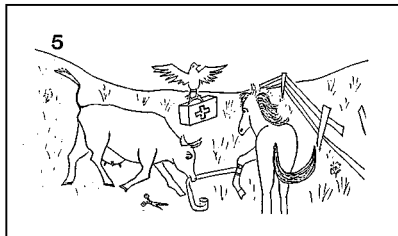
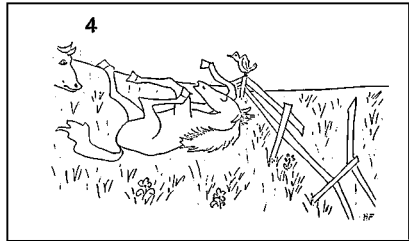
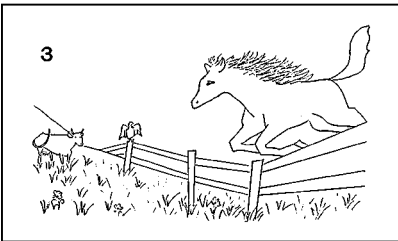
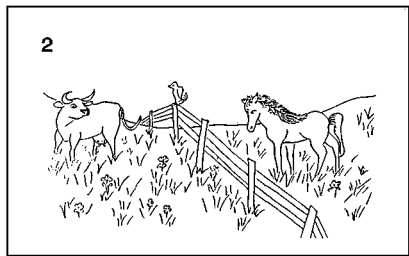
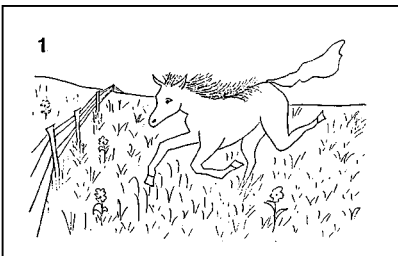
Third, it is necessary to collect further evidence in order to determine precisely which of different types of universal processes best account for specific results. In this respect, surprisingly little is still known about how to articulate the very precocious abilities displayed by infants in all three of the domains examined here and later verbal and non-verbal abilities that may be displayed with the emergence of language (see also discussions in Bowerman and Choi 2001; Gopnik and Choi 1990; Gopnik and Meltzoff 1986; Mandler 1992, 1996, 1998). For our purposes here, we may consider two main accounts of this articulation. The first approach views universal perceptual and cognitive abilities, whether innate or developed more or less rapidly over time, as necessary for the child to enter into the language system and as determining universals of language and of language acquisition. The second approach views such early abilities as being at least partially restructured by language at some point during development. This restructuring could involve the impact of two related but distinct types of language properties on cognition: general semiotic properties of language (language-in-general) and language-specific properties (languages-in-particular). In this respect, it is clear that the so-called 'prelinguistic' period is not a 'non-linguistic' period, since the child is immersed in language from birth (and even before birth) onwards. The question has nonetheless often been framed in terms of a sharp contrast between the periods that precede and follow the emergence of productive speech (with a breakpoint at around eighteen

Conclusions

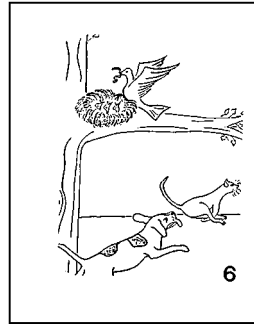
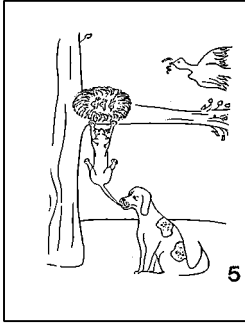
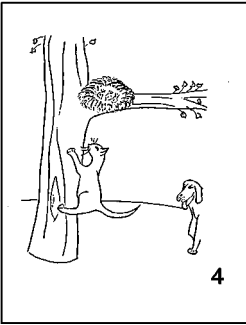
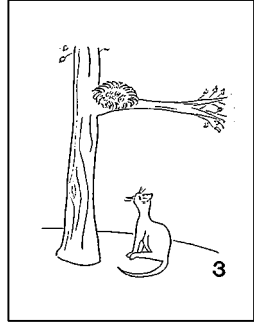
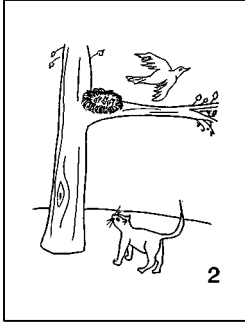
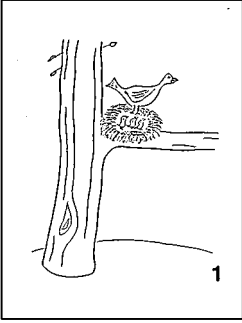
to twenty months of age). As we saw (Chapter 6), research with infants shows several types of results, which must be further related. Some studies show surprisingly precocious perceptual and cognitive abilities, which seem to be universal and language-independent. Other studies further argue that early comprehension skills show the existence of innate structural knowledge of language. Yet other findings show that children are already sensitive to the specific distinctions marked by their particular native language at a very early age. Extensions of all of these strands of research during early periods of child development would be essential to determine whether precocious perceptual and categorisation capacities, which have been so far assumed to be universal, innate, and language-independent, may be 'contaminated' by language, when and how precisely this restructuring occurs, and whether it involves the impact of general properties of language and/or of specific properties of particular linguistic systems.

Appendix

Picture sequences used as stimuli: HORSE story



Picture sequences used as stimuli: CAT story



Notes

1 Introduction

- 1 The nature of units may further vary depending on the theoretical framework adopted. Sentences may contain more than one clause, each of which roughly encodes a proposition, while utterances may also contain more than one sentence.

2 Theoretical issues

- 1 Various techniques in this research include measurements of children's reaction to novelty or their preferential looking to different stimuli (see Spelke 1986; Hirsh-Pasek and Golinkoff 1996).
- 2 Piaget acknowledges the impact of language on cognition during late phases of development, but his position in this respect is much less clear concerning early phases.
- 3 Gumperz and Levinson (1996: 25) argue that these two views may be actually compatible *as long as one subscribes to the distinction between atomic and molecular levels of semantic representation*. Semantic and conceptual representations would then provide a range of possible lexical concepts in a universal language of thought, while the locus of diversity would be found in the particular ways in which languages combine atomic primitives to make up other meanings.
- 4 According to Peirce, all signs involve a relation among three necessary components: a *denotatum*, a *sign vehicle*, and an *interpretant*.
- 5 Indices reflect the fundamental self-reflexive capacity of language to point to and to denote its own signs (Silverstein 1987b). Thus, indices denoting the participants involve a reference to the speech event itself (e.g. *I* denotes the person uttering the discourse segment containing *I*) and endophoric uses of linguistic signs point to other signs in discourse.

3 Cross-linguistic invariants and variations

- 1 French presents important variations across modalities and/or registers. Many morphological distinctions only exist in writing or are rare in the child's input. In addition, omitted subjects mostly occur in writing, except in particular oral contexts, such as modalised utterances (e.g. *Faut pas pleurer* '(One) must not cry'). Some properties of clause structure are also specific to the spoken/informal register, for example heavy uses of presentative clusters or of dislocations, while others are typical of the written/formal register, for example subject-verb inversions (e.g. *Où étais-tu?* 'Where were you?', *Derrière la porte se trouvait un enfant* 'Behind the door was a child').

- 2 Some questions remain as to the properties of the third verb class.
- 3 As noted above, some particles are available in Chinese to mark grammatical roles in clauses presenting particular word orders (e.g. *ba3* marks objects in SOV constructions).
- 4 For theoretical details and variants, for example with respect to precede/command conditions, see discussions in Lust 1986.
- 5 Note that the status of some languages is mixed in this respect, since they have some properties of topic-oriented languages, despite an otherwise clear subject-orientation, for example German as a zero-topic language (see, e.g. Lillo-Martin 1992 for discussion) or French as a language with a topic-comment structure (e.g. Lambrecht 1981, 1987).
- 6 Use of Chinese classifiers for referent introductions vary as a function of specificity and individuation, as well as other pragmatic factors.
- 7 The distinction between local and global markings is best viewed in terms of a continuum, for example the nominal determiners of some languages carry morphological distinctions that indicate a global relation among elements in the clause.
- 8 These principles are more obvious in SVO languages (e.g. English) than in SOV languages (e.g. Turkish) (Akinici 1999; Sridhar 1989).
- 9 In contrast to English or French, subject-verb inversions are obligatory in these contexts in German (see below).
- 10 Preverbal bare nominals can also be non-specific.
- 11 The order of French clitics further varies as a function of the denoted referent in clauses containing direct and indirect objects, for example *Il le lui donne* (lit. 'He it to-him gives' 'He gives it to him', but *Il me le donne* (lit. 'He to-me it gives' 'He gives it to me').
- 12 Other languages present different properties, such as languages with complex systems of classifiers, for example Chinese (discussed above) or Yucatec Maya (discussed in Chapter 2).
- 13 More precisely, it is the tensed part of the verb that is relevant to these different orderings.
- 14 Talmy (2000) also includes a *secondary* referent. Terminological variants of the terms *figure* and *ground* include *theme* and *relatum* (e.g. Klein and Nüsse 1997) or French *cible* and *réfèrent* (e.g. Vandeloise 1986). According to some authors, it is not these two entities that are related, but rather their locations (see Becker 1997; Klein and Nüsse 1997).
- 15 English *come* marks motion towards some established reference point, while *go* either contrasts with *come* (opposite direction) or is unmarked (see a discussion based on other languages in Wilkins and Hill 1995).
- 16 In this respect, the absence of manner specification is not possible in (3.71) or (3.81) if a displacement within a general location must be expressed.
- 17 The Korean devices are predicates rather than prepositions and Korean is a verb-framed language.
- 18 French speakers resist localising the ring, preferring to take the human referent as the starting point. The preposition *sur* ('on') is possible, but implies a configuration of the type 'on top of'.
- 19 The absence of a complement can often be taken as a criterion to differentiate prepositions from particles in English.
- 20 Although grammaticalised tense has often been described as involving three categories (past, present, future), it is more accurate to say that it makes a distinction between the

past and the non-past, where the non-past includes a variety of markings (e.g. modal distinctions, atemporal statements).

- 21 Uses of the historical present are much more frequent and less functionally marked in French and German as compared to English.
- 22 The English progressive marks imperfective aspect, while the non-progressive marks either perfectivity or is unmarked with respect to aspect.
- 23 The choice of French *passé composé* vs. *passé* depends much on register, the latter (also called *historical past*) being restricted to formal and/or written registers (e.g. Benveniste 1966).

4 Coherence and cohesion in discourse development

- 1 These stages are presumed to bear a resemblance to Vygotsky's stages of conceptual development, evaluated on the basis of children's classification in a blocks test.
- 2 It is also of course possible to provide other types of information in this unit, which contribute to story structure.
- 3 Uses of this kind are of course possible for special effects in literary discourse.
- 4 Another structural anomaly not discussed here consisted of omitting the Initiating Event and therefore the first mention of the target referent.

5 Children's marking of information status: referring expressions and clause structure

- 1 Some of this discussion can also be found in Hickmann 1998b.
- 2 Similarly, if the WH- and verb-movement parameters are relevant to the pro-drop parameter in French (Weissenborn 1992), then question formation should be examined in the input. Inversions (*Où était-elle?* ('Where was she?')) are practically absent from the spoken register, unlike other variants (*Où est-ce qu'elle était?* (lit. 'Where Q she was?'), *Où elle était?* (lit. 'Where she was?'), *Elle était où?* (lit. 'She was where?')). As a result, some parameters might be set quite late, notwithstanding some early exposure through book-reading.
- 3 Results based on imitation (Valian *et al.* 1996) involve four *it*-expletives and two *there*-expletives.
- 4 Among other data not discussed here, see also Garton 1983 for some interesting observations concerning early determiner use.
- 5 All stories were constructed following one of the story grammars illustrated in Chapter 4 (Table 4.1, Stein and Glenn 1979).

6 The acquisition of spatial and temporal-aspectual devices

- 1 Some recent theoretical discussions in linguistics argue against such a metaphor hypothesis (e.g. Cadiot 1999).
- 2 Since Bronckart and Sinclair's (1973) terminology confuses different types of 'aspect', I have freely translated their terms *perfective* and *imperfective situations* by *resultative* and *non-resultative situations*, respectively.

- 3 A third class of predicates not discussed here were durative and potentially bounded, but their boundedness properties varied in relation to various verb complements.
- 4 The responses of the English-speaking subjects show little differentiation among experimental conditions.
- 5 It is unclear whether some of the criteria used in this research to classify devices are applicable on a cross-linguistic scale, since they may be constrained by the formal and functional properties of the particular language examined (French in this case), including grammatical constraints (e.g. null-subject parameter) and register constraints (e.g. connectives and null subjects).

7 Methodological issues

- 1 The English corpus stems from a large study of discourse cohesion focusing on referring expressions (Hickmann 1982), which was later extended to other domains and languages. A total of fifty additional subjects (one hundred narratives) from other ages were also included in some language groups and are occasionally mentioned when relevant for the discussion.
- 2 A special procedure identified zero elements in the absence of a formal distinction between finite and non-finite verbs in Chinese. Possessives were included in the analyses only when they involved a coreference relation across clauses and identified if these clauses were non-finite (e.g. *her* in *She went to get food to feed her babies*).
- 3 Although aspect particles might constitute an index of subjecthood in Chinese, they are frequently omitted (see Chapter 10), and position remains the main criterion of subjecthood, despite frequent subject-verb inversions in discourse (see Chapter 8).

8 Animate entities

- 1 Much of the discussion in this chapter is based on two publications (Hickmann *et al.* 1996; Hickmann and Hendriks 1999), where more detailed quantitative analyses can be found.
- 2 Animate referents were occasionally not mentioned at all (4% German/Chinese, 5% French, 6% English) and a few first mentions (1% English/French, 2% Chinese, 5% German) consisting of elliptical labellings (e.g. *Here a horse*, *The dog there*) were excluded from the analyses (since NP position cannot be assigned). Additional analyses including these cases showed equivalent results.
- 3 In subsequent analyses, German presentatives such as (8.3) are coded as existentials, others (e.g. (8.7)) as subject-verb inversions.
- 4 The analyses exclude null elements in untensed clauses, reflexives, possessives that are coreferential within the clause, and Chinese relatives (pronominal clauses marked by the morpheme *de*) (see Chapter 7). Null elements include rare zero-relative pronouns.
- 5 The second set of German pronouns (e.g. *der* ‘he’) is partially akin to demonstratives (e.g. *dieser* ‘this one’), but distinct from them and frequent in switch-role contexts. French clitics are reduced in some phonological environments (e.g. *il(s)* [*il*] ‘he/they’) reduced to [*i*]).
- 6 Following standard analyses (e.g. Lambrecht 1981), the dislocation of an element in conjunction with a coreferential clitic pronoun within the clause constitutes only one reference to the denoted entity.

- 7 This decrease reflects a reliance on different registers, since dislocations are massively used by French adults in informal spoken speech, but not in planned and/or written language.

9 *Space*

- 1 In the complex presentative constructions of both languages the mentions of grounds rarely occur in the first existential clause (e.g. *Y'a un cheval dans un pré qui court* 'There's a horse in a meadow that's running'), serving to locate the motion or location described in the second clause (e.g. *Y'a un cheval qui court dans un pré* 'There's a horse that's running in a meadow').
- 2 Presentative subject-verb inversions were not coded as existentials on formal grounds (see Chapter 8) and uses of the sentence-initial adverbial *da* in these constructions were not coded as denoting grounds (see Chapter 7).

10 *Time*

- 1 There were no intermediary cases (50% to 75% of one form type). These analyses exclude special cases (*That's the end*, directly reported speech, rare first-person clauses, see below).
- 2 The coding of these contexts involved a number of criteria, such as particular predicates (e.g. internal states), discourse factors (information status), or a temporal relation in discourse (overlaps). In addition, categories were hierarchically ordered with priority given to the largest discourse contexts. For example, referent introductions or descriptions that occurred as part of overlaps were coded as overlaps. Similarly, internal states that were explicitly explained events were coded as explanations. Therefore, descriptions consisted of all cases that did not fall into any of the other categories. Finally, to simplify the presentation, two other common shift types were excluded, because of their special status: tense shifts used to report speech directly (e.g. *He said 'I want to see the cow'*) and to mark the end of the story (e.g. *That's the end*) (see Hickmann 1993 for some relevant analyses in another database).

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