

**CROSSLINGUISTIC INFLUENCE
IN LANGUAGE AND COGNITION**

CROSSLINGUISTIC INFLUENCE IN LANGUAGE AND COGNITION

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Preface

The study of crosslinguistic influence (CLI), or transfer, is peculiar among language acquisition and language use phenomena in at least two senses. First, empirical interest in CLI has existed since long before the formal establishment of the fields that now claim it as their own (cf., Larsen-Freeman & Long, 1991, p. 5; Odlin, 1989, p. 6). Second, unlike most other well-known factors affecting language acquisition and use (e.g., acculturation, anxiety, input, universal principles and parameters), which are often investigated from the perspective of a particular theoretical stance, research on transfer has tended to remain largely exploratory in nature—being driven mainly by theory-neutral research questions rather than by theory-specific hypotheses. This is not to say that transfer researchers have had no theoretical interest in CLI. Rather, it is probably because of the complicated nature, broad scope, and long history of interdisciplinary interest in the phenomenon that researchers have tended to follow a concatenate (or research-then-theory) approach (cf. R. Ellis, 1994, p. 474) to the study of CLI.

Each of the hundreds of empirical and theoretical studies on CLI has contributed to what we know about the phenomenon, but until now there has not been a major book-length review of the findings of such studies since Odlin (1989). The primary impetus for this book is our belief that it is once again time for a synthesis of the empirical and theoretical findings concerning CLI, especially with respect to the many important developments that have taken place since 1989. Additionally, although what the field now knows about CLI is undoubtedly dwarfed by what remains to be discovered, this line of inquiry has entered a new era since 1989. The new era exhibits four characteristics that distinguish it from earlier work on transfer. First, CLI is no longer a phenomenon for which there exist no principled criteria for confirming its presence or absence in language data (cf. Meisel, 1983). Second, CLI is no longer treated by researchers simply as a background, mediating, or intervening variable, examined only as an *explanans* (i.e., an explanation for the language behavior in question) and never as an *explanandum* (i.e., the phenomenon to be explained).

There were, of course, studies before 1989 that examined transfer as an explanandum (e.g., Andersen, 1983; Kellerman, 1978; Ringbom, 1978b; Selinker, 1969), but such studies were relatively sparse until the 1990s. Third, in the new era of transfer research, CLI is no longer a vague notion that lacks explicit theoretical status. Indeed, a major objective of this book is to explore, highlight, and detail its developing interdisciplinary theoretical status. Last but not least, inquiry into the nature of CLI now goes beyond the level of language knowledge and probes into its cognitive bases. Like the magnifying glasses portrayed on the cover of this book, languages differ with respect to the aspects of reality that they give prominence to. These differences have implications for how speakers of different languages perform both verbal and nonverbal tasks in either their native or a later-learned language, and they also have implications for how learning another language can lead to changes in a person's conceptual knowledge. Against this backdrop, a second major objective of this book is to demonstrate how the scope of CLI extends beyond linguistic transfer into areas that we will describe as conceptual transfer.

The present book consists of seven chapters. Chapter 1 provides a summary of historical landmarks in the investigation of transfer, a discussion of important new directions in CLI research, and a scheme for understanding the relationship between different types of CLI. Chapter 2 discusses methodological issues and approaches for identifying and measuring the effects of CLI. Chapter 3 reviews recent studies on linguistic transfer in several different areas of language knowledge and use, including, among others, phonology, lexis, semantics, morphology, syntax, discourse, and pragmatics. In Chapter 4, we discuss findings and issues related to conceptual transfer in several domains of reference, including, among others, gender, number, space, and motion. In Chapter 5, we discuss the interaction between the languages that a person knows from a longitudinal perspective, especially in relation to how experience in more than one language leads to changes in one's conceptual system and in the associations that conceptual representations share with linguistic representations. In Chapter 6, we discuss the variables that both promote and constrain instances of transfer, such as language proficiency, perceived distance between the source and recipient languages, recency and activation levels of the languages in question, the L2 status effect, and several other factors. Finally, in Chapter 7, we describe a number of implications that the recent transfer literature holds for theory, research, and pedagogy.

We conclude our preface by acknowledging and thanking those people who have been most influential in our writing of this book. We are especially thankful to Vivian Cook, Terence Odlin, and Håkan Ringbom for their helpful suggestions and insightful comments on a preliminary version of this book. We also thank our editor, Cathleen Petree, for her encouragement, help, and especially her patience during the years that it took us to complete our writing and revising of

this book. Finally, we wish to thank our family members, friends, and colleagues for their support and encouragement on this project, and for providing us with a wealth of information, insights, and examples of crosslinguistic influence in both language and cognition.

Overview

1.1. INTRODUCTION

Crosslinguistic influence—or the influence of a person’s knowledge of one language on that person’s knowledge or use of another language—is a phenomenon that has been of interest to laypeople and scholars alike since antiquity and most likely ever since language evolved. One of the earliest references to language contact, bilingualism, and crosslinguistic influence comes from Homer’s *Odyssey*, where Odysseus tells Penelope about the “mixed languages” of Crete. Due to widespread multilingualism in the ancient world, instances of crosslinguistic influence abound in a variety of ancient texts, ranging from epitaphs and personal letters, to legal and commercial documents, to religious and literary treatises (Adams, Janse, & Swain, 2002). These texts also offer evidence of negative attitudes towards the phenomenon of *transfer* (another term for crosslinguistic influence), such as derogatory remarks about “speakers of bad Greek” made by ancient writers and philosophers, including Homer, Herodotus, and Flavius Philostratus. In fact, Janse (2002) argues that the negative term *barbarians* and its derivatives were commonly used to refer not only to speakers of languages other than Greek but also to foreigners speaking “bad Greek” or, in our contemporary terms, foreigners exhibiting first language transfer.

The trend of seeing language transfer as a negative phenomenon, associated with low moral character and limited mental abilities, persisted all the way into the twentieth century when increased global migration fueled the fear of foreigners and of the unspeakable things they could do to one’s language. In a speech delivered in 1905 to the graduating class of Bryn Mawr College, Henry James, traumatized by his recent visit to Ellis Island and to the Lower East Side, populated by recently arrived Eastern European immigrants, warned the students against an imminent threat to the civilized tongue from

the vast continent of aliens whom we welcome, and whose main contention . . . is that, from the moment of their arrival, they have just as much property

in our speech as we have, and just as good a right to do what they choose with it. (cited in Brumberg, 1986, pp. 6–7)

In reality, it was the immigrants' native language that was in danger of second language influence. This influence is well-documented in Mencken's (1937) monumental treatise *The American Language*. Mencken's discussion of the influence of English on the immigrants' native languages offers a glimpse of the interest that lexical (word-related) and syntactic (grammar-related) transfer from the second language to the first elicited in the scholarly community. At the same time, many scholars and writers of the era, including some well-educated immigrants, frowned on both first and second language transfer. Marcus Ravage, a well-known writer and himself a Romanian immigrant, criticized the influence of Yiddish and Romanian on his fellow Romanians' English:

My friends were finding English contemptibly easy. That notion of theirs that it was a mixture of Yiddish and Rumanian, although partly justified, was yielding some astonishing results. Little Rumania was in throes of evolving a new tongue – a crazy-quilt whose prevailing patches were, sure enough, Yiddish and Rumanian, with here and there a sprinkling of denatured English. They felt no compunction against pulling up an ancient idiom by the roots and transplanting it bodily into the new soil. One heard such phrases as "I am going on a marriage," "I should live so," "a milky dinner." (Ravage, 1917, p. 103)

Ravage's concerns were echoed by another well-known immigrant writer of the era, Abraham Cahan, who poked fun at the lexical and syntactic influence of English on the immigrants' Yiddish:

I have already described how the Yiddish of American-born children grated on my ears. The Americanized Yiddish of the immigrants, studded with English expressions, was no better. My anger rose when I heard such expressions as "er macht a leben" (he makes a living) or "er is vert tsehn toisend dolar" (he is worth ten thousand dollars). Or such horrors as "vindes" (windows) or "silings" (ceilings) and "pehtaytess" (potatoes). (Cahan, 1926, pp. 241–242)

These examples serve to show that, in the absence of an in-depth understanding of the workings of language, transfer phenomena often came to signify sloppiness, narrow-mindedness, and lack of mental clarity and sound thinking. Linguists and psychologists often contributed to this picture, arguing, for instance, that the mutual interference of languages represents a danger to sound thinking (Epstein, 1915) and that first language transfer in pronunciation is due to the learners' laziness and lack of interest in changing their phonological behavior (Jespersen, 1922). These convictions were not truly challenged until the

1940s and 1950s, when the work of Charles Fries (1945), Uriel Weinreich (1953), Einar Haugen (1953), and Robert Lado (1957) moved discussions of language transfer to a scholarly footing, legitimizing transfer as an unavoidable feature of language learning and use and exploring it as a linguistic, psycholinguistic, and sociolinguistic phenomenon. Weinreich's work in particular was groundbreaking in terms of both the breadth and depth of the empirical evidence he examined, and in terms of the insights he offered about the nature of CLI. His book *Languages in Contact* (1953) is still frequently cited in transfer research.

Since the 1950s, a number of additional books have dealt extensively with transfer, including, in chronological order, Vildomec (1963), Gass and Selinker (1983), Kellerman and Sharwood Smith (1986), Ringbom (1987), Dechert and Raupach (1989), Odlin (1989), Gass and Selinker (1992), Sjöholm (1995), Jarvis (1998), Kecskes and Papp, Cenoz, Hufeisen, and Jessner (2001, 2003), Alonso (2002), Cenoz, Hufeisen, and Jessner (2003), Cook (2003), Arabski (2006), and Ringbom (2007). Of these, Odlin's book stands out as having provided the broadest synthesis of the transfer literature to date. The present book is not intended as a replacement for Odlin's. Rather, our aim is, first, to characterize the new developments that have taken place in transfer research since the publication of his book and, second, to link these developments to ongoing interdisciplinary inquiry into language and cognition. The scope of our book is also somewhat narrower than Odlin's in that we deal with transfer almost exclusively in relation to adult second language users, and almost exclusively as a psycholinguistic phenomenon—or as a phenomenon that takes place in the minds of individuals, and which is subject to the effects of various cognitive, linguistic, social, and situational factors. In this book, therefore, we do not delve into issues related to child bilingualism, transfer as a societal phenomenon, or code-switching.

We use the terms *transfer* and *crosslinguistic influence* interchangeably as theory-neutral cover terms to refer to the phenomenon in question, even though we recognize that by the 1980s some researchers no longer considered the term “transfer” to be a suitable label for the phenomenon because of its traditional association with the behaviorist notion of skills transfer (see Lado, 1957, p. 2; Odlin, 1989, p. 26; Osgood, 1953, p. 520; Selinker, 1983, p. 34). *Interference* is another term that has often been used since Weinreich (1953), but this term also carries behaviorist connotations and additionally has the disadvantage of directing one's attention only to the negative outcomes of transfer. In the mid 1980s, Kellerman and Sharwood Smith (1986) proposed the term *crosslinguistic influence* as a theory-neutral term that is appropriate for referring to the full range of ways in which a person's knowledge of one language can affect that person's knowledge and use of another language. This term has since gained general acceptance in the fields that investigate this phenomenon, even though the terms “transfer” and “interference” have continued to be used synonymously with it. More recently, some scholars have suggested that even “crosslinguistic influence”

may be an inappropriate term to refer to the phenomenon, given that the influence of one language on another in an individual's mind may be more an outcome of an integrated multicompetence than of the existence of two (or more) completely separate language competences in the mind (e.g., Cook, 2002). We discuss this perspective more fully in section 1.6 of this chapter, and in the meantime simply state that although the suitability of the terms "transfer" and "crosslinguistic influence" can certainly be called into question, these are at present the most conventional cover terms for referring to the phenomenon, and are the terms that we will use throughout this book. The term *first language* (L1) will be used to refer to the first language acquired by the speaker from a chronological perspective, even if this language is no longer the speaker's dominant language. The term *second language* (L2) will refer to any language acquired subsequently, regardless of the context of acquisition or attained level of proficiency.

The two primary aims of the present chapter are to provide a brief historical perspective of the important developments that took place in the transfer research prior to the 1990s (or prior to the 1989 publication of Odlin's book), and to offer a summary of the new developments that have taken place since the beginning of the 1990s. We begin with the historical perspective in section 1.2 by describing the four general phases through which the investigation of a psycholinguistic phenomenon logically progresses, and by discussing which of these phases transfer research has already passed through, and where it now stands. In section 1.3, we discuss some of the historical skepticism about the scope and importance of transfer, and explain why much of the skepticism was unwarranted and why it has largely given way to a general recognition of both the importance and the complexity of the phenomenon. Section 1.4 concludes our description of the historical perspective by outlining what we consider to be the primary landmark findings of the pre-1990s transfer research. In section 1.5, we turn to a summary of the important developments that have taken place in crosslinguistic influence (CLI) research since the beginning of the 1990s, giving special attention to new areas of empirical investigation. Section 1.6 continues our summary of recent developments by focusing on new theoretical accounts of CLI that have arisen since the beginning of the 1990s. Finally, in section 1.7, we draw together the historical and recent perspectives by clarifying the relationship among the different types of CLI that have been referred to throughout the literature.

1.2. PHASES OF TRANSFER RESEARCH

Transfer research, like the investigation of various other phenomena in language and cognition, can be described as progressing through four general phases. During Phase 1, the phenomenon in question gains recognition as a possible

explanans (explanation, affecting factor, or independent variable) for what is considered to be a more important *explanandum* (thing to be explained, or dependent variable). Next, during Phase 2, the phenomenon in question comes to be considered important enough to be investigated as an explanandum in its own right, with its own set of empirical *explanantia* (or factors that affect its behavior). Then, in Phase 3, the phenomenon attracts sufficient theoretical interest to give rise to sophisticated competing theoretical models and hypotheses concerning the social, situational, and mental constraints, constructs, and processes involved in the occurrence of the phenomenon; empirical research during this phase is thus highly theory-driven. Finally, Phase 4 is characterized by a complex understanding of the phenomenon in terms of the actual neurophysiological structures and processes through which it operates. These phases and their primary characteristics are listed in Table 1.1.

TABLE 1.1
Phases of Transfer Research

General Description		Primary Research Concerns
Phase 1	Recognition and investigation of the phenomenon as a factor—as an explanans or intervening or independent variable—that affects other processes (such as second language acquisition)	<ul style="list-style-type: none">• Identifying cases of transfer• Defining the scope of transfer• Quantifying transfer effects
Phase 2	Investigation of the phenomenon as a primary process itself—as an explanandum or dependent variable—that has its own set of explanantia or independent variables	<ul style="list-style-type: none">• Verification of transfer effects• Identifying causes of transfer• Identifying constraints on transfer• Investigating the selectivity of transfer• Investigating the directionality of transfer effects
Phase 3	Development of theories designed to explain the phenomenon in relation to social, situational, and mental constraints, constructs, and processes	<ul style="list-style-type: none">• Development of theoretical models that explain how, why, when, and what types of CLI occur• Development of specific, testable hypotheses concerning CLI• Empirical testing of these hypotheses

TABLE 1.1 *continued*
Phases of Transfer Research

<i>General Description</i>	<i>Primary Research Concerns</i>
Phase 4 Development of a precise physiological account of how the phenomenon takes place in the human brain	<ul style="list-style-type: none">• Detailed mapping of the brain in relation to how language is acquired, stored, and processed• Accumulation of direct evidence of crosslinguistic neurological connections in a person's long-term memory—of how such connections are formed, changed, and maintained• Accumulation of direct evidence of how languages are activated in the brain and of how a person's knowledge of one language can be activated and interfere with his or her use of another language

From our perspective, Phase 1 of transfer research began when transfer became widely recognized as a variable that can affect language acquisition, language use, and other linguistic, psychological, cognitive, and cultural processes. Its beginning was marked by the recognition of transfer as an intervening variable in language acquisition and language change, and this was followed by studies that examined transfer in a more controlled way as a moderator or primary independent variable (for a description of different types of variables, see, e.g., Hatch & Lazaraton, 1991, pp. 63–68). It is difficult to put an exact date on the beginning or end of the first phase. It may have begun informally centuries ago, but its beginning was clearly underway in the mid to late 1800s with studies by Müller (1861) and Whitney (1881), and a little later by Epstein (1915) and others (see, e.g., Odlin, 1989, pp. 6–9). Perhaps the most substantial contribution to Phase 1 occurred in the 1950s in the form of Weinreich's (1953) detailed examination of numerous types of transfer (which he called interference), and his discussion of methods for identifying and quantifying transfer and its relationship to other aspects of bilingualism. Phase 1 continued at least until the mid 1970s, and remnants of this phase can still be seen in some of the transfer research today. The issues that were fundamental to researchers during the peak

of Phase 1 were (a) the identification of transfer, especially in relation to which learner errors are due to L1 influence (e.g., Dušková, 1969); (b) defining the scope of transfer, especially in relation to the areas of language use are affected by it (e.g., Weinreich, 1953); and (c) the quantification of transfer effects, especially in relation to the proportion of errors it accounts for in comparison with other variables (e.g., Grauberg, 1971).

As mentioned, there is no exact date for the end of Phase 1 of transfer research; all three of these issues are still being pursued in empirical studies today. Nevertheless, Weinreich laid the groundwork for the following phase in the 1950s, and a shifting trend out of Phase 1 can clearly be seen in work published in the 1960s by Selinker (1969) and others (see, e.g., Selinker, 1992); this shift to Phase 2 was probably fully underway by the mid to late 1970s with studies by Kellerman (1978), Ringbom (1978b), Schachter (1974) and others. During Phase 2 of transfer research, the identification, scope, and quantification of transfer effects have remained important issues, but to these have been added the following important issues: (a) verification of transfer effects (e.g., Ard & Homburg, 1983; Jarvis, 2000a; Selinker, 1969), (b) sources and causes of transfer (e.g., Cenoz, 2001; Ringbom, 1978b), (c) constraints on transfer (e.g., Andersen, 1983; Kellerman, 1978), (d) the selectivity of transfer at the level of individual learners (e.g., Giacobbe & Cammarota, 1986; Schmidt, 1977; Zobl, 1980), and (e) the directionality of transfer effects (e.g., Ringbom, 1987; Kecskes & Papp, 2000). All of these issues are still the focus of a great deal of attention.

Phase 2 probably has not ended yet, but a shift to the next phase has nevertheless already begun. Phase 3 is a phase of increasing theoretical interest in CLI, a phase where there is keen interest in modeling, explaining, and empirically investigating the mental constructs and processes through which CLI operates. Elements of Phase 3 were certainly evident already in the work of Lado (1957), Weinreich (1953), and Vildomec (1963), and later in work related to, for example, the UG paradigm (e.g., White, 1989) and the Competition Model (e.g., Harrington, 1987), but it was not until fairly recently that we began to see theoretical models and frameworks designed specifically to explain CLI and the interaction between languages in the mind (e.g., Cook, 1991, 2002; Flege, 1995; Kroll & De Groot, 1997; MacWhinney, 2005). We will discuss some of these proposals in section 1.6 of this chapter and will return to them in the conclusions chapter of the book.

While the shift from Phase 2 to Phase 3 is probably still underway, some of the necessary groundwork for the highly anticipated Phase 4 is already being laid. The groundwork for Phase 4 can be seen in studies that probe into the neurophysiology of how languages are stored and how they operate in the brain, especially in relation to the brains of people who know and use more than one language. Neurolinguistic research relying on positron emission tomography (PET), functional magnetic resonance imaging (fMRI), electroencephalographic

and magnetoencephalographic recording (EEG), magnetic source imaging and event-related brain potentials (ERPs), and the analysis of aphasic symptoms and recovery has already brought to light a number of important findings concerning the interaction between languages within the brain (see, e.g., Emmorey et al., 2005; Fabbro, 1999, 2002; Franceschini, Zappatore & Nitsch, 2003; Green, 2001; Hahne, 2001; Hahne & Friederici, 2001; Hasegawa, Carpenter & Just, 2002; Nakada, Fujii & Kwee 2001; Paradis, 2004; Schumann, 2001). However, Phase 4 probably will not be solidly underway for several more decades—not until the tools of neurolinguistic research allow for a more precise description of the exact nature of individual phonemic, morphological, lexical, semantic, conceptual, syntactic, discursive, pragmatic, and collocational representations in the brain, and not until we understand the precise neurolinguistic and neurophysiological processes through which these representations are acquired, stored, and accessed, and how the representations of two different languages might be associated or even integrated. It is also quite possible that at least some of these phenomena will never be captured on the neurolinguistic level.

In summary, there is quite a bit of overlap among the phases of transfer research. Once a phase is begun, it may never completely end, given that the findings and concerns from earlier phases remain relevant after subsequent phases have begun. On the other hand, assumptions about the nature of language espoused at the earlier stages may be abandoned or transformed at subsequent stages. At present, CLI research appears to be in a transition from Phase 2 to Phase 3, or from concerns about the measurement of transfer and the factors that interact with it to more full-fledged theoretical explanations of how CLI operates. In a word, we are at a point where we have amassed a truly extensive amount of knowledge about the phenomenon, but we also know that we have a long way to go before we have explained it fully.

1.3. HISTORICAL SKEPTICISM ABOUT TRANSFER

Even though the fields of research that investigate transfer still have a long way to go in their understanding of this phenomenon, we can already see that CLI is both fascinating and multifaceted—a phenomenon that has the potential to percolate into all areas of language knowledge and use among those who know more than one language. Its complexity has not always been acknowledged, however, and even recently, in our interactions with other scholars we have heard some maintain inexorably that transfer is nothing more than falling back on a language that one already knows when lacking knowledge in the language that one is presently learning. This claim, known as the *ignorance hypothesis*, was originally introduced by Newmark (1966), and has been restated by Newmark and Reibel (1968), Krashen (1983), and a few others. The essence

of this hypothesis can be seen in the following quotation from Newmark and Reibel:

a person knows how to speak one language, say his native one; but in the early stages of learning his new one, there are many things that he has not yet learned to do. . . . What can he do other than use what he already knows to make up for what he does not know? To an observer who knows the target language, the learner will be seen to be stubbornly substituting the native habits for target habits. But from the learner's point of view, all he is doing is the best he can: to fill in his gaps of training he refers for help to what he already knows. (1968, p. 159)

A corollary of this view of language transfer is the denial of the existence of L2 influence on the L1. Take, for instance, an off-hand comment made recently by Adams and Swain (2002) about the impossibility of transfer from L2 Greek into L1 Latin in ancient public inscriptions found in Greece and made presumably by L1 Latin speakers: "*Unintentional* interference (from the writers' L2!) is out of the question" (p. 5). While we do not dispute the authors' contention about the origins of particular syntactic constructions, what is interesting to us is their use of parentheses and the exclamation point, which implicitly suggest that L2 influence on the L1 (in the L2 context to boot) is so highly unlikely that to posit it would be ridiculous.

Returning to the ignorance hypothesis, no one who is familiar with second language acquisition (SLA) and bilingualism/multilingualism would of course deny that CLI is sometimes triggered by a person's ignorance of a form, structure, or rule in one of the languages that he or she otherwise knows. Resorting in such cases to one's knowledge of another language is, in our experience, a fairly common communicative strategy (cf. Dörnyei, 1995). Even so, a crucial fact about CLI that this hypothesis ignores is that transfer occurs not only as a communicative strategy, but also very frequently as a learning strategy by which the learner uses his or her knowledge of one language as a resource for formulating hypotheses about the forms, structures, functions, meanings, rules, and patterns of another (e.g., R. Ellis, 1994, p. 314). In many cases, this results in hybrid structures that combine elements of both languages, such as when a Swedish speaker writing in English creates the word *luckly* to mean happy, based on her combined knowledge of Swedish (*lycklig* = happy) and English (*lucky*) (cf. Ringbom, 1987, p. 154). In other cases, CLI as a learning strategy involves associating forms (e.g., words or phrases) in one language with meanings acquired through another language, such as when Finnish speakers overgeneralize the use of the English preposition *in* to denote an internal goal (e.g., "They escaped in the police car" meaning "They escaped from the police car")—a pattern that is motivated by the nature of the Finnish spatial system (in which the corresponding form carries the

meaning of “from inside”) and which differs from the way speakers of other L1s overgeneralize the use of *in* (Jarvis & Odlin, 2000). Additionally, as Kleinmann (1977) showed, even when learners know the same structures, CLI can affect which particular structures they choose to use in a given context. The final blow to the ignorance hypothesis is dealt by the fact that CLI occurs not just from L1 to L2, but also from L2 to L1, even in cases where it is clear that *the L2 user* (i.e., someone who knows and uses more than one language) has not lost or forgotten the L1, not even the particular L1 structure that exhibits L2 influence (e.g., Jarvis, 2003). In all of these cases, it is clear that CLI is not simply a matter of falling back on one language when a person lacks pertinent knowledge of another language.

Some of today’s lingering adherents to the ignorance hypothesis were once among the cadre of enlightened researchers in the 1960s and 1970s who recognized that second language acquisition is a far richer and more complex phenomenon than simply the struggle to overcome L1 habits. Many of that enlightened corps, however, strayed into adopting and perpetuating the theory-induced but logically and empirically unsound notion that transfer is uninteresting or even negligible (e.g., Dulay & Burt, 1974; George, 1972; Krashen, 1981; Whitman & Jackson, 1972). This notion was fueled partially by the demise of behaviorism, and perhaps even more by the failure of contrastive analysis to predict learner errors with sufficient accuracy, as well as by the findings of a few studies that showed that transfer-related errors constituted only a small percentage of the total observed errors (for more discussion of the problems of these early studies, see, e.g., R. Ellis, 1994; Gass & Selinker, 2001; Odlin, 1989). However compelling those reasons seemed at the time, with hindsight it is tempting to draw an analogy between the transfer skeptics and hypothetical meteorologists who consider precipitation to be uninteresting because their instruments do not predict it accurately enough, or between the transfer skeptics and hypothetical meteorologists working in Southern California who generalize from the arid conditions in which they conduct their research that precipitation is negligible around the globe.

1.4. LANDMARK FINDINGS FROM THE PRE-1990s TRANSFER RESEARCH

Fortunately, the notion that transfer is uninteresting, negligible, and/or the result of ignorance or sloppy thinking is gradually becoming only a smudge in the history of the field. For this fact, we can thank those many researchers who throughout the 1960s–1980s never lost sight of the important and broad-reaching (though often subtle) effects of CLI, and who have established much of what we now know about the phenomenon. Following are eight landmark findings

concerning CLI that they brought to light during the 1960s–1980s. (These and other findings from the pre-1990s transfer research are covered more fully in Odlin [1989].)

1. Errors are not the only outcome of CLI. The consequences of CLI in many cases are positive, such as when it leads to conventional language use and accelerated language acquisition (e.g., Ard & Homburg, 1983; Ringbom, 1978a). Additionally, the similarities and differences between the *source language* (a language the language user knows that serves as the source of CLI effects) and the *recipient language* (the language where CLI effects occur) often lead not to errors per se, but to the general underproduction (of, e.g., relative clauses; Schachter, 1974) or overproduction (of, e.g., sentences beginning with *It is* and *There is*; Schachter & Rutherford, 1979) of structures in the recipient language. Moreover, CLI often manifests itself in the form of preferences for using certain language structures instead of others (e.g., one-part verbs instead of phrasal verbs—such as *enter* versus *come in*; Dagut & Laufer, 1985), where more than one preference is fully acceptable in the recipient language.
2. CLI can affect not only the rate and ultimate success of learners' second language acquisition; it can also affect the route of their acquisition—or the stages and sequences they pass through as they acquire proficiency in the target language (e.g., Schumann, 1979; Stauble, 1984). For example, it can affect the order in which Chinese and Spanish speakers acquire *this* versus *the* in L2 English (Zobl, 1982).
3. Contrary to the strong version of the Contrastive Analysis Hypothesis (e.g., Lado, 1957; see Odlin, 2006; Wardhaugh, 1970), differences between the source and recipient languages do not necessarily lead to learning difficulties or to CLI. Instead, easily perceivable differences often make target-language structures easier to acquire. This appears to be the case with the English progressive, which does not have a counterpart in Arabic but is nevertheless relatively easy for Arabic speakers to acquire (Kleinmann, 1977). Additionally, it is similarities (such as similar words and word-order rules) instead of differences between the source and recipient languages that most often appear to lead learners to make mental associations or *interlingual identifications* (see Odlin, 1989, pp. 113–114; Weinreich, 1953, p. 7) between structures in the two languages (e.g., Andersen, 1983).
4. CLI does not decrease linearly as competence and proficiency in the recipient language increase. Some transfer errors (such as Spanish speakers' use of an infinitive after a modal—e.g., *She can't to understand*; Taylor, 1975, p. 104) do tend to decrease with increases in recipient-language

proficiency, but in many other cases CLI shows up only at later stages of development when the learner has acquired enough of the recipient language to recognize the similarities between it and the source language. For example, Wode (1977) found that German-speaking learners of English do not show influence from German in the earliest stage of their acquisition of English negation (where they produce negations such as *No play baseball*), but they do show influence from German at a later stage (e.g., *I'm steal not the base*).

5. Language transfer can occur not only from an L1 to an L2 (*forward transfer*), but also from an L2 to an L3 (*lateral transfer*) (e.g., Ringbom, 1978b), and from an L2 to an L1 (*reverse transfer*) (e.g., Jakobovits, 1970; see also Weinreich, 1953). This has been a somewhat forgotten or ignored finding, but has received renewed interest in recent years, as we describe in section 1.5.
6. CLI interacts with other factors that together determine the likelihood of transfer—or the *transferability*—of a given structure in a given context. Some of the factors that affect transferability are language users' age (e.g., Zobl, 1983), their perception of the language distance (or typological relatedness) between the languages they know (e.g., Ringbom, 1978b), the degree to which language users perceive the language structures in question to be language-specific (e.g., learners' judgments about the "coreness" of various meanings of the verb *to break*; Kellerman, 1978), and the degree to which CLI coalesces with developmental sequences and universal learning principles (e.g., Andersen, 1983; Gass, 1983; Schumann, 1979; Zobl, 1980).
7. Transfer effects are not limited to language forms, such as the phonological or morphological structure of a word or the syntactic structure of a clause. Transfer effects also extend to the meanings and functions that language users associate with those forms, as can be seen, for example, in differences between English speakers and Spanish-speaking learners of English regarding what they classify as shoes versus boots (Graham & Belnap, 1986). Transfer effects also extend beyond forms and meanings to include the ways in which language is used to perform pragmatic functions, such as the ways in which Hebrew speakers from various L1 backgrounds perform an apology (e.g., Olshtain, 1983), and the ways in which Japanese-speaking learners of English refuse an offer (e.g., Takahashi & Beebe, 1987).
8. Individual differences between language users can lead to individual differences in the types and extent of CLI they exhibit in their use of the recipient language. For example, Odlin (1989) refers to studies that suggest that factors such as anxiety and aptitude can result in individual differences in learners' language performances, including CLI-related

differences pertaining to the degree to which they exhibit an L1 accent and the degree to which they avoid certain structures in the target language (pp. 130–132).

For most scholars, these landmark findings have laid to rest the idea that CLI is either uninteresting or negligible. More specifically, the empirical record has shown that transfer cannot be characterized simply as habit-related performance, as falling back on the L1, or as a mechanical process of linguistic transference from one language to another. Instead, the landmark findings, especially findings 3 to 8 above, have underscored that CLI is a highly complex cognitive phenomenon that is often affected by language users' perceptions, conceptualizations, mental associations, and individual choices.

1.5. RECENT DEVELOPMENTS IN CLI: NEW AREAS OF RESEARCH

More recent developments in transfer research have expanded on these classical findings, and have led to the recognition of more types of transfer, more constraints on transfer, and more ways in which the languages that a person knows can interact with one another. The new developments involve (a) new findings and refinements to already existing areas of research, (b) entirely new areas of research, and (c) new theoretical accounts of CLI. All three types of new developments are given attention throughout this book, but (b) and (c) deserve special attention because they represent not just new developments, but in fact new directions in CLI research. We summarize the new directions related to (b) in this section, and turn to a summary of (c) in the following section.

A perusal of Odlin's book reveals that by 1989 CLI research had flourished in the study of word order, relativization, negation, vocabulary, segmental phonology, and speech acts. However, relatively little research had been conducted on CLI in discourse, in particular with regard to narrative structure or suprasegmental phonology, although these areas were clearly marked as important by Odlin. Even less attention had been paid to transfer effects in perception and comprehension. In the years that have elapsed since his book was first published, CLI research has substantially expanded its scope in terms of topics, directionality, the number of languages considered, and areas of language use and processes where it has been explored.

Topic-wise, explorations of morphosyntax have begun to consider CLI in the use of phrasal verbs (e.g., Sjöholm, 1995), causative constructions (e.g., Helms-Park, 2001), gender assignment (e.g., Dewaele & Veronique, 2001) and linguistic framing (e.g., Pavlenko, 2003a; Pavlenko & Driagina, 2007; Pavlenko & Jarvis, 2002; Slobin, 1996; Vermeulen & Kellerman, 1999). Studies in phonology have

begun to examine suprasegmental transfer (e.g., Andrews, 1999; Gibson, 1997; Leather & James, 1996), and studies in discourse have begun exploring CLI in narrative construction (e.g., Berman, 1999; Kellerman, 2001; Pavlenko, 2002b, 2003b; Verhoeven & Strömquist, 2001) and in discourse styles and conversational strategies, such as back-channeling (e.g., Heinz, 2003; Tao & Thompson, 1991).

With regard to directionality, CLI effects have been examined in terms of forward transfer (e.g., Jarvis, 2000a), reverse transfer (e.g., Andrews, 1999; Cook, 2003; Kecskes & Papp, 2000; Major, 1992; Pavlenko, 2000), lateral transfer (e.g., Cenoz et al., 2001), and bidirectional transfer (e.g., Pavlenko & Jarvis, 2002; Su, 2001). The investigation of reverse transfer, or L2 (L3 etc.) influence on L1, is a particularly noteworthy development in this area. As will be shown in the next section, the acknowledgment of this type of transfer has important theoretical implications for our understanding of linguistic competence and native-speakerness.

Another important and long-awaited development is the expansion of the scope of CLI research to include the interaction between three or more languages in the mental lexicon (e.g., Dewaele, 1998; Cenoz et al., 2001, 2003), which shows that later learned languages may affect one another as well as the L1, and that this interaction may facilitate further learning and engage the learners' creativity. Topics such as these are now frequently discussed at the International Conference on Third Language Acquisition and Multilingualism, which has been held every second year since 1999.

The final important development is the expansion of areas of language use in which transfer has been explored. Traditionally, transfer was examined in terms of particular linguistic subsystems, such as syntax and semantics, in the areas of second language production and acquisition (the latter as seen in production). Recent studies have pushed the boundaries of the field outward, demonstrating that CLI is not limited to production and acquisition and can be identified in a variety of psycholinguistic processes. To date, CLI has been examined in lexical and syntactic processing (e.g., Cook et al., 2003; Costa et al., 2003a; Dijkstra, 2003; Dijkstra, Van Jaarsveld & Ten Brinke, 1998; Kroll & Dussias, 2004; Von Studnitz & Green, 2002), in listening and reading comprehension and sentence interpretation (e.g., Ringbom, 1992; Su, 2001; Upton & Lee-Thompson, 2001), in tip-of-the-tongue states (e.g., Ecke, 2001; Gollan & Silverberg, 2001), in nonverbal communication (e.g., Brown & Gullberg, 2005; Kellerman, 2001; Kellerman & Van Hoof, 2003; McCafferty, 2002, 2004; Negueruela et al., 2004), and in conceptual representation (e.g., Andrews, 1994; Jarvis, 1998; Kroll & De Groot, 1997; Pavlenko, 1997, 2003a, 2005a). In the area of conceptual representation, intriguing transfer effects have been detected in the interpretation of and reference to emotions, which were previously considered to be universal rather than language-specific (e.g., Panayiotou, 2004a, b; Pavlenko, 2002b, 2005b; Pavlenko & Driagina, 2007; Stepanova Sachs & Coley, 2006).

Considerable advances have also been made in the study of second language writing (Cook & Bassetti, 2005a), in particular from the perspective of contrastive rhetoric (e.g., Connor, 1996; Kecskes & Papp, 2000). Lately, interest in and attention to transfer effects have been exhibited by classicists who have explored bilingualism and language contact in antiquity, through the study of bilingual and multilingual texts and translations (e.g., Adams, 2003; Adams, Janse, & Swain, 2002). Based on the findings of the research on writing and literacy, be it ancient or contemporary, several scholars have begun to argue that biliteracy is a phenomenon distinct from bilingualism, and thus transfer effects pertinent to biliteracy should be studied on their own terms (e.g., Adams & Swain, 2002; Connor, 1996; Cook & Bassetti, 2005a).

The richness and variety of the directions taken in recent CLI studies are not an accidental development. They stem from the greater interdisciplinarity of the research itself, which has resulted from an increasing cross-pollination among the fields of bilingualism, cognitive science, psychology, SLA, and theoretical linguistics. From the perspective of the field of bilingualism, the cross-pollination has been especially facilitated by the consolidation of the field around three journals—*International Journal of Bilingualism* (1997–), *Bilingualism: Language and Cognition* (1998–), and *International Journal of Bilingual Education and Bilingualism* (2000–)—and two regularly held conferences—the International Symposium on Bilingualism (1997, 1999, 2001, 2003, 2005, 2007), and the University of Vigo Symposium on Bilingualism (1997, 2002). These forums have brought together linguists, psycholinguists, and psychologists interested in bilingualism, language learning, and attrition, and have facilitated the exchange of ideas, theories, and methodologies across disciplinary boundaries. This exchange has also resulted in a variety of theoretical proposals, centrally or peripherally concerned with transfer.

1.6. RECENT DEVELOPMENTS IN CLI: NEW THEORETICAL ACCOUNTS

New theoretical accounts of CLI and other linguistic phenomena resulting from the interaction between two or more languages have developed against the background of general theoretical advances in the fields of linguistics, psychology, bilingualism, and second language acquisition. The first and perhaps most important theoretical development in CLI is the growing recognition of the relevance of linguistic relativity, or the Sapir-Whorf Hypothesis, to transfer research. Several years ago, Lakoff (1987) complained that with the growing dominance of generative linguistics and its cornerstone, Universal Grammar, “most ‘responsible’ scholars have steered clear of relativism. It has become a *bête noire*, identified with scholarly irresponsibility, fuzzy thinking, lack of rigor, and

even immorality” (p. 304). The current impetus for investigations into linguistic relativity has come from Lakoff’s own work, and also from the groundbreaking work of Lucy (1992a, b; 1997), Slobin (1996, 2000, 2001), and Levinson and associates (Bowerman & Levinson, 2001; Gumperz & Levinson, 1996; Levinson, 1996, 1997, 2003a, b). These scholars have pointed out that critics of linguistic relativity have traditionally oversimplified and misinterpreted Sapir’s and Whorf’s original claims about how language can influence thought (i.e., linguistic relativity), falsely assuming that Sapir and Whorf believed that language strictly determines thought (i.e., linguistic determinism). Lakoff and the other neo-relativists have also forged new, complex, and nuanced approaches to the study of the ways in which different aspects of language shape distinct modes of thought, acknowledging that some cognitive processes and modes of thought may not be affected by language at all. These developments have spurred an array of empirical studies that attest to the linguistic effects on cognitive processes and conceptual representations (Bowerman & Levinson, 2001; Gentner & Goldin-Meadow, 2003; Gumperz & Levinson, 1996; Lakoff, 1987; Levinson, 2003a; Lucy, 1992b; Niemeier & Dirven, 2000; Nuyts & Pederson, 1997; Pütz & Verspoor, 2000).

Of course, the relativistic perspective is not a prerequisite to exploring transfer, given that crosslinguistic influences are assumed within several different theoretical frameworks, including the universalist paradigm. However, the different approaches to CLI have radically different implications for cognition. Kellerman (1995, 2001) and Odlin (2002, 2003, 2005) have pointed to possible implications of the Sapir-Whorf hypothesis for transfer research, yet have not made a comprehensive attempt to link the two. The present book makes such an attempt, building on Pavlenko’s (2005a) argument that misinterpretations of Sapir’s and Whorf’s arguments also stem from the monolingual bias of the scholars who have assumed that the theory aims to describe a world where monolingual speakers differ from each other because they are locked into particular modes of thinking by their languages. This monolingual bias does not, however, come from Whorf, one of the first to champion the importance of multilingual awareness and to argue that “to restrict thinking to the patterns merely of English, and especially to those patterns which represent the acme of plainness in English, is to lose a power of thought which, once lost, can never be regained” (1956, p. 244).

Whorf’s writings clearly show his belief that additional language learning has the power to transform or enhance the speaker’s worldview. It is therefore ironic that his work was later misinterpreted as an argument for linguistic determinism, whereby the language one speaks determines one’s view of the world once and for all. Clearly, Whorf, an avid language learner who was committed to comparative linguistics, did not and could not entertain such a possibility; rather, he argued for the benefits of linguistic pluralism. Unfortunately, even though some applied linguists and bilingualism scholars remained conscious of

the multilingual awareness argument (e.g., Carroll, 1963; Fishman, 1980; Kaplan, 1972), it did not become prominent in any of the discussions of the Sapir-Whorf hypothesis *per se*. To remedy the situation and to provide a firm footing for a relativistic approach to transfer research, the present book aims to examine the conceptual underpinnings of certain CLI effects and to show how an understanding of CLI can facilitate the study of language and cognition. Chapters 4 and 5 will engage centrally with these issues.

Another important theoretical development that pertains more specifically to bilingualism research has been the widespread acceptance of the multicompetence framework proposed by Cook (1991, 1992, 1997, 1999, 2003). The theory suggests that people who know more than one language have a distinct compound state of mind which is not equivalent to two monolingual states. A similar argument has been advanced by Grosjean (1982, 1989, 1992, 1998), who has repeatedly argued that a bilingual is not a sum of two complete or incomplete monolinguals in one body but rather a specific speaker-hearer with a unique but nevertheless complete linguistic system. The competences of this speaker-hearer are developed to the extent required by his or her needs and those of the environment. This view, now widely accepted in the field of bilingualism (e.g., Bhatia & Ritchie, 2004), will be adopted in this book.

The multicompetence approach allows us to theorize the interaction between multiple languages in the speaker's mind as a natural and ongoing process and to understand why multilinguals may perform differently from monolinguals in all of their languages, including the L1. Most importantly, this theory challenges common assumptions about L1 competence that are found in the fields of SLA and theoretical linguistics. Traditionally, the L1 competence of individual speakers has been treated as stable, such that once the speaker's language system has matured, his or her linguistic competence is no longer subject to change. A particularly strong version of this argument is presented in MacWhinney (1997), who suggested that once a local brain area "has been committed, it then begins to accept input data that lead toward a fine-tuning of the activation weights governing processing. If a second language is then to be imposed upon this pre-existing neural structure, it would directly interfere with the established set of weights. In fact, the use of transfer in second language learning allows the learner to avoid such catastrophic interference of L2 back upon L1" (p. 136). Recent research in SLA and bilingualism has challenged this assumption, demonstrating that L1 competence is a dynamic phenomenon that may be subject to both L2 influence and L1 attrition (or the loss of L1 abilities), evident in metalinguistic tasks and in L1 performance and processing (Cook, 2003; Pavlenko, 2000; Schmid, 2002; Schmid et al., 2004; see Thomason & Kaufman, 1988, for a discussion of the relevance of bilinguals' sociohistorical backgrounds to their patterns of L2 influence and L1 attrition). Of particular importance is the fact that L2 effects on the L1 are sometimes visible even in learners and speakers of a

foreign language who are still residing in their native language context (Kecskes & Papp, 2000; Van Hell & Dijkstra, 2002).

Notably, while postulating an ongoing interaction between two or more linguistic systems, the multicompetence framework is predicated on the view that languages are interconnected yet more or less bounded codes. In the past decade, this assumption has been challenged in multiple quarters, most visibly in the study of code-switching and code-mixing (cf. Auer, 1998; see also Hall, Cheng, & Carlson, 2006). However, while it is true that in some contexts linguistic codes may not be easily separable, for the purposes of the present discussion, we view an L2 user's languages as more or less separate (though permeable) entities, not only as a linguistic reality but also as a psychological one, whereby trilingual speakers, for instance, identify the language forms they encounter and produce as belonging to particular languages, such as Spanish, English, or Mandarin Chinese.

The third important development that contributes to our understanding of CLI is an unprecedented revival of research on language attrition, due to the tireless efforts of Schmid and Köpke (Köpke, 2002; Schmid, 2002; Schmid et al., 2004), as well as to the ongoing work of De Bot and associates (e.g., De Bot, 2004a; De Bot & Hulsen, 2002). Just as the findings of SLA research have distinguished between developmental and CLI effects in interlanguage, the findings from the attrition research allow us to differentiate between CLI (e.g., L2 influence on L1) and more universal attrition processes (e.g., simplification), and between CLI and incomplete acquisition of the L1 as a heritage language by immigrant children. An excellent example of such differentiation is offered in a study by Köpke (2002), who tested L2 influence in two groups of German migrants, one living in an anglophone community in Canada, and the other in France. The participants were asked to perform three tasks (picture description, sentence generation, grammaticality judgment), all of which involved contrastive features in the languages in question. The analysis of the results allowed the researcher to distinguish between attrition and L2 influence effects, to identify L2 influence on the L1 at the level of phonology and lexis but not morphosyntax, and to suggest that L1 grammar is less susceptible to L2 influence.

The final important development is the recent proliferation of models and theories of bilingual memory, bilingual language processing, and the bilingual mental lexicon. Among the most ambitious in scope are theories of bilingual memory, advanced by Schrauf and associates, which aim to describe the overall functioning of bilingual autobiographic and episodic memory, with particular attention to the interaction between language and memory (e.g., Schrauf, 2000, 2002; Schrauf & Durazo-Arvizu, 2006; Schrauf, Pavlenko, & Dewaele, 2003; Schrauf & Rubin, 2003, 2004). The importance of this work is in highlighting the links between the words of a particular language and memories of events that have taken place in that language.

Equally ambitious in scope are language processing models, which aim to integrate diverse linguistic levels participating in language comprehension and production. These models can be further subdivided into three categories: *psycholinguistic models* (e.g., De Bot, 2004b; Levelt, 1989; for an up-to-date overview of models of bilingual representation and processing, see Kroll & Tokowicz, 2005), *connectionist models*, such as the Competition Model (e.g., Dong, Gui, & MacWhinney, 2005; Harrington, 1987; MacWhinney, 1997, 2005), and *activation-inhibition models*, such as the Inhibitory Control (IC) model (Green, 1993, 1998) and the Activation Threshold Hypothesis (ATH) (Paradis, 1985, 1993). These frameworks aim to explain the ways in which levels of activation or weights assigned to particular connections allow speakers to select languages and produce coherent messages. They also allow us to see how the insufficient inhibition of a non-selected language (i.e., a language the person knows, but not the one the person intends to use at the moment) may lead to transfer (e.g., Paradis, 1993). The most specialized in scope are psycholinguistic models of the bilingual mental lexicon, which aim to depict the relationship between words and concepts in the minds of bilingual individuals (Kroll & De Groot, 1997). Notably, few of these models have focused on CLI per se or served as the theoretical basis for recent studies of CLI (but see, e.g., Dong, Gui, & MacWhinney, 2005; MacWhinney, 1987, 1997, 2005; Paradis, 1993, 2004; Su, 2001). We see this as an unfortunate oversight on the part of both theorists and CLI researchers, and return to the issue of theoretical models in the last chapter of this book to describe how the CLI effects discussed here can be theorized in relation to bilingual memory and the bilingual lexicon.

1.7. TYPES OF CLI

As can be gathered from our foregoing discussion of historical and recent developments, investigations of transfer have been concerned with a vast array of different types of CLI. Skimming through the recent transfer literature, for example, one will encounter studies on positive transfer (e.g., Yip & Tang, 1998), negative transfer (Odlin, 1996), lexical transfer (e.g., Helms-Park, 2001), semantic transfer (Hasselgren, 1994), phonological transfer (Curtin, Goad, & Pater, 1998), morphological transfer (Jarvis & Odlin, 2000), pragmatic transfer (e.g., Kasper, 1992), conceptual transfer (e.g., Jarvis, 1998; Pavlenko, 2002b, c, 2003a; Odlin, 2005), transfer in L3 acquisition (e.g., Cenoz et al., 2001, 2003), L2 effects on the L1 (e.g., Cook, 2003), transfer in reading (e.g., Upton & Lee-Thompson, 2001), transfer in sentence interpretation (e.g., Su, 2001), intentional versus unintentional transfer (e.g., Hammarberg, 2001), covert transfer (e.g., Ringbom, 1993), and many other types of transfer. To clarify what the range of transfer types is, and to show how they relate to one another, we have developed a scheme for

characterizing CLI types across ten dimensions. The scheme is shown in Table 1.2, and some of its inspiration comes from the Bachman and Palmer (1996) scheme for describing test-task characteristics.

As shown in Table 1.2, the ten dimensions of transfer classification include (a) area of language knowledge/use, (b) directionality, (c) cognitive level, (d) type of knowledge, (e) intentionality, (f) mode, (g) channel, (h) form, (i) manifestation, and (j) outcome. With this classification scheme, it is possible to characterize a given type of transfer across all ten dimensions at the same time. For example, an accidental L1-induced error produced by a Spanish-speaking learner of English who says “sleep” [slip] to mean “slip” [slɪp] could be classified as an instance of phonological, forward, linguistic, implicit, unintentional, productive, aural, verbal, overt, negative transfer. We recognize that in most cases it would be both cumbersome and unnecessary to characterize an instance of transfer across all ten dimensions, but we believe that considering each dimension will help us to

TABLE 1.2
Characterization of CLI Types Across Ten Dimensions

<i>Area of Language Knowledge/Use</i>	<i>Intentionality</i>
phonological	intentional
orthographic	unintentional
lexical	
semantic	<i>Mode</i>
morphological	productive
syntactic	receptive
discursive	
pragmatic	<i>Channel</i>
sociolinguistic	aural
	visual
<i>Directionality</i>	
forward	<i>Form</i>
reverse	verbal
lateral	nonverbal
bi- or multi-directional	
	<i>Manifestation</i>
<i>Cognitive Level</i>	overt
linguistic	covert
conceptual	
	<i>Outcome</i>
<i>Type of Knowledge</i>	positive
implicit	negative
explicit	

point out which aspects of transfer have remained unacknowledged or under-explored. Our ability to refer to this type of classification scheme, where relevant, will also help us and other researchers to avoid confusion concerning how different types of CLI relate to one another. In order to clarify the scheme further, we discuss each of the ten dimensions briefly in the following paragraphs.

1.7.1. Area of Language Knowledge/Use

This is the domain of reference for most of the traditional types of transfer that are dealt with in the literature. It also represents the focal category for the organization of Odlin's (1989) book, which includes separate chapters on transfer in discourse, semantics, syntax, and phonetics/phonology/orthography. The number of types of transfer within this category is potentially quite a bit larger than the ten listed in Table 1.2, depending on how one defines and distinguishes among different types of language knowledge and use. Bachman's (1990, pp. 84–98) widely cited model of communicative competence, for example, lists 14 components of competence, including some of the ones that are listed in Table 1.2, but also some that are not, such as cohesion, rhetorical organization, and various types of illocutionary and sociolinguistic competence. The types of transfer that we have listed in Table 1.2 under the heading of *Area of Language Knowledge/Use* are limited to the primary areas of focus for CLI studies. Some of these types of CLI, including phonological, orthographic, lexical, and semantic transfer are traditional areas of research. Morphological and syntactic transfer are also traditional areas of research, but there has been considerable growth in the level of detail that has come to light about these types of transfer since 1990 (e.g., Alonso, 2002; Collins, 2002; Helms-Park, 2001; Jarvis & Odlin, 2000; Odlin, 1990). The final three types of CLI—discursive, pragmatic, and sociolinguistic transfer—also received some attention prior to the 1990s (e.g., Olshtain, 1983; Scarcella, 1983; Schmidt, 1977), but can nevertheless be considered new areas of CLI research due to the recent introduction of substantial changes in how these types of transfer are approached (see, e.g., Kasper, 1992; Pavlenko, 2000, 2003a).

1.7.2. Directionality

CLI can occur in any one of a constellation of directions, such as from L1 to L2, from L2 to L3, from L1 to L3, from L3 to L1, from L2 to L1, and so forth. In order to classify these specific directions into a more manageable system of categories, we use the terms *forward transfer*, *reverse transfer*, and *lateral transfer*. The terms “forward transfer” and “reverse transfer” (or “backward transfer”) are already conventional in the literature (see, e.g., Gass & Selinker, 2001, p. 132; Su, 2001, p. 108), and are used especially to refer to L1 to L2 (forward) transfer and L2 to L1 (reverse) transfer, even though the terms themselves suggest that they could

be applied to other cases where the sequential status of the languages (as L2, L3, L4, etc.) is both unambiguous and relevant. Thus, forward transfer could also be used to describe L2 to L3 transfer, L3 to L4 transfer, and so forth, whereas reverse transfer could also be used to describe L3 to L2 transfer, L4 to L3 transfer, and so forth.

However, the status of a post-L1 language in relation to its ability to function as a source language for CLI is usually not determined as much by the order in which it was acquired as it is by other factors, such as the language user's level of proficiency in the source language, as well as the frequency and recency of use of the post-L1 source language and its degree of similarity to the recipient language (e.g., Cenoz, 2001; Dewaele, 1998; Ringbom, 2001; Williams & Hammarberg, 1998). The influence of the L1 is also affected by these factors, but researchers have noted that the acquisitional order of the L1 truly does give it a unique status in relation to CLI, whereas the CLI effects of post-L1 languages usually cannot be pinned down to the specific sequences in which they were acquired (e.g., De Angelis & Selinker, 2001; Hammarberg, 2001). It is presumably because of this reason that Gass and Selinker (2001) refer to cases of CLI from one post-L1 language to another post-L1 language simply as *interlanguage transfer* (pp. 132–137). To avoid the potential ambiguity and theory-specific connotations of this term, we will instead refer to such cases as *lateral transfer*, which we feel complements the terms “forward transfer” and “reverse transfer” quite well. We acknowledge that the term “lateral transfer” could be used to refer to cases of CLI from one L1 to another L1, but given that this book does not deal with childhood bilingualism, we will use “lateral transfer” herein to refer only to instances of CLI between two post-L1 languages whose status as L2, L3, L4, and so forth is either problematic or is believed to be irrelevant. One other term that we use to refer to directionality possibilities is *bidirectional transfer*. This term refers to cases where two languages that language users know function synchronously as both source and recipient languages (e.g., Pavlenko & Jarvis, 2002). This could mean either cases of synchronous forward and reverse transfer (i.e., L1 to L2 and L2 to L1) or cases of synchronous bidirectional lateral transfer (e.g., L2 to L3 and L3 to L2).

1.7.3. Cognitive Level

Transfer has traditionally been viewed as a process through which mental representations from one linguistic system, such as the L1, are transferred over to another linguistic system, such as the L2. Corder (1983), for example, stated that “if anything which can be appropriately called transfer occurs, it is from the mental structure which is the implicit knowledge of the mother tongue to the separate and independently developing knowledge of the target language” (p. 92). Whether CLI really does involve the mental transference of information from

one linguistic system to another, or whether it more simply involves the formation of mental links between the two, is still not clear. However, what is becoming increasingly clear is that there may be a number of cognitive levels at which two or more languages that a language user knows can exert an influence on one another. Slobin (1996), for example, makes an implicit distinction between the following levels: thought, thinking for speaking, and speaking. According to Slobin, CLI effects can occur at both of the latter two levels. A number of other researchers, representing a variety of complex theoretical perspectives, have converged on a framework for understanding language and cognition that distinguishes between the levels of concepts, lemmas, and lexemes (e.g., De Bot, 2004b; De Bot, Paribakht, & Wesche, 1997; Kroll & De Groot, 1997), or more generally between the levels of conceptual representations, semantic representations, and linguistic representations proper (e.g., Pavlenko, 1999). According to this latter framework, CLI can occur at any or all of the three levels. Additionally, an instance of CLI may involve multiple levels simultaneously, such as when a Swedish-speaking learner of English refers to only human collisions but not to vehicular collisions with the calque phrasal verb *run on* (= Sw. *springa på*) (Jarvis, 2000a, p. 291); the form of the phrasal verb appears to represent CLI at the linguistic level, whereas the meaning that the language learner ascribes to the phrasal verb appears to reflect CLI at the conceptual level. Table 1.2 lists semantic transfer under the heading of *Area of Language Knowledge/Use*, so we have not listed it again under *Cognitive Level*. However, we will show later how differentiating between the semantic and conceptual levels will be useful for future transfer research.

1.7.4. Type of Knowledge

The distinction between implicit and explicit language knowledge and processes received a great deal of attention in the field of second language research during the 1970s and 1980s (e.g., Bialystok, 1978; Gass, 1988; Krashen, 1982), and still receives high-profile attention (e.g., N. Ellis, 1994; R. Ellis, 2002; Paradis, 2004). We believe that this distinction has important implications for CLI, especially as the two levels relate to how the languages that a person knows are stored and processed in the mind (e.g., Fabbro, 2002; Paradis, 2004). CLI effects are often more evident where implicit knowledge is involved (e.g., Jarvis, 2003), and this issue crucially needs to be explored further, especially through the use of converging methodologies that are capable of investigating both implicit and explicit knowledge simultaneously and uncovering the possible differences between the two (cf. DeKeyser, 2003; N. Ellis, 2004).

1.7.5. Intentionality

The distinction between intentional and unintentional transfer is to some extent the distinction between CLI as a communicative strategy and CLI as the result of formed mental associations between elements of two languages (cf. R. Ellis, 1994, pp. 336–338). We recognize, however, that some forms of unintentional CLI, such as unintentional language switches (see, e.g., Poulish, 1999, pp. 51–64), do not reflect communicative strategies, and we also recognize that CLI can be quite intentional even when it involves the formation of mental associations or interlingual identifications. In SLA, there have been very few studies that have investigated the distinction between intentional and unintentional transfer (primarily just Hammarberg, 2001 and Williams & Hammarberg, 1998), so our reference to this distinction in the following chapters will likewise be limited. We do want to acknowledge, however, that intentional transfer has received a lot of attention in scholarship on the literary creativity of bilingual writers (e.g., Kellman, 2000; Pérez Firmat, 2003) and in investigations of the culture of translation in the ancient world (e.g., Adams, Janse & Swain, 2002).

1.7.6. Mode

The four traditional language skills—reading, writing, listening, and speaking—have commonly been distinguished in terms of mode (productive, receptive) and channel (audio, visual). Bachman and Palmer (1996) have pointed out that these two dimensions are not adequate by themselves for distinguishing among the many types of language skills and tasks that exist (pp. 75–76). However, despite being inadequate, they are necessary, and therefore we have included mode as a necessary dimension for distinguishing between types of transfer that involve production versus comprehension and interpretation. Issues related to CLI in comprehension and interpretation have become increasingly important in the literature in recent years (e.g., Koda, 1990; Ringbom, 1992; Sasaki, 1991; Su, 2001; Upton & Lee-Thompson, 2001).

1.7.7. Channel

Channel (oral/aural versus visual/written/manual) is necessary for distinguishing between types of transfer that involve speech versus those that involve writing and other forms of nonspoken verbal communication, such as sign language. Findings and issues concerning CLI in relation to both channels are discussed in Chapter 3. In the meantime, we wish to emphasize that oral production is no longer privileged above written language (production or comprehension) in relation to bilingualism or SLA and that sign-sign, sign-speech, and speech-sign bilingualism are gaining increased attention in the two fields (e.g., Emmorey et al., 2005).

1.7.8. Form

Form refers to the distinction between verbal and nonverbal performance (Bachman & Palmer, 1996, p. 52). Most studies of CLI naturally focus on verbal performance, but recent studies have shown that gestures and bimodal communication (verbal and nonverbal) can offer important information about L2 development (Gullberg, 2006a, b; McCafferty & Stam, in press). Several studies have also demonstrated that the language or languages speakers know can influence their use of gestures in bimodal communication (e.g., Brown & Gullberg, 2005; Gullberg, in press; Hendricks, 2003; Kellerman, 2001; Kellerman & Van Hoof, 2003; McCafferty, 2002, 2004; Negueruela et al., 2004), and their performance on nonverbal tasks (e.g., Lucy, 1992b; Pederson et al., 1998). The studies by Lucy (1992b) and Pederson et al. (1998) do not deal directly with the question of crosslinguistic influence, but in Chapters 2, 4, and 5 we discuss the relevance of these and other studies of nonverbal performance to transfer research.

1.7.9. Manifestation

Manifestation involves the distinction between overt and covert types of CLI. Ringbom (1987, p. 50; 1993, p. 49) has discussed this distinction, categorizing under overt transfer such instances where a language user has made an interlingual identification between patterns, structures, forms, or meanings in the source language and those in the recipient language. By comparison, he categorized under covert transfer such instances where a language user either relies on patterns, structures, forms, or meanings from the source language that do not exist in the recipient language, or omits or avoids structures that exist in the recipient but not in the source language. We believe that this distinction is both interesting and potentially useful, but we do not deal with it further in this book given that it has not been investigated empirically, to our knowledge.

1.7.10. Outcome

The terms *positive* and *negative transfer* date back at least to Selinker (1969), and the notions behind them date back even further (e.g., Weinreich, 1953). Determining whether an instance of CLI is positive or negative requires examining either whether it interfered with the intelligibility, success, or situational appropriateness of the language that was used, or, more commonly, whether it violated the grammaticality constraints that are adhered to by monolingual native speakers of the recipient language. Traditionally, investigations of CLI took into consideration only instances of negative transfer, even though negative transfer may account for only a minority portion of the effects of CLI (e.g., Ringbom, 1987, p. 69). More recently, a number of researchers have adopted the goal of accounting for the overall effects of CLI without regard for whether the

outcome of specific instances of CLI is positive or negative (see, e.g., Cook, 2002 for a characterization of this perspective). Still others have focused specifically on the positive outcomes of CLI in order to highlight the important effects of CLI that have been overlooked as a result of the traditional preoccupation with errors (e.g., Kecskes & Papp, 2000). In this book, we do not deal much with the distinction between positive and negative transfer except as it relates to the findings of specific studies.

Before proceeding to the next chapter, we wish to reiterate the rich complexities that have been revealed through recent theoretical and empirical work on transfer, and which are reflected in the above ten dimensions. Mathematically speaking, the categories of the ten dimensions can be combined in enough different ways to allow us to distinguish over 5,000 unique types of transfer, and even this would not exhaust all the possibilities given that additional types and dimensions of CLI also exist (such as Weinreich's [1953] distinction between transfer on the individual versus societal level, which we describe briefly in Chapter 2, and the distinction between learning transfer and performance transfer, which we discuss in Chapter 6). We do not, of course, wish to suggest that each of the thousands of possible types of transfer requires its own set of empirical studies or its own theoretical explanation, but we do want to emphasize the large and important gap between the types of CLI that have been investigated and the possibilities that are still under-explored or completely unexplored. We also want to underscore the importance of the individual in transfer research. The different challenges, goals, personalities, language knowledge, language-related experiences, attitudes, and mental predispositions of different people result in different patterns of CLI across individuals. The effects of the individual on CLI and the effects of CLI on the individual are the two central concerns of this book, and we view all of the other issues that we deal with as being either directly or indirectly related to these.

Identifying Crosslinguistic Influence

2.1. INTRODUCTION

CLI has often been treated as a you-know-it-when-you-see-it phenomenon (Jarvis, 2000a). Most researchers probably do know it when they see it, but do they always see it? What happens when CLI is so subtle or so obscured by other factors that it cannot be detected simply by looking at the data, no matter how carefully? Conversely, what happens when the researcher sees something that looks like CLI but really is not? And, in cases where CLI combines with the effects of other factors, how can CLI be teased apart from those other factors? That is, how can the specific effects of CLI be isolated, identified, and measured? Clearly, the all-too-common practice of assuming the liberty to label as transfer any or only the language use data that the researcher subjectively deems as such, is inadequate. What is needed is a more principled approach to identifying and measuring CLI.

There has been some debate over whether a principled approach to the identification of CLI is attainable. Not so many years ago, Felix (1977) and Meisel (1983) claimed that researchers really did not have at their disposal any principled means for identifying instances of CLI. In Felix's words, "we do not possess any well-established criteria by which it can be decided in a unique and principled way which ungrammatical utterances are demonstrably instances of language transfer" (p. 238; cited in Meisel, p. 129). Meisel added to this claim his own concern that the terms *interference* and *negative transfer* had been used loosely by researchers to refer to any instances where an interlanguage (IL) structure bore a superficial resemblance to a corresponding L1 but not to a target-language (TL) structure. Meisel went on to say that this was a poor practice because "there is hardly a conceivable way to prove that it was this [i.e., CLI] and no other cause that produced such an effect" (p. 129).

We share Felix's and Meisel's concerns over the wide-spread use of inadequate procedures for investigating transfer, but we do not agree with their claim that there are no principled means for identifying instances of CLI. In fact, principled

empirical investigations of transfer date back several decades and include such classic studies as Kellerman (1978), Kleinmann (1977), Ringbom (1978b), Schachter (1974), Selinker (1969), Sjöholm (1976), Wode (1977), and many others. It is true that none of these studies completely resolved all problems related to the identification and measurement of CLI in their given contexts, but they certainly did implement sophisticated means for establishing judiciously and credibly that the effects they identified were consequences of CLI, often in combination with other factors (e.g., Kellerman, 1978; Ringbom, 1978b). Our position is therefore that the problem with identifying instances of CLI is not so much a matter of whether there exist any principled means for doing so, but rather whether researchers are aware of and are making use of the principled means that are available to them.

In 1989, Odlin observed that, “from the nineteenth century on, the standards of evidence for transfer have been rising” (p. 24). It is clear that this trend has continued even until today. One lingering problem, though, is that researchers have not yet reached a consensus on what the standards of evidence should be. In fact, only rarely have issues surrounding transfer methodology been discussed in a public forum. This chapter summarizes some of the more in-depth discussions of CLI methodological standards that have arisen (e.g., Jarvis, 1998, 2000a; Odlin, 1989, 2003), and includes our own insights into the matter. We begin with the matter of scope, and then turn to more specific methodological issues that relate to both small-scale and large-scale investigations of CLI.

2.2. DEFINING THE SCOPE

2.2.1. Two Broad Approaches to Investigating CLI

The methodology one adopts for identifying and measuring instances of transfer will of course depend on the scope of one’s investigation. As Weinreich (1953) described, transfer can be examined at the level of the individual (which he called “speech”) or at the level of society (which he called “language”):

In speech, interference is like sand carried by a stream; in language, it is the sedimented sand deposited on the bottom of a lake. The two phases of interference should be distinguished. In speech, it occurs anew in the utterances of the bilingual speaker as a result of his personal knowledge of the other tongue. In language, we find interference phenomena which, having frequently occurred in the speech of bilinguals, have become habitualized and established. (p. 11)

In our own terminology, we will refer to CLI at the level of the individual as a psycholinguistic phenomenon, and transfer at the level of society as a societal

phenomenon. Whereas CLI can be investigated at either level, the two perspectives inescapably involve some important differences in their methods of data collection and analysis, even though both rely on the same general types of evidence for identifying CLI. Transfer as a societal phenomenon is usually researched in relation to the consequences of language contact—e.g., the influence that French has had on English with respect to loanwords (e.g., “petite”), phonemes (e.g., /Z/), and other structures (see, e.g., Bonvillain, 2003, pp. 337–339). An essential purpose of such research is to describe and explain patterns of language contact and to explore the degree to which the outcomes of language contact—most notably the influences of one language on another—are constrained by the shared sociocultural history of the societies in contact and by the structure of their languages (e.g., Bonvillain, 2003; Clyne, 2003; Myers-Scotton, 2002; Odlin, 1989; Thomason & Kaufman, 1988; Treffers-Daller, 1999).

The relevant research methodology often involves collecting data from historical sources, conducting surveys and questionnaires, consulting written etymologies and grammars of the languages in question, gathering one’s own observations of contemporary language use in public and private domains, and sometimes even compiling a corpus of contemporary oral and/or written language use from a cross-section of the speakers of the relevant languages. These sources of data are then examined for qualitative and quantitative evidence of the influence of one language on another. The analysis may also involve an examination of the frequency of occurrence of borrowed structures, as well as an examination of which types of structures are most likely to be borrowed, which languages or societies are most likely to borrow from another, and how various linguistic and social factors affect the observed trends (e.g., Backus, Nortier, & Treffers-Daller, 2005; Odlin, 1989, 2003; Thomason & Kaufman, 1988; Treffers-Daller, 1999). What is of interest to the researcher investigating transfer as a societal phenomenon is not so much how individuals make mental associations between two languages, but rather how the *external language* (language as an external artifact; e.g., Jackendoff, 1990; Jarvis, 2000b) of one speech community is affected by its contact with the external language of another speech community. (For more information about CLI as a societal phenomenon, see Clyne, 2003; Myers-Scotton, 2002; Thomason, 2001; Thomason & Kaufman, 1988; and Winford, 2003, who discuss the topic at length and provide further references to the relevant research in this area.)

The scope of the present book, on the other hand, is the psycholinguistic phenomenon of CLI, whose investigation can be seen largely as an endeavor that involves probing into the *internal languages*, or mental grammars, of individual language users (e.g., Jarvis, 2000b). The goal of this area of inquiry is to determine the mental processes underlying CLI, as well as the internal (cognitive, conceptual, and affective) and contextual (linguistic, social, and environmental) factors that both trigger and constrain these processes (see Chapters 1 and 6).

We recognize that societal and individual CLI are not fully separate phenomena. At the same time, the psycholinguistic study of individual CLI discussed here is limited to the first generation of adults in the process of learning a particular language. The study of societal CLI, on the other hand, includes second and third generation members, and involves phenomena such as convergence, attrition, and incomplete acquisition, which are not under consideration in the present discussion. We also acknowledge that parallel processes may be taking place in the language of immigrants in diaspora and in the language of the metropolis. For instance, in investigations of English influence on Russian, similar phenomena have been observed in the language of Russian immigrants in Anglophone countries and in contemporary Russia undergoing Westernization (Andrews, 1999; Osipova, 2004; Ryazanova-Clarke & Wade, 1999). Having acknowledged the similarities between individual and societal CLI, we will attempt to limit our discussion to CLI as a psycholinguistic phenomenon in individual adult bi- and multilinguals (including all levels of post-childhood second and foreign language learners). In what follows, we discuss methods used in different types of this psycholinguistic inquiry.

2.2.2. Psycholinguistic Approaches to CLI

The methods for investigating transfer as a psycholinguistic phenomenon are influenced by and very often resemble the experimental and clinical elicitation techniques used in the field of experimental psychology. These include techniques such as bilingual lexical priming, category matching, elicited imitation, eye tracking, introspective measures, lexical decision, reaction time, stimulated recall, structural perception and interpretation (see, e.g., Grosjean, 1998; Mackey & Gass, 2005). Besides techniques adopted from experimental psychology, methods for investigating transfer also include techniques adopted from anthropology and linguistics, such as observations of natural language use (e.g., Broselow, 1992; Jarvis, 2003), and the use of grammaticality or acceptability judgments (e.g., Balcom, 1999; Montrul, 1999; see also R. Ellis, 1994, pp. 669–674). All of these methods are used to discover the processes underlying CLI in the internal languages of individual language users, even when such research does not concentrate expressly on individuals.

There are two general approaches to investigating CLI as a psycholinguistic phenomenon, both of which encompass all of the types of methods we have mentioned. The main difference between the two approaches is the level of attention given to individuals. The first approach is the *intrasubjective* approach, and this does focus on individuals; more precisely, it focuses on the patterns of CLI found in the language use (production or comprehension) of individuals. Studies that follow the intrasubjective approach are normally framed as case studies (e.g., Jarvis, 2003; Yip & Matthews, 2000), which may or may not involve

a longitudinal design. The main advantage of the intrasubjective approach is the level of interpretational validity that it provides, at least in cases where the findings of intrasubjective research are grounded in a careful and thorough examination of CLI in a person's language use in clearly specified contexts. The primary disadvantage of the intrasubjective approach is the lack of generalizability that can be derived from a case study of a single language user, or even from a collection of case studies of a small group of individuals.

The advantages and disadvantages of the second approach to investigating transfer as a psycholinguistic phenomenon are essentially just the opposite. The second approach is the *intersubjective* approach, which focuses on patterns of language use observed in relatively large, well-defined groups of language users. Studies that follow the intersubjective approach are normally framed as cross-sectional studies (e.g., Cenoz's 2001 study of lexical transfer in the English oral narratives of Basque- and Spanish-speaking youth), and their primary advantage is their generalizability. Their main liability is their potential lack of attention to the unique characteristics of the participants and the environments in which the data were collected (see Gass & Selinker, 2001, pp. 30–37). In order to minimize this potential liability, researchers are encouraged to supplement their intersubjective analyses—which tend to be quantitative—with qualitative analyses of patterns found in the language use of individuals in well-defined contexts (e.g., Creswell, 2003; Pavlenko, 2002b, 2003a; Pavlenko & Driagina, 2007).

The intersubjective approach may seem similar to the practice of investigating transfer as a societal phenomenon, but there are some important differences between the two. The main difference is that, in addition to investigating whether speakers of Language X are likely to produce patterns that can be traced back to Language Y, in the intersubjective approach there is also an attempt to determine whether it really is the L2 users' knowledge of Language Y that gives rise to their use of Language Y patterns. This may sound trivial, but it is not, as the following example is meant to illustrate: A common pattern found in the English of both monolingual English speakers and bilingual English-Irish speakers in Ireland involves the use of *after* as a marker of perfect aspect, as in the sentence *He's after telling a lie* ("He has told a lie")—a sentence that is likely to be interpreted by English speakers in other parts of the world as either being ungrammatical or meaning "He is intending to tell a lie." The *after* perfect construction in Hiberno English has clear origins in Irish, and many researchers have relied on examples of this type to characterize the nature and extent of Irish influence on Hiberno English (as a societal phenomenon) (see Odlin, 1989, p. 14). However, the use of the *after* perfect in Hiberno English cannot be used *prima facie* as evidence of transfer as a psycholinguistic phenomenon, given that even monolingual speakers of English in Ireland use this construction—showing that it has become a convention of Hiberno English that in most cases does not arise from individuals' knowledge of the *after* perfect in Irish. The *after telling a lie* example

almost certainly does show the effects of CLI, but the CLI in question likely took place in the minds of English-Irish bilinguals many generations ago (e.g., Odlin, 2003); most of the Irish people who use this construction today have learned it as part of their dialect of English.

The example just discussed involves a *diachronic* CLI phenomenon—one in which a dialect of English has changed over time as the result of sustained influence from Irish. This contrasts with the *synchronic* perspective on transfer, in which CLI is investigated within a given time period without reference to its historical context. The diachronic–synchronic dichotomy may at first glance appear to be a good way to distinguish between transfer as a societal phenomenon and transfer as a psycholinguistic phenomenon. However, it actually is not. This is because investigations of CLI as a societal phenomenon span across both the diachronic and synchronic perspectives (see, e.g., Niemi, Odlin, & Heikkinen, 1998). Additionally, neither term applies particularly well to investigations of CLI as a psycholinguistic phenomenon because both terms typically connote research that deals with changes in the external languages of speech communities (as is the case with language contact research).

The corresponding terms for research that investigates the internal languages of individual language users (as is the case in psycholinguistic research) are “longitudinal” and “cross-sectional”. By way of definition, a *longitudinal* study of CLI is one that tracks patterns of transfer in specific language users over time as their knowledge of their languages changes. A *cross-sectional* study of CLI, in turn, is one in which performance data are collected from individual language users at a single point in time, with no attempt made to track how CLI might change in relation to changes in the individuals’ knowledge of their languages. It is relevant to point out that longitudinal research tends to be intrasubjective, whereas cross-sectional research tends to be intersubjective. This is only a tendency, however, and there are a number of studies that show the opposite configurations (see, e.g., Gass & Selinker, 2001, pp. 30–37). In the following section on intrasubjective research (section 2.3), we do not refer explicitly to the distinction between longitudinal and cross-sectional because we view small-scale studies that gather data at multiple points in time as being straightforwardly related to small-scale studies that follow corresponding procedures for gathering data at a single point in time. The relationship between longitudinal and cross-sectional is more complex in large-scale intersubjective research, however, so we return to this distinction in the subsequent section on intersubjective research (section 2.4).

2.3. INTRASUBJECTIVE METHODS

Some CLI-related phenomena that display a high degree of individual variation—such as the relationship between transfer and the end state of L2 acquisition,

as well as L2 influence on L1 performance—may be best approached through case studies or other types of studies that focus on individuals rather than on groups (cf. Odlin, 1989, p. 130). Whereas a fundamental goal of group-oriented (intersubjective) research is to test hypotheses and formulate generalizations about populations of language users, an equally fundamental goal of individual-oriented (intrasubjective) CLI research is to uncover as many specifics as possible about how CLI manifests itself in the language and cognition of real individuals. In light of this goal, a crucial component of any intrasubjective study is a rich presentation of the data, including a detailed qualitative description of the language user(s) who produced the data, their activities and states of mind prior to and during the data collection, and the linguistic and situational environment in which the data were collected (cf. Gass & Selinker, 2001, p. 33; Johnstone, 2000; Richards, 2003).

In most cases, the qualitative descriptions that tell how and why certain patterns occur will be combined with quantitative information that addresses how frequent these patterns are and how likely they are to occur in different contexts (Creswell, 2003; Johnstone, 2000; Richards, 2003). The quantitative component of the study may, when necessary, also involve the use of inferential statistical tests to verify more objectively how strong CLI effects are, the degree to which CLI interacts with other variables, and the environments in which certain patterns are most likely. Although inferential statistical tests are usually associated with group-oriented research, most statistical tests can also be applied to data produced by even a single language user as long as cases are defined not as individual people, but as instances of language use. Some statistical tests, such as VARBRUL (e.g., Young & Bayley, 1996) and logit analysis (e.g., Rahkonen & Juurakko, 1998), are frequently used in this manner.

It is important to emphasize that the qualitative component of an intrasubjective study should not emerge haphazardly. Whether the researcher deliberately elicits data from L2 users or merely observes their naturalistic language use, it is essential that the elicitation and/or observations proceed according to a systematic plan for collecting the data in order to make sure that the data are not biased by having been collected only in certain environments and not in others (e.g., Johnstone, 2000, pp. 20–37). Additionally, no single type of data collection is completely or consistently trustworthy, “so we need ways of ensuring that we are doing all we can to observe from different perspectives and in different ways” (Johnstone, p. 37). According to Rod Ellis (1994, p. 669–676; see also Ellis & Barkhuizen, 2005, pp. 15–22), there are five main types of data that are used in second language acquisition research (and related areas of linguistics and applied linguistics):

1. natural use data (i.e., observations of unsolicited language use),
2. clinical elicitation data (i.e., elicited but unguided language use, such as

- film recalls and other tasks that allow the researcher to observe and document verbal and nonverbal performance),
3. experimental elicitation data (i.e., guided linguistic performance, such as cloze tests, and non-linguistic facets of language use, such as reaction times),
 4. metalingual judgments (i.e., grammaticality or appropriateness judgment tasks),
 5. self-report data (i.e., introspection, retrospection, or think-aloud tasks).

More thorough and detailed treatments of the types of data used in bilingualism and second language acquisition research can be found in Grosjean (1998) and Mackey and Gass (2005), who through an informed, interdisciplinary perspective discuss the use of acceptability judgments, bilingual lexical priming, category matching, discourse completion, elicited imitation, ethnographies and observations, eye tracking, introspective measures, lexical decision, magnitude estimation, moving window, picture description, questionnaires and surveys, reaction time, role play, sentence interpretation, sentence matching, stimulated recall, truth-value judgments, and many other data collection techniques that have been adopted by the fields of bilingualism and second language acquisition from numerous other fields. Additionally, Ellis and Barkhuizen (2005) offer an excellent introduction to various approaches to learner language analysis.

It is beyond the scope of the present chapter to discuss individual data collection techniques and methodologies, but we do want to emphasize that each type of data has unique strengths and weaknesses, and no single type of data will necessarily provide the best evidence for transfer (see also Odlin, 2003). Thus, the most useful studies (whether intrasubjective or intersubjective) are often those that investigate patterns of language use across different types of data. According to Rod Ellis (1994), "good research is research that makes use of multiple sources of data, that gives recognition to the limitations of the data sources used, and, in Birdsong's [1989, p. 613] words, recognizes that 'each method carries with it impediments to the translation of data to theory'" (p. 676). This is important in both intrasubjective and intersubjective research, and perhaps especially so in the former case, where the paucity of participants needs to be compensated for by a wealth of information and evidence.

One example of an intrasubjective investigation of CLI that makes use of multiple types of data is a case study by Jarvis (2003) of a Finnish-speaking woman named Aino, who was living in the U.S. and whose use of L1 Finnish showed numerous influences from L2 English. To investigate this phenomenon, Jarvis designed a study to collect several types of spoken L1 Finnish data from Aino. The data represented types 1, 2, 4, and 5 of Rod Ellis' five types of data, which we described earlier. All four types of data collected by Jarvis showed somewhat different patterns. For example, patterns of L2 > L1 influence that were commonly

found in the natural use data were not found at all in the clinical elicitation data, and were found only occasionally in the metalingual judgment data. The self-report data, which came from an informal interview with Aino, helped the researcher sort out which of the observed instances of L2 influence Aino was consciously aware of, which of these she knew were not conventional in monolingual Finnish, and which of these she thought sound perfectly natural in Finnish. On the basis of his analysis of all four types of data, Jarvis concluded that Aino's implicit knowledge of her first language had changed in relation to certain grammatical constructions (e.g., **tarvitsen mennä* instead of the more conventional *minun tarvitsee mennä* for *I need to go*), certain words and phrases (e.g., **ottaa bussi* instead of *mennä bussilla* for *take a bus*), and ways of expressing certain meanings (e.g., **päästä flunssan yli* instead of *toipua flunssasta* for *get over the flu/a cold*). All four types of data also suggested that the CLI effects in question were item-specific instead of system-wide (see section 2.5.2 later in this chapter). Jarvis interpreted the data as suggesting that the changes that had taken place in Aino's implicit knowledge of L1 Finnish were changes that involved adding new L2-based options to her L1 (e.g., new ways of expressing ideas), but did not involve the loss of any of her prior L1 knowledge. During the clinical elicitation task (a series of brief film retells), for example, Aino consistently used forms that are conventional in Finnish, and during the informal observations of natural use, Aino's L2-influenced patterns alternated with conventional L1 forms. These findings have a number of implications for both CLI and L1 attrition, and it is clear that the findings would have been obscured if the researcher had not relied on multiple types of data.

Determining how much and what types of data to gather for an intrasubjective investigation of CLI is an important matter, as is determining what counts as evidence of transfer once all of the data have been collected. According to Jarvis (1998, 2000a), any identification of CLI should rest on the following three types of evidence:

<i>Intragroup homogeneity:</i>	Evidence that the behavior in question is not an isolated incident, but is instead a common tendency of individuals who know the same combination of languages.
<i>Intergroup heterogeneity:</i>	Evidence that the behavior in question is not something that all language users do regardless of the combinations of L1s and L2s that they know.
<i>Crosslinguistic performance congruity:</i>	Evidence that a language user's behavior in one language really is motivated by her use (i.e., the way she demonstrates her knowledge) of another language.

Jarvis proposed that a truly circumspect study of CLI will include an attempt to evaluate all three of these types of evidence. This proposal was made in relation to the notion of methodological rigor, however, and Odlin (2003) has since suggested that researchers can often make an uncontroversial case for transfer even without testing rigorously for all three types of evidence. We agree with part of Odlin's assertion. That is, we agree that an uncontroversial case for transfer can be made without the use of rigorous tests or statistical analyses, but we are convinced that all three types of evidence are essential regardless of whether they are verified through rigorous tests or through more informal evaluation, and also regardless of whether they are derived internally from within an empirical investigation or drawn either implicitly or explicitly from external sources (such as from previous studies, from existing language corpora, or from common knowledge). Interestingly, Odlin (2003) himself referred informally to all three types of evidence when describing how we can be sure even without rigorous tests that the *after* perfect construction in Hiberno English is the result of crosslinguistic influence from Irish and Scottish Gaelic. We say more about methodological rigor and about the importance of the three types of evidence in the following section. In the meantime, we conclude this section by clarifying our position that, although in many cases it is clearly preferable to validate the evidence for transfer through the use of rigorous tests (including statistical analyses), a solid case for transfer can often be made more simply through an appeal to the necessary types of corroborating evidence that are already externally available to the study's audience, or through an appeal to the necessary types of corroborating evidence that have been established through previous research or that can be drawn from an available corpus of L2 user data, such as the International Corpus of Learner English (see, e.g., Granger, Hung, & Petch-Tyson, 2002).

2.4. INTERSUBJECTIVE METHODS

2.4.1. Pseudolongitudinal Designs: The Nexus Between Longitudinal and Cross-Sectional

Inasmuch as the purpose of a psycholinguistic study of CLI is to investigate the processes underlying transfer, a fundamental question is how (as well as when, where, and why) language users make mental associations—or interlingual identifications (Odlin, 1989; Weinreich, 1953)—between elements of the different languages that they are learning or already know. Even though we cannot scrutinize directly the mental processes through which these connections are initially made, there is still a great need to identify when and under which circumstances specific instances of CLI first occur and how they transform over time (cf. Ringbom, 1993). The ideal way to go about isolating first occurrences of CLI and

tracking their evolution would be through a large-scale longitudinal study, one that tracked hundreds or even thousands of individuals over several years. Regrettably, although there have been some attempts at large-scale longitudinal studies (e.g., the European Science Foundation project described in, e.g., Becker & Carroll, 1997; Perdue, 1993), this is simply not a feasible goal for most language researchers (although a large-scale longitudinal corpus compiled jointly by multiple researchers certainly is a feasible goal; see, e.g., Granger, Hung & Petch-Tyson, 2002). The recommended alternatives include both small-scale longitudinal studies and large-scale cross-sectional studies, and the field clearly needs both in order to compensate for the lack of large-scale longitudinal studies (cf. Gass & Selinker, 2001, p. 33; see Ruspini, 2002, for a detailed discussion of types of longitudinal research, their historical development, and their relationship to cross-sectional research).

In large-scale *intersubjective* research, the relationship between longitudinal and cross-sectional is complex. It is particularly complicated by the fact that, due to the general impracticality of large-scale longitudinal studies, research questions about the emergence and evolution of CLI effects are generally investigated through *pseudolongitudinal designs*. Because pseudolongitudinal designs obscure the distinction between longitudinal and cross-sectional, and because they are also very commonly used in intersubjective transfer research, we deem it necessary to discuss pseudolongitudinal designs at some length.

Pseudolongitudinal designs form a subcategory of cross-sectional methodology in the sense that they usually involve gathering data from language users at a single point in time (or within a narrow time period). However, pseudolongitudinal designs are also related to longitudinal methodology in the sense that they include language users at successive levels of language ability, which makes it possible to track CLI effects in relation to changes in language ability (though not within the same language users, as would be the case in a true longitudinal study). There are three broad types of pseudolongitudinal research. The first and methodologically simplest is what we refer to as a *stratified design*. This involves collecting data from a group of language users who represent a wide spectrum of language abilities, and then examining the data for patterns of transfer that correspond to changes in language ability. As a simple example, one may wish to examine the patterns of transfer exhibited by Spanish-speaking learners of English in relation to their use of the preposition *in* to express meanings that L1 English speakers would normally associate with *on*, as in the sentence **She sat in the floor*. (The core meaning of Spanish *en* overlaps with the core meanings of both *in* and *on*, and Spanish speakers often associate English *in* with Spanish *en*, using *in* to represent the meanings of both *in* and *on*; see, e.g., Corra-Beningfield, 1990; Swan & Smith, 2001.)

To investigate this phenomenon through a stratified design, the researcher could collect relevant language-use or appropriateness-judgment data from a

number of Spanish-speaking learners of English whose L2 proficiency spanned the range from beginner to advanced. As an index of (negative) transfer effects for each learner, the researcher could use the relative frequency of their use of *in* in contexts where *on* would be more conventional. To analyze when such effects first occur and how they change with development, the researcher could order the learners' transfer indices according to their levels of language ability. (Popular measures and estimates of language ability include proficiency test scores, years of language instruction, age of arrival in the target-language environment, length of residence in the target-language environment, frequency of language use, and so forth. Estimates of language ability can also be based on a combination of two or more of these.) The resulting descriptive statistical table might look something like Table 2.1 (though far more learners would be recommended).

Table 2.1 shows that the transfer effects under consideration tend to decrease with increases in English proficiency, and the significance of this trend can be determined through the use of inferential statistical tests (e.g., through a Pearson's or Spearman's correlation test). Of course, the data in Table 2.1 are hypothetical, and actual data may or may not be as clean or as linearly ordered, but the point is that a stratified design like this allows the researcher to observe changes in CLI patterns that correspond with changes in language ability—assuming, that is, that developmental changes that can be seen across learners are similar to those that would be seen if one looked at a single learner over time (cf. Gass & Selinker, 2001, p. 33). Examples of recent studies that have used a stratified design to investigate CLI effects in relation to language ability include Guion et al. (2000) and Kubota (1998), among others.

The second and most common type of pseudolongitudinal design is what we refer to as a *multi-group design*. As the term implies, this involves collecting data from multiple groups of L2 users representing successive, clearly defined levels of language ability. “The assumption underlying this method is that comparing [multiple] groups would yield results similar to what would be found if we looked

TABLE 2.1
Hypothetical Data Representing a Stratified Design

Learner	English Proficiency	Transfer Index (% use of <i>in</i> for <i>on</i>)
Jose	1 (Low Beginner)	.90
Maria	2 (High Beginner)	1.00
Evelina	3 (Lower Intermediate)	.85
Pedro	4 (Upper Intermediate)	.47
Antonio	5 (Lower Advanced)	.37
Gabriela	6 (Upper Advanced)	.00

at a single individual over time” (Gass & Selinker, 2001, p. 33). A great many transfer studies have used this method (e.g., Alonso, 2002; Ard & Homburg, 1983; Jarvis, 2000a, 2002; Su, 2001; Taylor, 1975; Upton & Lee-Thompson, 2001), and here we provide a single example. The example is a study conducted by Su (2001) to investigate the transfer of sentence interpretation strategies by English-speaking learners of Chinese and Chinese-speaking learners of English at three levels of L2 proficiency: beginning, intermediate, and advanced. The study investigated the degree to which learners at different levels of L2 proficiency rely on their L1-based strategies while interpreting L2 sentences. It also addressed whether learners at successive levels of L2 proficiency rely increasingly on L2-based strategies when using their L1. The results of the study showed that both English-speaking learners of Chinese and Chinese-speaking learners of English do rely heavily on L1-based strategies at the beginning level, but show much less reliance on L1-based strategies at the intermediate and advanced levels. From the perspective of L2 influence, both the English and Chinese speakers showed an increasing reliance on L2-based strategies at successive levels of L2 proficiency.

The third and final type of pseudolongitudinal design is what we call a *matched-subjects design*. It is similar to the multi-group design in that it involves multiple groups representing successive levels of language ability, but also differs in the sense that, in the matched-subjects design, sets of participants are matched across language-ability levels as if they were a single person being examined longitudinally. One of the few studies we are aware of that has used this design is Master (1987). Master investigated CLI and other issues related to the L2 acquisition of English articles by 20 learners from the following language backgrounds: Chinese, German, Japanese, Russian, and Spanish. Learners were recruited in such a way that there was one learner from each L1 background at each of four levels of English proficiency, as shown in Table 2.2.

Master matched the four learners from each L1 background together as if they were a single individual being investigated longitudinally over a long period of

TABLE 2.2
Breakdown of Master’s (1987) Learners by L2 Proficiency Level and L1

L1	Beginner	Low Interm.	Middle Interm.	Upper Interm.	Total
Chinese	1	1	1	1	4
German	1	1	1	1	4
Japanese	1	1	1	1	4
Russian	1	1	1	1	4
Spanish	1	1	1	1	4
TOTAL	5	5	5	5	20

time. On the basis of his analysis of oral interview data elicited from each learner, Master found, among other things, that learners whose L1s have article systems (German, Spanish) show different patterns of L2 article acquisition than learners whose L1s do not have such systems (Chinese, Japanese, Russian) (see also Master, 1997).

The matched-subjects design may be the preferred option for pseudolongitudinal studies that have limited numbers of participants, as Master's did, provided that the researcher is able to follow consistent and well-motivated procedures for matching participants across language-ability levels. The most obvious weakness of the matched-subjects design is that any non-typical performance by any one of the matched subjects could skew the results and lead to misinformed conclusions. For this reason, the multi-group alternative would seem to be preferable to the matched-subjects design wherever large numbers of L2 users are available, and wherever it is feasible to analyze data produced by large numbers of language users. From the perspective of Master's study, it is easy to see that his research design would have been methodologically more rigorous and his results even more convincing if he had been able to fill each cell in Table 2.2 with an entire group of learners who were equivalent in terms of both L1 background and L2 proficiency, instead of recruiting for each cell only a single learner.

One caveat that concerns all three types of pseudolongitudinal design is that they are capable of substituting for true longitudinal studies only to the extent that one can assume that intersubjective (and intergroup) trends across language-ability levels are similar to the trends that one would observe in a typical language user over time. Some researchers feel uncomfortable with this assumption and prefer a pseudolongitudinal design that includes at least an abbreviated longitudinal component. An abbreviated longitudinal component would involve adding to one's pseudolongitudinal design a plan for collecting data from each L2 user more than once over a long enough period of time to capture at least some changes in their language competence. For example, using an expanded multi-group design, one could collect data from a group of low beginning L2 learners over a long enough period of time to trace their development to the level of high beginning, and track a separate group of high beginning learners until they reached the level of low intermediate, and so forth. One could then examine and compare both longitudinal changes within groups and cross-sectional trends across proficiency levels to see how well they coincide and complement one another. Combining longitudinal and pseudolongitudinal methodologies in such a way might allow the researcher to achieve an optimal balance between practical considerations and interpretational validity.

Concerning the distinction between pseudolongitudinal designs and other types of cross-sectional designs that are not pseudolongitudinal, the former specifically involve an examination of the language use of people who represent

successive levels of language ability, whereas the latter do not. There are no other necessary differences between the two, and the researcher's choice of one over the other should ultimately be determined by one's research questions. As we indicated in Chapter 1, there are a variety of important questions about CLI that must still be resolved. Those questions that entail the need to isolate first occurrences of CLI and/or to monitor the evolution of such occurrences usually call for a longitudinal or pseudolongitudinal design, whereas questions about whether various types of transfer even occur (e.g., Jarvis & Odlin, 2000; Odlin, 1990; Pavlenko, 1997; Pavlenko & Jarvis, 2002) or what constraints there are on the types of transfer that are known to occur (e.g., Andersen, 1983; Jarvis, 2000a; Kellerman, 1978, 1983; Ringbom, 1987), often imply a cross-sectional design that is not pseudolongitudinal. In the remaining sections of this chapter, we discuss complexities of cross-sectional research that apply equally to cross-sectional designs that are pseudolongitudinal and to those that are not pseudolongitudinal. The primary issues that we address are the types of evidence for CLI that are needed, as well as the relationship between the design of the study and the types of evidence for CLI that will be available from the data.

2.4.2. Evidence for CLI

As we indicated earlier, any identification of CLI should rest on the following three types of evidence: intragroup homogeneity, intergroup heterogeneity, and crosslinguistic performance congruity. We have already given informal definitions of these terms as they relate to intrasubjective research, but will now define them more formally as they relate to intersubjective research. Before doing so, it is relevant to point out that the underlying link connecting all three types of evidence is that they are all indicators of a potential relationship between source-language knowledge and recipient-language performance (cf. Jarvis, 2000a, pp. 252–254). (As mentioned in Chapter 1, we will often refer to the language from which CLI effects originate as the *source language*, and the language being examined for CLI effects as the *recipient language* [cf., e.g., Odlin, 2003]. In doing so, we emphasize that the source language is not always the L1, and the recipient language is not always an L2; for example, in cases of L2 influence on the L1, the opposite configurations hold. Also, in cases of bidirectional transfer, two languages are simultaneously source and recipient.)

The first type of evidence, intragroup homogeneity, is a phenomenon that exists whenever a group of language users who are mutually comparable—i.e., who have a comparable knowledge of the source language, and also a comparable knowledge of the recipient language—behave similarly in the recipient language. To give an example, if a verifiable trend in the use of the English definite article with proper nouns (e.g., **the David Gilmore*) is observed in the language production of Spanish-speaking learners of English at a given level of

L2 proficiency (cf. Raimes, 2003), then the relative homogeneity of this pattern (i.e., the strength of this trend) in the English (recipient language) of these Spanish (source language) speakers would serve as one piece of evidence that the observed pattern may be the result of CLI (perhaps in combination with other factors). The example just given involves negative transfer, but it could just as easily involve positive transfer, or CLI-induced patterns that do not represent errors in the recipient language, such as the choice between *in* and *on* in cases where either is acceptable (e.g., *sitting in the grass* versus *sitting on the grass*) (Jarvis & Odlin, 2000; see also, e.g., Kecskes & Papp, 2000; Kubota, 1998). The importance of intragroup homogeneity as evidence for CLI derives from the logic that, if a group of language users has a similar knowledge of a source language (whether L1, L2, L3, etc.), and if their knowledge of the source language is assumed to affect their use of a recipient language, then the group of language users in question should be expected to show a high degree of intragroup homogeneity in their use of the recipient language. More simply, where CLI causes one speaker of a source language to behave in a certain way in the recipient language, we would expect CLI to cause a significant number of comparable speakers of that source language to do the same thing.

Of course, the degree of consistency they exhibit in their use of the recipient language should ideally be considered in relation to the degree of consistency they show in their use of the source language. A given source language will, after all, have multiple registers, dialects, and idiolects, and such differences can lead speakers of the same source language to perform differently in the recipient language (e.g., Broselow, 1992). Thus, although CLI should normally be expected to bring about high levels of intragroup homogeneity in recipient-language performance, it can also be the direct cause of low levels of intragroup homogeneity in cases where individual variation in the source language is high (Odlin, 1989, p. 130). The intragroup homogeneity of the participants should also in many cases be considered in relation to the levels of intragroup homogeneity found in the language use of monolingual speakers of both the source and the recipient languages. This is perhaps especially important in studies of L2 > L1 influence, where, for example, CLI from an L2 (the source language, in this case) can cause the targeted individuals to differ from monolinguals in their use of the same L1 (the recipient language, in this case) (Pavlenko, 2002b, 2003a, b). We discuss the importance of such comparisons a little later on, and in the meantime present in Table 2.3 a more complete logic for the use of intragroup homogeneity as evidence of CLI (note particularly the final *Then* statement).

Elements of the logic shown in Table 2.3 were an essential part of the rationale used by Selinker (1969, 1983) for identifying transfer effects in the use of place and time adverbials by Hebrew-speaking learners of English. More specifically, he argued that evidence for transfer can be found in both of the following cases: (a) “whenever there is a statistically significant predominance in the [source]

TABLE 2.3
Rationale for Intragroup Homogeneity as Evidence of CLI

Whereas:	language users’ performance in a source language is determined <i>inter alia</i> by their knowledge of that source language,
If:	a group of language users shares a similar knowledge of a source language,
Then:	their performance in the source language should be expected to be relatively uniform, and
If:	their knowledge of the source language is also assumed to affect their performance in a recipient language,
Then:	the group of language users in question should be expected to show a level of uniformity in their use of the recipient language that is comparable to the level of uniformity they display in their use of the source language.

language of one of two alternative linguistic entities, which is then paralleled by such predominance in an analysis of the attempted production of a [recipient] language,” and (b) “whenever there is no statistically significant predominance in the [source] language of either of two alternative linguistic entities, which is then paralleled by a lack of predominance in an analysis of the attempted production of a [recipient] language” (1983, p. 51). As an example of the former, Selinker found that Hebrew speakers showed a significant preference in Hebrew for positioning place adverbials before direct objects that represent subjects studied at school, and they showed an equivalently high preference for doing the same thing in English (e.g., *I will study in the university biology*). As an example of the latter, Selinker found that Hebrew speakers showed no significant preference in Hebrew for the ordering of place and time strings, and correspondingly showed no significant preference in English (between, e.g., *I live in Tel Aviv now* versus *I live now in Tel Aviv*).

Although intragroup homogeneity provides important support for any argument about the presence of CLI effects, it is important to recognize that intragroup homogeneity by itself is insufficient to substantiate CLI effects (Jarvis, 2000a). Support is also needed in the form of the second type of evidence—intergroup heterogeneity—which involves performance differences between groups of language users who differ in their knowledge of the source or recipient languages. Evidence for intergroup heterogeneity can come from three types of comparison: (A) comparisons of the use of the same recipient language by two or more groups of language users whose knowledge of the recipient language is comparable, but who do not share the same source language (e.g., comparisons

of Arabic-, Japanese-, and Spanish-speaking learners of English); (B) comparisons between monolingual and bilingual speakers of the same recipient language (e.g., comparisons of English monolinguals with Russian-English bilinguals, where Russian > English transfer is relevant); and (C) comparisons between monolingual and bilingual speakers of the source language (e.g., comparisons of Russian monolinguals with Russian-English bilinguals, where Russian > English transfer is relevant).

Comparisons of Type B, focused on the recipient language, are perhaps the most commonly used method for detecting the possible presence of CLI. If they show that monolingual and bilingual speakers of the recipient language systematically differ from each other in their language behavior, this behavior may be indicative of CLI and necessitates further investigation to rule out developmental errors. If, on the other hand, monolingual and bilingual speakers of the same recipient language exhibit similar behavior in the recipient language, then this may indicate successful recipient-language acquisition (in cases where the recipient language is an L2 for the bilinguals) or language maintenance (where the recipient language is an L1 for the bilinguals) instead of CLI. Comparisons of Type A, for their part, are important for ruling out the possibility that all speakers of the recipient language—regardless of the source languages they know—perform similarly in the recipient language. They are particularly important for differentiating between language universals, developmental errors, and instances of CLI. Finally, Type C comparisons allow us to link instances of CLI to source language patterns. When such a comparison shows that monolingual and bilingual speakers of the same source language differ in their source-language behavior, this may cast doubt on the presence of CLI in cases where the alleged CLI effects resemble only monolingual but not bilingual patterns of behavior. We say more about such comparisons later in this and the following section.

For now, we return to the Selinker (1983) example in order to clarify how intergroup heterogeneity affects the strength of evidence for CLI. Now, Selinker did not explicitly acknowledge the importance of intergroup heterogeneity in his study, but the design of his study indicates that he may have been at least implicitly aware of it. In addition to examining intragroup homogeneity in the use of both Hebrew and English by Hebrew speakers, he also compared the Hebrew speakers' use of English with that of a group of monolingual English speakers. He stated that the reason for including the English-speaker group was to determine "an English norm of syntactic string behavior" (p. 39), which would allow him to identify which instances of transfer were positive versus negative (pp. 50–51). However, an even more important consequence of including the native English speakers was that it made the case for transfer more convincing. By showing that Hebrew speakers' adverbial-placement preferences in English are often not the same as those of native English speakers (a comparison of Type B from above), the study cast doubt on at least two non-CLI explanations for the

patterns found in the data. The first alternative explanation that it cast doubt on was the possibility that the Hebrew speakers’ parallel syntactic preferences in Hebrew and English were the result of an inherent language universal that entails the same adverbial-placement preferences among speakers of all languages. The second alternative that it cast doubt on was the possibility that Hebrew and English coincidentally share the same adverbial-placement conventions, and, by extension, that the Hebrew speakers’ preferences in English were simply the result of successful L2 acquisition (or target-language influence) instead of CLI.

Of course, the case for CLI would have been made still stronger if Selinker had included in his study at least one additional comparison group, one composed of language learners of English whose L1 was unrelated to Hebrew (a comparison of Type A from above). If he had done so, and if the additional comparison group had also differed in their use of English from the Hebrew speakers, then this would have cast even stronger doubt on (to the extent of ruling out) the possible role of language universals and target-language influence in determining the patterns found in the data. Additionally, it would have ruled out the possibility that the observed patterns were the result of universals of second language acquisition that cause learners of all L1 backgrounds to behave similarly (e.g., Gass, 1997).

The basic logic behind intergroup heterogeneity is given in Table 2.4. There are at least two important caveats to this logic, however. The first is that differences in the use of the recipient language across the comparison groups should not be expected to exceed the degree of differences they exhibit in their use of the source languages. For instance, why would Finnish speakers and Swedish speakers be expected to differ in their use of English in areas where their use of Finnish and Swedish is congruent (e.g., Jarvis, 2000a; Jarvis & Odlin, 2000)? The other caveat is that differences in performance between groups of language users should probably be understood in relative terms rather than as absolutes. Similarities and differences in many or most areas of language use, after all, form a continuum rather than a dichotomy. One extreme of the continuum would represent total incongruence in the language performance of the different

TABLE 2.4
Rationale for Intergroup Heterogeneity as Evidence of CLI

<i>If:</i>	two or more groups of language users speak different source languages, and
<i>If:</i>	their knowledge of the source languages is assumed to affect their performance in a common recipient language,
<i>Then:</i>	the groups of language users in question should be expected to show clear differences in their use of the recipient language.

groups, and the other extreme of the continuum would represent completely identical behavior among the groups. The middle of the continuum would represent a perfect balance between incongruity and identical behavior. So, is the middle of the continuum where the line should be drawn between similarities and differences? Probably not. CLI is a complex phenomenon, and the relationship between similarities and differences can vary from one study to another and from one area of language use to another.

Jarvis' (2000a) solution to this problem is to define intergroup heterogeneity in relative terms, as *intergroup* homogeneity that is weaker than *intragroup* homogeneity. In his own study, Jarvis examined word-choice behavior among Finnish-speaking and Swedish-speaking learners of English. He found that the Finns and Swedes were more similar than different with respect to the word-choice preferences they exhibited in their L1s (the source languages) and in English (the recipient language). However, Jarvis also noted that the similarities between the Finns and Swedes, while substantial, were nevertheless weaker than the similarities found within either group. Jarvis interpreted this finding as evidence of intergroup heterogeneity—i.e., intergroup homogeneity that is weaker than intragroup homogeneity. Some may question whether this criterion for heterogeneity is too loose or too liberal; we do not believe so because we feel that intragroup homogeneity and intergroup heterogeneity really need to be examined collectively and defined in relation to one another.

Besides intragroup homogeneity and intergroup heterogeneity, any truly comprehensive investigation of CLI effects will also include a third type of evidence: crosslinguistic performance congruity. The logic behind crosslinguistic performance congruity is shown in Table 2.5.

Crosslinguistic performance congruity is conspicuously similar to what was said earlier about intragroup homogeneity (i.e., that language users should be expected to show similar levels of intragroup homogeneity in the source and recipient languages), but it also goes further by specifying that language users'

TABLE 2.5
Rationale for Crosslinguistic Performance Congruity as Evidence of CLI

Whereas:	language users' performance in a source language is determined by their knowledge of that language,
If:	their performance in a recipient language is also assumed to be affected by their knowledge of the source language,
Then:	the language users in question should be expected to show similarities between their performance in the source language and their performance in the recipient language.

source- and recipient-language behavior should not only be quantitatively parallel (in terms of homogeneity quotients), but should also be qualitatively congruent in terms of the actual language structures and patterns that are produced. That is, crosslinguistic performance congruity involves showing more explicitly what it is in the language users' source-language knowledge (and performance) that has brought about the observed patterns in their recipient-language performance.

Examples of the use of crosslinguistic performance congruity as evidence of transfer abound in the literature, and most of these come from studies of L1 influence on the use of an L2 (e.g., Beebe, Takahashi, & Uliss-Weltz, 1990; Jarvis, 2000a, 2002; Olshtain, 1983; Selinker, 1983). The example we present here, however, pertains to the more neglected area of L2 influence on the use of an L1. In a study that deals with L2 > L1 conceptual transfer, among other things, Pavlenko (2002a, b, 2003a, b) showed that a group of Russian speakers who had lived in the U.S. for a number of years had, through their internalization of new concepts and discursive conventions, acquired the tendency to evaluate and refer to certain types of events in terms of people's rights to enjoy privacy and personal space, two notions commonly encoded and referred to in American English. The Russian-English bilinguals demonstrated this tendency not only in their use of English (the source language, in this case), but also in their use of Russian (the recipient language). Their Russian data were particularly interesting because, in their references to privacy—a notion absent in Russian language and culture (see, e.g., Karasik et al., 2005)—the speakers violated both semantic and morphosyntactic conventions of Russian discourse. Pavlenko demonstrated empirically that monolingual Russian speakers do not refer to matters of privacy or personal space in the same contexts, and thus she concluded on the basis of the bilinguals' crosslinguistic performance congruity (i.e., the fact that they referred to privacy and personal space in a similar way in both their L2 English and L1 Russian), that their knowledge of English had influenced their use of Russian.

The three types of evidence for CLI that we have just discussed can be summarized in the following way. Intragroup homogeneity involves determining the consistency with which a group of speakers performs in the source language with respect to a particular language feature, and examining whether they exhibit a comparable level of consistency in their use of a corresponding feature of the recipient language. Intergroup heterogeneity involves examining whether groups of individuals who speak different source languages perform differently in the same recipient language. Finally, crosslinguistic performance congruity involves comparing language users' performance in both the source and recipient languages, and determining whether their performance in the recipient language is directly motivated by the language structures and patterns they produce in the same contexts in the source language. Following Jarvis (1998, 2000a), we have argued that all three types of evidence should be considered in order to establish

rigorously that a purported CLI effect is indeed the result of CLI. We have also argued that all three of these types of evidence can be enhanced through the inclusion of control groups made up of monolingual speakers of the source and/or recipient language. Curiously, Jarvis (1998, 2000a) so far appears to be the only study to have addressed all three types of evidence explicitly. This fact may lead some to believe that CLI research as a whole has lacked rigor, being overly impressionistic and unreliable (e.g., Dechert & Raupach, 1989; Felix, 1977; Meisel, 1983). Rather than arguing for or against this claim, let us instead clarify what empirical rigor means, and what levels of rigor are required to identify transfer effects reliably.

2.4.3. Methodological Rigor

From the perspective of empirical research, the term *rigorous* is essentially synonymous with *meticulous* and *fastidious*. This means that a rigorous investigation of CLI is one that is designed to examine all types of evidence for CLI, including all three of the general types of evidence that we have discussed. Jarvis' study may be the only study so far that has done this explicitly, but some additional studies (e.g., Selinker, 1983) have produced all three types of evidence empirically without acknowledging them explicitly. Whereas it is true that most transfer studies have not done this—which is unfortunate in many cases—there have been a number of CLI studies that have achieved a criterion level of credibility without having had to produce all three types of evidence. When this can be done, it is clear that pressing for more empirical rigor just for the sake of achieving more rigor is inefficient.

Now, empirical efficiency does not mean that any of the three types of evidence is ever irrelevant; instead, it means that one or more of the types of evidence can sometimes either be implicitly assumed or can be drawn from previous studies or from other sources of information (e.g., personal experience, informal observations) that are external to the empirical investigation itself. Intragroup homogeneity, for instance, is rarely dealt with directly in transfer studies, yet most transfer studies do indicate either implicitly (e.g., Ringbom, 1978b) or explicitly (e.g., Broselow, 1992; Yip & Matthews, 2000) that the transfer patterns found in the data are common among speakers of the source language(s) in question. Likewise, even though many transfer studies do explore intergroup heterogeneity directly through the planned recruitment of groups of language users from multiple source-language backgrounds (e.g., Gass, 1983; Jarvis & Odlin, 2000; Ringbom, 1987; Schachter, 1974), other studies rely on external evidence of intergroup heterogeneity, such as on the readers' assumed already-existing knowledge that speakers from different source-language backgrounds often differ considerably in their use of the targeted structure in the recipient language (e.g., Hasselgren, 1994; Kellerman, 1978). Furthermore, regarding

crosslinguistic performance congruity, although several studies have compared source- and recipient-language performance directly (e.g., Jarvis, 2002; Olshtain, 1983; Pavlenko, 2002b, 2003a; Pavlenko & Jarvis, 2002; Selinker, 1983; Su, 2001; Yip & Matthews, 2000), a great many transfer studies have not done so, but instead have compared recipient-language performance with intuitions or general descriptions (e.g., written grammars) of how the source language works (e.g., Broselow, 1992; Dulay & Burt, 1973; Schachter, 1974; Young, 1996).

Using external descriptions of the source language instead of actual elicited source-language performance as the basis of comparison is fine as long as the descriptions are truly descriptive instead of prescriptive, and as long as they provide an accurate characterization of how the L2 users would have performed on the given task if they had been asked to complete the task in the source language, and not just in the recipient language. This would require taking into consideration all dialectal, social, and contextual factors related to the source language that may affect the L2 users' performance on the given language task. At the same time, it is important to recognize that there are several advantages that a comparison of actual performances has: (a) It allows the researcher to investigate CLI without ignoring individual differences—i.e., unique patterns that individuals may exhibit in the source language, which may give rise to corresponding unique patterns in their use of the recipient language (e.g., Linnarud, 1978; Masny & d'Anglejan, 1985; Towell & Dewaele, 2005); (b) it acknowledges the distinction between language and code (e.g., Pavlenko, 1997), seeking for instances of CLI that are motivated by habitual language use in the source language rather than by the language's latent inventory of linguistic options (i.e., its code); and (c) it also allows the researcher to identify instances of dialectal transfer (cf. Broselow, 1992) or other types of transfer where individuals' source-language behavior exhibits characteristics not shared by all speakers of the language.

It is important for the researcher to remain vigilant of the fact that CLI is an internal phenomenon, a phenomenon that exists in the minds of individual language users, and a phenomenon that springs from the interaction of languages stored and processed within the same mind. When a Spanish speaker who has learned English exhibits Spanish influence in his use of English, for example, or when he exhibits English influence in his use of Spanish, it is his own knowledge of Spanish that influences his use of English, or his own knowledge of English that influences his Spanish. It is not monolingual Spanish speakers' or monolingual English speakers' knowledge of these languages that determines the patterns of CLI that the language user in question will exhibit. Thus, in any investigation of CLI, it is crucial for the researcher to know what the L2 users' actual knowledge of the source and recipient languages is. Most commonly, this will involve giving them comparable tasks in both the source and recipient languages (though not necessarily in that order).

Now, even though performance data collected from monolingual speakers of the source and recipient languages cannot be used to investigate directly whether the targeted L2 users' own knowledge of the source language guides their own performance in the recipient language, data collected from monolingual speakers of both languages is nevertheless important for examining the linguistic options and patterns of habitual language use that the targeted L2 users have been exposed to. In cases where the targeted individuals interact regularly with monolingual speakers, they are likely to conform (partially or fully) to a number of the monolinguals' language conventions, and this may have important implications for CLI. In many cases, it may make the effects of CLI less conspicuous, especially in cases where the L2 users deliberately try to avoid transfer (e.g., Jarvis, 2003). In other cases, however, their attempts to conform to the language of the monolinguals with whom they interact may result in patterns that appear to be CLI-induced, but really may not be.

For example, non-native speakers sometimes use non-standard structures that are misidentified as instances of transfer, whereas in reality the non-native speakers have merely adopted these structures from the habitual language use of monolingual native speakers of a non-standard variety of the target language. Latino students who go to school with African Americans, for instance, are often found to produce double negatives (e.g., *You don't know nothing*). Double negatives exist in their L1, of course, so the case for transfer seems reasonable, but double negatives are also a feature of most dialects and varieties of English, including the African American Vernacular English of their peers, which suggests a non-transfer explanation. In such cases, the researcher needs to consider whether non-native speakers from other L1 backgrounds (especially ones that do not have double negatives) who attend the same schools also produce these structures. If not, the case for transfer is strengthened, but if so, the logical explanation for the use of such structures is successful L2 acquisition of the ambient target language. Examples like this emphasize the importance of including appropriate monolingual controls—especially monolingual speakers of the recipient language who are similar to the L2 users on a range of sociodemographic variables—in the design of one's study whenever possible.

Returning to the balance between rigor and efficiency, the key criterion for whether a CLI study goes far enough is more a matter of how strong and how credible the three types of evidence are, rather than whether all three were explored directly in the empirical design of the study. Methodological rigor is important, but the ultimate goal should be interpretational validity—or the credibility of one's findings and interpretations—and this ultimate goal may demand differing levels of methodological rigor in different studies depending on the degree to which external sources of evidence are already available, and depending on the degree to which the presence of CLI effects is likely to be questioned or challenged in the first place.

Another important issue regarding the three types of evidence is whether all three need to be unambiguously positive in order for the researcher to be able to affirm that CLI effects are present. The simple answer is “no,” but this requires some qualification. The qualification is that none of the types of evidence can be disregarded in an ad hoc manner, but in certain circumstances, one or more of the types of evidence may be relatively weak for various reasons even when CLI effects are real. For example, intergroup heterogeneity can be weak in cases where the different source languages are congruent, such as where they all lack an article system (e.g., Master, 1997) or where they coincidentally have similar conventions (such as in the use of prepositions, e.g., Ijaz, 1986).

Likewise, crosslinguistic performance congruity can be weak in cases where L2 users’ knowledge of the recipient language is far less developed than their knowledge of the source language, or in cases where language users are naturally more cautious but also less precise and less descriptive in their use of a foreign language than of their native language (e.g., Hasselgren, 1994; Levenston & Blum, 1977; McClure, Mir, & Cadierno, 1993). Also, Odlin (1989, p. 38) notes that crosslinguistic performance congruity can be weak but very real in cases where the source language lacks a distinction that exists in the recipient language (e.g., the distinction between /d/ and /t/), which can lead to hypercorrections or instances of metathesis (e.g., **tumpdruck* for *dumprtruck*) that do not directly mirror source-language patterns. Likewise, the resemblance between language users’ performance in the source and recipient languages can be weak when their recipient-language preferences are only loosely modeled after those in the source language, such as when Japanese and Chinese speakers overuse topicalization constructions in English such as *there is* and *it is* in order to follow the topic-comment template of their L1s, even though their L1s do not have structures directly comparable to *there is* or *it is* (e.g., Schachter & Rutherford, 1979).

In cases such as these where one of the types of evidence for CLI is weak, the argument for transfer can still be made as long as the researcher is able to explain and justify with sufficient clarity why that type of evidence is weak and how CLI effects can still be demonstrated in the data. The researcher is also obligated to explain how the types of evidence for CLI that are unambiguously positive are unambiguously consequences of CLI, given that intragroup homogeneity, intergroup heterogeneity, and crosslinguistic performance congruity can sometimes result from factors other than transfer. For example, high levels of intragroup homogeneity can also be prompted by developmental factors, high levels of intergroup heterogeneity can also stem from differences in schooling and educational practices, and high levels of crosslinguistic performance congruity can also be caused by language universals (see Jarvis, 2000a).

2.5. ADDITIONAL METHODOLOGICAL CONSIDERATIONS

2.5.1. Mediating Variables

Our discussion of methodological considerations so far has focused on concerns that are more or less specific to transfer research. However, there are also some considerations that apply to good research in general, such as the potential effects of mediating variables on the phenomenon under investigation (see, e.g., Creswell, 2003, pp. 94–95). In this section, we are concerned with the effects of mediating variables on CLI, or, in other words, with the interaction between CLI and outside factors (e.g., Jarvis & Odlin, 2000). This is in fact also the focus of Chapter 6, so we will deal with this issue only briefly here—only to the extent that it relates to the methodological focus of the present chapter. We begin by pointing out that investigating the mediating (intervening or moderating) effects that other variables may have on transfer has four important functions: It helps the researcher (a) identify CLI where it might otherwise be obscured by the influence of other variables, (b) confirm that the CLI effects that have been identified really were brought about through CLI and not through other factors, (c) measure the relative effects of CLI in relation to other factors that affect language acquisition and use, and (d) determine the degree to which other factors either amplify or moderate (i.e., trigger or constrain) the effects of CLI.

An important question researchers face when designing empirical studies—including CLI studies—is which outside factors need to be taken into account. The natural starting point is of course the literature that shows which factors have been found in past research to affect the phenomenon under investigation. Concerning factors that affect CLI, Rod Ellis' (1994, pp. 315–335) synthesis of the SLA literature describes six general constraints on transfer: language level (phonology, syntax, lexis, etc.), sociolinguistic factors, markedness, prototypicality, language distance and psychotypology, and developmental factors. Jarvis (2000a, pp. 260–261) has refined this list into nine categories of factors that can interact with CLI, and we provide an even more refined list in Chapter 6. Also relevant is Grosjean's (1998) discussion of several additional factors that affect not only CLI but also the language performance of bilinguals in general. These factors include the purposes for which a person has acquired a language and the purposes for which she currently uses the language, her level of proficiency in various language skills, whether she is still actively acquiring the language, how often and for how long she interacts with monolinguals versus other bilinguals, and so forth.

A crucial question for a researcher in the process of designing an empirical study of CLI is whether all of these factors need to be worked into the design of the study, and, if not, which are the most important to include. In an ideal study, all of these factors would be taken into account. However, since this is impossible in most cases, the purposes of the study—including the specific

research questions and/or hypotheses that are to be addressed—will dictate which factors are the most crucial to account for. In cases where they are relevant to the purposes of a particular study, priority should certainly be given to those outside factors that have been found in past research to interact with transfer in the particular area of language use that is being investigated. Besides these priority considerations, there is no necessary ranking of the importance of these variables because, as Jarvis (2000a) pointed out, “any one of the variables could alter the results of one’s analysis” (p. 261); thus, the particular circumstances surrounding one’s study should dictate which outside variables will be taken into account. These circumstances include the purposes of the study as well as the feasibility of collecting the necessary data and performing the necessary type(s) of analysis to determine whether a given factor has an effect on the type of CLI under investigation. In Jarvis’ (2000a) own study, variables such as personality, motivation, and language aptitude were not included in the design of the study because they were not considered to be crucial to his research question or hypotheses; data pertaining to these variables also could not feasibly be collected within the two hours that his participants were available for testing. However, variables such as age, cultural and educational background, target language proficiency, language distance, and task type were considered to be crucial to his investigation of word-choice transfer, so these variables were built into the design of the study.

Once the researcher has decided which outside variables to account for, the next question is how to work them into one’s research design. There are four general ways in which the effects of potential mediating variables can be teased apart from those of the primary phenomenon under investigation (cf., e.g., Hatch & Lazaraton, 1991, pp. 51–70), which in this case is CLI. The first three ways involve canceling out or leveling the effects of the outside variables so that any variability (e.g., differences between groups) in the data can be attributed to CLI. The first way is to eliminate the variable altogether from one’s study. For example, if it is believed that the conscious monitoring of one’s speech may constrain transfer, then the elicitation task might be designed so as to make conscious monitoring unlikely (e.g., by not giving the participant time to reflect on language use). The second way is to hold the variable constant. For example, if the researcher hypothesizes that males and females differ in their patterns of transfer, then she might choose to investigate only male L2 users. In this case, the gender variable is not eliminated from the study, but all participants represent the same level of the variable, so any differences among participants could not be attributed to differences in gender. The third way is to ensure that the outside variables that are included in the study are randomly or equally distributed across all participants or participant groups. For example, instead of recruiting only male L2 users, the researcher could ensure that all participant groups have an equal balance of both males and females. This way, if there are differences between

groups, such differences cannot be attributed to gender since all groups have equal proportions of males and females.

The fourth way to account for outside variables is to actively investigate their effects. This is possible to some degree in intrasubjective research, but is most straightforward in large-scale studies. Accordingly, the following example involves a multi-group design. For purposes of illustration, let us assume that a transfer researcher designs an investigation of L1 > L2 transfer in which she chooses to account for the potential effects of age, motivation, L1 background, target language proficiency, and task type as independent variables. Since L1 influence is her primary interest, she would want to use L1 background as her main independent variable, and the remaining variables as mediating variables. Her participant groups could be set up in accordance with which variables she expects to have the largest effects, or more simply in a way that is most feasible from the perspective of group formation. If she chose target-language proficiency as her first mediating variable, her participant groups could be set up as shown in Table 2.6.

By comparing Group 1 with Group 2, and Group 3 with Group 4, the researcher could determine whether target-language proficiency has an effect on L2 users' target-language performance independently of L1 influence. To determine whether L1 influence has an effect on participants' performance independently of target-language proficiency, the researcher could compare Group 1 with Group 3, and Group 2 with Group 4. The interaction between L1 influence and target-language proficiency could be extrapolated implicitly from these results, or it could be evaluated more explicitly through the use of statistical tests such as Factorial ANOVA or General Linear Modeling (see, e.g., Hatch & Lazaraton, 1991, pp. 369–388).

So far in this example, the researcher has not yet addressed the potential effects of age, motivation, or task type. For age and motivation, it may be enough just

TABLE 2.6
**Sample Group Structure: L1 Background as Independent Variable,
L2 Proficiency as Mediating Variable**

L1 Background A
Target-Language Proficiency 1 (Group 1)
Target-Language Proficiency 2 (Group 2)
L1 Background B
Target-Language Proficiency 1 (Group 3)
Target-Language Proficiency 2 (Group 4)

to record each participant's level for these variables, and then run statistical tests (e.g., correlation tests) within each group to see whether differences in L2 users' levels of these variables correlate strongly with differences in their language performance. If they do not correlate significantly, then age and motivation can justifiably be dismissed from further consideration at this point. However, if they do correlate with language performance, then age and/or motivation may have the potential not only to interact with transfer, but may also be the primary cause of any variability in the participants' language performance. This would indicate that the researcher needs to take additional steps to tease apart the effects of age and motivation from the effects of L1 influence. One way of doing so is to divide the L2 users further into groups defined according to age and motivation in order to determine whether different groups that have different L1s but the same levels of age and motivation show differences in their language performance. If they do, then this provides evidence of L1 influence.

When a very large-scale study is feasible, the researcher could divide the above 4 groups into the following 16 groups (or more, if she included more than two levels per variable), as shown in Table 2.7.

As before, groups that are equivalent with respect to all but one variable can be compared to see whether the variable on which they differ corresponds with differences in language performance. For example, to examine the effects of age alone, Group 1 could be compared with Group 2, Group 3 with Group 4, etc. To examine the effects of motivation alone, Group 1 could be compared with Group 3, Group 2 with Group 4, Group 5 with Group 7, etc. To examine the effects of proficiency, Group 1 could be compared with Group 5, Group 2 with Group 6, etc. Finally, to examine the effects of L1 influence, Group 1 could be compared with Group 9, Group 2 with Group 10, etc. The potential interaction or mediating effects of these variables on one another could, as before, be implicitly extrapolated through such comparisons, but a statistical test such as Factorial ANOVA or General Linear Modeling is a much more efficient and reliable way to examine interactions. (For nominal data, interactions between variables can be determined through VARBRUL, logit analysis, and various other nonparametric statistical tests. See, e.g., Hatch & Lazaraton, 1991; Mackey & Gass, 2005; Rahkonen & Juurakko, 1998; Young & Bayley, 1996.) When an interaction is found, according to Hatch and Lazaraton (1991), "*the interaction overrides the main effect*" (p. 380, italics in the original). That is, when a significant interaction is found, the researcher should interpret the results in relation to the interaction of variables, and not in relation to individual effects of different variables.

The last mediating variable in this example, task type, needs to be dealt with differently because this cannot be recorded as a simple characteristic of each L2 user in the same way that age, proficiency, and motivation can, but instead requires giving all participants the same set of tasks, and then determining

TABLE 2.7
**Sample Group Structure: L1 Background as Independent Variable,
L2 Proficiency, Motivation, and Age as Mediating Variables**

L1 Background A
Target Language Proficiency 1
Motivation Level 1
Age Level 1 (Group 1)
Age Level 2 (Group 2)
Motivation Level 2
Age Level 1 (Group 3)
Age Level 2 (Group 4)
Target Language Proficiency 2
Motivation Level 1
Age Level 1 (Group 5)
Age Level 2 (Group 6)
Motivation Level 2
Age Level 1 (Group 7)
Age Level 2 (Group 8)
L1 Background B
Target Language Proficiency 1
Motivation Level 1
Age Level 1 (Group 9)
Age Level 2 (Group 10)
Motivation Level 2
Age Level 1 (Group 11)
Age Level 2 (Group 12)
Target Language Proficiency 2
Motivation Level 1
Age Level 1 (Group 13)
Age Level 2 (Group 14)
Motivation Level 2
Age Level 1 (Group 15)
Age Level 2 (Group 16)

whether they perform differently on the different tasks. Inasmuch as the order in which the tasks are given may affect participants' performance on them, it is also advisable to alternate the order in which the tasks are given to different participants. When there are two tasks, the participants in each group could be divided in half, the first half of the participants getting one task first, and the other half of the participants getting the other task first. Alternatively, instead of

dividing each group in half, the researcher could more simply give half of the groups one task first, and give the other half of the groups the other task first. When the latter approach is taken, it is important to ensure that the order in which the tasks are given does not overlap consistently with any level of any variable. For example, it is important to ensure that neither Task A nor Task B is given only to Age Level 1, Motivation Level 1, Proficiency Level 1, or L1 Background A. This is particularly important when the tasks in question are given in different languages, and the language of the task may itself become a variable to consider.

Two other issues are important. First, the number of L2 users who end up in the final analysis of one's study is almost always considerably smaller than the number from whom data were gathered. For instance, Jarvis (1998) reported that he tested 635 people, but ended up selecting only 386 of them for inclusion in the study (p. 76). A large number of participants had to be excluded because they did not follow the directions or did not meet the selection criteria (e.g., Finnish-Swedish bilinguals were excluded), and the researcher also excluded several more participants randomly in order to ensure that all of his experimental participant groups were the same size. Having equal-sized participant groups is not always crucial, but when one deals with multiple independent and mediating variables, the results are often easiest to interpret when the levels of each variable are equally balanced.

The other issue is minimum group size. The basic principle is: the bigger, the better. Larger samples tend to be more reliable and more generalizable. A rule-of-thumb for empirical researchers has been to strive for samples that include at least 30 people per group. The number 30 is somewhat subjective, but from the perspective of statistical tests, critical values for groups of 30 are often very similar to critical values for groups whose sizes approach infinity. Another reason for favoring group sizes of at least 30 is that there is a tacit assumption among many researchers that data tend to begin to resemble a normal distribution as group sizes approach and exceed 30 participants. This is not always the case, though, as data produced by groups that are smaller than 30 can be normally distributed, and data that are produced by groups that are larger than 30 can depart significantly from normality. The criterion of 30 is only a convention, and one which relates most directly to the use of parametric statistics. Whether one has group sizes larger or smaller than 30, though, the use of parametric statistical tests is warranted only when the data are normally distributed. (This can be determined with inferential statistical tests, such as Kolmogorov-Smirnov and Shapiro-Wilks.) When the data for any group are not normally distributed, the researcher should choose nonparametric over parametric statistical tests, regardless of group sizes. Also, as we have already discussed, the use of statistical tests is not always called for in empirical research (cf. Lazaraton, 2000). Likewise, case studies of even a single individual are valuable to the field as long as researchers

address all of the necessary types of evidence to justify their claims, findings, and interpretations. (See Hatch & Lazaraton, 1991, and Mackey & Gass, 2005, for more information about research design and the assumptions underlying the most common statistical tests.)

2.5.2. Scope of Effects

We have already indicated—and will further clarify in Chapters 3 and 6—that there exist a number of linguistic, psycholinguistic, social, sociolinguistic, and individual factors that serve to constrain the scope of CLI effects likely to arise in any given instance of language use (see, e.g., Cenoz, Hufeisen, & Jessner, 2001; Cook, 2003; Jarvis, 2000a; Odlin, 1989; Pavlenko, 2000, 2005a; Ringbom, 1987). An equally important point is that, irrespective of such constraints, CLI effects can be either system-wide or item-specific (e.g., Jarvis, 2003). System-wide effects include cases where an entire lexical, morphological, phonological, or syntactic class in a person's use of one language is affected by the corresponding system from another language that she knows. A relevant example is the tendency of Russian-speaking learners of English to exhibit a general reliance on the Russian aspectual system when using tense markers in English (e.g., Wenzell, 1989).

Item-specific CLI effects, in turn, occur only with specific items. For example, Finnish-speaking learners of English—even highly advanced learners—are often heard producing constructions such as *a weather* (e.g., *It's a nice weather today*), in which the indefinite article is used erroneously with a noncount noun (e.g., Jarvis & Pavlenko, 2000). Although at first glance the problem seems to be Finns' understanding of how the English article system works, this assumption is called into question by the fact that errors of this type tend to be limited to words such as *weather*, *news*, and *bread*, whose counterparts in Finnish (*ilma*, *uutinen*, *leipä*) are count nouns or nouns that exhibit dual countability (e.g., *leipä* can mean either *bread* or *a loaf of bread*). The erroneous use of the indefinite article with these words is an item-specific CLI effect, and it most likely arises from an L1-induced misclassification of these few specific noncount nouns as count, and not from a Finn's mental association of the English article system with any system of Finnish grammar. Scope-of-effect considerations such as these go hand-in-hand with the other methodological issues that we have discussed in this chapter, and are of course crucial to any claims that are made about the nature and extent of CLI effects.

2.5.3. Promising Future Methods for Investigating Transfer

We conclude this chapter by briefly pointing to four proposed approaches to investigating transfer that are likely to bring about substantial new insights into the nature and pervasiveness of CLI as a phenomenon of language learning,

bilingualism, and multilingualism. The first approach was actually proposed long ago, probably no later than 1968 (cf. Ringbom, 1992, pp. 88–89), and it has to do with the ways in which the knowledge of one language can affect a person's comprehension (oral or written) of another language. Even though this phenomenon has been given lip service for several decades, Ringbom has pointed out that this has been a neglected area of empirical research. He did find some research that has been done in this area, and we will review even more in Chapter 3 of this book. In the meantime, we will simply say that this has been and remains one of the most promising (relatively) unexplored areas of transfer research, which is of vital importance to the understanding of how interlingual identifications are formed in the minds of individual language users.

A second promising approach to investigating CLI, which we discuss at length in Chapters 3, 4, and 5 of this book, has to do with the ways in which interlingual identifications interact with the mental concepts that bi- and multilinguals acquire through experience with their multiple languages. The objects of interest here are the ways in which conceptual representations govern language use, and the ways in which the concepts acquired and formed through experience in one language may affect a person's verbal and nonverbal performance in the context of another language. Investigating this type of transfer will require some old but also some new and creative ways of collecting data—not just language data, but also nonverbal performance data, such as asking participants to manipulate pictures or objects according to their perceived similarities (cf. Lucy, 1992b; Levinson et al., 2002), asking them to draw on paper their own mental images of certain uses of language (Kellerman, 1999; Negueruela et al., 2004, p. 142), and investigating the ways in which they express their mental conceptual images through the use of gestures and facial expressions (see, e.g., Brown & Gullberg, 2005; Gullberg, 20006a; in press; Kellerman & Van Hoof, 2003).

A third approach that is likely to receive a great deal of attention in future transfer research involves the exploration of techniques for identifying a person's language background on the basis of his language use. The impetus for this line of inquiry comes from *stylometry*, a subfield of linguistics that uses quantitative measures to identify the author of a disputed text (see, e.g., Holmes, 1998). A recent study by Jarvis, Castañeda-Jiménez, and Nielsen (2004) extends the use of stylometric techniques to the investigation of whether language learners' L1s can be detected on the basis of their overall patterns of word choice in an L2. The results of the study show that learners from five separate L1 backgrounds can be distinguished with over 90 percent accuracy on the basis of their collective use of approximately 50 words in their written narrative descriptions of a silent film. This is a striking finding, and it suggests that stylometric techniques may be powerful tools for detecting the inconspicuous effects of CLI.

Finally, a very promising approach to transfer research that has not yet been attempted is a meta-analysis of all prior CLI studies. This would not simply be a

summary or synthesis of the findings of past research, but would be a statistical analysis of the effect sizes of different types of CLI in different contexts, similar to the meta-analysis of studies on the effectiveness of form-focused instruction that was conducted by Norris and Ortega (2000). There are a number of obstacles that may prevent such a meta-analysis of transfer research anytime in the near future—such as the fact that transfer research has been far more diffuse than research on form-focused instruction, as well as the fact that transfer studies have not consistently reported the types of statistical information that are necessary to perform a meta-analysis. However, when a meta-analysis of CLI studies is eventually conducted, this will undoubtedly help clarify a number of issues related to the importance and prevalence of CLI in various contexts, as well as how it interacts with other factors related to language learning, language use, and multilingualism.

Linguistic Transfer

3.1. INTRODUCTION

In Chapter 1, we presented a taxonomy of the different types of transfer that have been investigated in previous research. One of the dimensions of that taxonomy deals with the distinction between linguistic and conceptual transfer, or the distinction between types of transfer that are examined primarily in relation to linguistic forms and structures versus types of transfer that are analyzed in relation to the mental concepts that underlie those forms and structures. The present chapter is devoted to the former perspective, and we deal with the latter perspective in the next two chapters. The purpose of the present chapter, then, is to review the findings of recent investigations into the ways in which L2 users' production, perception, and comprehension of forms and structures in one language are affected by their linguistic knowledge of another language.

As a prelude to our review of the recent findings on linguistic transfer, we wish to point out that especially during the 1970s and 1980s, claims were made and perpetuated about the unviability of CLI in certain linguistic subsystems, particularly in syntax and morphology (e.g., Dulay & Burt, 1974; Felix, 1980; Rutherford, 1983; Zobl, 1986). Toward the end of this period, however, the accumulated evidence was sufficient for Odlin (1989) to declare that "transfer can occur in all linguistic subsystems" (p. 23). Of course, the matter is not simple. For one thing, CLI is not equally visible in all areas of language use, as attested by the fact that phonological transfer, for example, is usually much more apparent than is transfer at the level of discourse. A second caveat is that the prevalence of CLI in the various linguistic subsystems can differ in accordance with the dimensions of transfer that we described in Chapter 1, which include the directionality of the CLI in question, the cognitive level(s) and type(s) of knowledge involved, the intentions of the speaker/writer, and the mode and channel of the language being used. Additionally, the likelihood of CLI in a given linguistic subsystem is constrained by important factors such as language universals, typological

distance between the source and recipient languages, the L2 user's level of proficiency in both languages, type of task, and many other factors.

The scope of the present chapter, as indicated, is linguistic transfer, and within this scope the sections of the chapter are organized in accordance with another dimension of our taxonomy: *Areas of Language Knowledge/Use*. The subcategories of this dimension include the following types of transfer: phonological, orthographic, lexical, semantic, morphological, syntactic, discursive, pragmatic, and sociolinguistic transfer. Each of these types of transfer is discussed in the following sections of this chapter. Other important dimensions of transfer, including directionality, intentionality, mode, channel, and outcome, are mentioned throughout the chapter where they are relevant. Factors that have been found to constrain and promote transfer are also discussed in conjunction with the studies in which they have been noted, but we do not delve into an in-depth discussion of such factors until Chapter 6. We acknowledge that most of the research discussed in this chapter deals with English as either the source or recipient language of CLI. This is a reflection of the strong orientation towards English in the relevant literature—a deficiency we hope will be remedied by future studies.

3.2. PHONOLOGICAL AND ORTHOGRAPHIC TRANSFER

Following the conventions of the relevant literature, in this section we use the term *phonological transfer* in a very general sense to refer to the ways in which a person's knowledge of the sound system of one language can affect that person's perception and production of speech sounds in another language. We recognize that a number of the findings we review on phonological transfer are not representative of the current pursuits of the branch of linguistics known as phonology (see, e.g., Roca & Johnson, 1999, for a synthesis of current phonological theory), but we nevertheless find phonological transfer to be a useful cover term for various CLI phenomena ranging from the actual sounds that L2 users perceive and produce (i.e., phonetics), to the ways that they categorize, structure, and organize these sounds (phonology).

Research prior to the 1990s made numerous inroads into uncovering the nature and prominence of CLI as it relates to the perception and production of phonetic segments, segmental properties, phonemic contrasts, syllable structure, and suprasegmental qualities such as stress, intonation, and rhythm. Such research also recognized and investigated the important interaction between CLI and developmental factors (see, e.g., Odlin, 1989, pp. 112–128). All of these issues continue to be researched today, though recent studies have also begun considering additional ways in which the reception and production of audible speech signals may exhibit CLI effects. In what follows, in section 3.2.1, we first discuss

the findings of studies that have investigated transfer in the perception and production of vowels and consonants. Then, in section 3.2.2, we synthesize the recent findings related to CLI effects on syllable structure and suprasegmental phonology. Finally, in section 3.2.3, we consider CLI from the perspective of the relationship between phonology and orthography.

3.2.1. CLI in the Perception and Production of Segmental Phonology

The most obvious effect of phonological transfer at the segmental level concerns the difficulty of perceiving the distinction between two sounds in a second language that are not in phonemic contrast in the native language, as can be seen in the difficulty that Spanish speakers sometimes have in distinguishing between /i/ and /I/ in English words like *sheep* and *ship* (e.g., Escudero & Boersma, 2004), and the difficulty that English speakers sometimes have in distinguishing between short and long vowels in Finnish words like *tuli* (“fire”) and *tuuli* (“wind”). However, not all L2 contrasts that do not exist in the L1 are equally problematic for learners, and recent research has attempted to explain why. For example, [m], [n], and [ŋ] do not contrast syllable-finally in Japanese, and a study by Aoyama (2003) showed that Japanese speakers have considerable problems perceiving the difference between syllable-final [n] and [ŋ] in English words, but have no particular difficulty perceiving the difference between syllable-final [m] and [n] or between syllable-final [m] and [ŋ]. One explanation for the relative ease with which Japanese speakers correctly distinguish syllable-final [m] from the other nasals is that [m] does contrast phonemically with [n] in another environment (i.e., syllable-initially). Another explanation—the one preferred by Aoyama—is that the English /m/ that the participants were exposed to during the experiment is very similar to a Japanese [m], whereas the English /n/ and /ŋ/ were more different from their Japanese counterparts (see also Eckman, 2004, p. 519). Though it is not clear which explanation accounts better for the facts, the data do clearly suggest that “the perceived relationship between L1 and L2 segments plays an important role in how L2 segments are perceived” (Aoyama, 2003, p. 263).

Other research on the perception of L2 segments has explored transfer effects in the perception of segmental properties, such as spectral qualities (or formant frequencies), duration, voicing, and aspiration. Concerning spectral qualities and duration, studies by Bohn (1995) and Flege, Bohn, and Jang (1997) have shown that Chinese- and Spanish-speaking learners of English rely on these properties differently from each other and from native speakers when discriminating /i/ and /I/. A study by Escudero and Boersma (2004) has shown that this depends largely on learners’ proficiency levels and on the dialect of English they are exposed to, but the study nevertheless confirms that the way learners rely on segmental

properties in the L2 is clearly affected by phonological structures and processes in the L1.

Concerning voicing and aspiration, research prior to the 1990s showed that English speakers are better at perceiving contrasts in aspiration (e.g., aspirated versus unaspirated /t/) than they are at perceiving contrasts in voicing (e.g., unaspirated /t/ versus /d/) (e.g., Pisoni et al., 1982). However, the studies that have produced this finding have tended to use listening tasks involving synthetically altered voice onset times (VOTs) (i.e., the length of aspiration before voicing begins) in speech segments that have no meaning to the listeners. The perception of sounds embedded in words that are already a part of a listener's mental lexicon, on the other hand, may work quite differently, as a study by Curtin, Goad, and Pater (1998) has suggested. The researchers in this study found that adult English-speaking and French-speaking beginning learners of Thai are significantly more accurate in their perception of the voicing contrast than of the aspiration contrast in a task that involves listening to words they know in Thai and making judgments about the meanings of those words. The researchers concluded that this outcome was the result of L1 transfer because, even though both aspiration and voicing are phonemically contrastive in Thai, in the listeners' L1s (English and French), only voicing is phonemically contrastive, and only voicing is represented in underlying lexical representations (e.g., /t/ and /d/ have separate underlying representations, but aspirated and unaspirated /t/ do not). These specific conclusions are not supported by the results of a replication study by Pater (2003), but both studies nevertheless suggest that learners carry over from their L1s certain processes of mapping surface phonetic forms to underlying phonemic representations.

With respect to the production of L2 segments, the phonological transfer research has been quite active in exploring why and how often learners produce certain segmental substitutions. For example, a study by Riney, Takada, and Ota (2000) documents the substitution of the Japanese flap for the English liquids /r/ and /l/ by Japanese college students, and another study by Lombardi (2003) analyzes the substitution of the English interdental fricatives with [t] and [s] by speakers of various languages. Together, the two studies show that a learner's likelihood of relying on a certain type of substitution depends on multiple factors, including language universals (e.g., markedness), the phonetic environment of the potential substitution, and the type of task the learner is given. Nevertheless, L1 influence interacts heavily with these factors in determining which sound will be used in the substitution and in which contexts. For example, Riney et al. found that their Japanese-speaking participants overwhelmingly replaced English liquids with the Japanese flap, and that this substitution occurred mainly in phonetic environments in which the flap can occur in Japanese (p. 731).

The influence of the L1 on L2 segmental substitutions is not perfectly direct, however. As Eckman, Elreyes, and Iverson (2003) have pointed out, segmental

substitutions are “not simply a matter of obeying the phonetic constraints of the native language. . . . The overriding principle here seems to be one of maintenance of a contrast or, perhaps more appropriately, the prevention of the complete neutralization of a contrast” (p. 190). So, for example, when Japanese-speaking learners of English pronounce *think* as if it were *sink*, they commonly also render *sink* as if it were *shink* in order to maintain the necessary contrast (p. 189). Transfer is clearly at play, but so are other constraints, such as universal phonological principles and concerns about meaning.

Another area of research concerning transfer in learners’ production of L2 segments relates not to substitutions per se, but rather to the production of essentially the right phonemes with some of the wrong segmental properties. Some of the segmental properties that have been examined include palatalization, voicing, and aspiration (often investigated relative to voice onset time). An example of transfer involving palatalization can be found in Keys’s (2002) investigation of Brazilian Portuguese speakers’ use of English. Brazilian Portuguese allows the palatalization of /d/ and /t/ in certain contexts where it is not allowed in English, and Keys found that Brazilian Portuguese-speaking learners of English tend to palatalize /d/ and especially /t/ in similar phonetic environments in English. This is not surprising, but what is surprising is that they also exhibit the tendency to palatalize /t/ in contexts where it is allowed in neither Brazilian Portuguese nor English, which suggests that their patterns of palatalization represent a confluence of both transfer and overgeneralization (cf. Jarvis & Odlin, 2000).

Transfer also interacts with the universal tendency to devoice word-final obstruents (e.g., pronouncing *bag* as *back*). Cebrian (2000), for example, found that Catalan-speaking learners of English devoice final obstruents at a rate and with patterns that can be explained only in terms of L1 transfer. Universal principles alone cannot account for these results because this would mean that final obstruent devoicing “would be predominant in all ILs, regardless of language background. Similarly, its strength cannot be explained solely as L1 interference because nonuniversal L1 rules like Spanish spirantization are not found to transfer to the same extent” (Cebrian, 2000, pp. 22–23).

With respect to voice onset time or VOT, in many languages this is an important and often sufficient acoustic cue for distinguishing between stop consonants that represent different phonemes. Even though VOT is just one characteristic of a person’s segmental speech production, a number of studies have confirmed that VOT values are closely correlated with overall judgments of the nativeness or accentedness of one’s speech (Flege & Eefting, 1987; Major, 1992). There may be many factors that affect a person’s VOT in any particular instance. For example, a study by Flege et al. (1998) showed that the VOT of the English /t/ produced by Spanish-speaking learners of English varies according to phonetic environment, and the accuracy with which they produce VOTs “is

probably the result of age-dependent variations in the subjects' ability to detect cross-language phonetic differences, to establish phonetic categories, to establish new phonetic realization rules, to modify existing realization rules, or some combination of these" (p. 177). In all of these cases, transfer is one of the important factors affecting learners' perception and production of L2 segments.

So far, we have dealt with phonological transfer exclusively from the perspective of forward transfer (i.e., $L1 > L2$). However, and quite notably, phonological transfer occurs not only in the forward direction, but also in the reverse direction (i.e., $L2 > L1$). Current research in phonology suggests that the human perceptual system remains somewhat flexible throughout the life course and carries out modifications in response to changes in sensory input. Consequently, in addition to reliance on L1 transfer, L2 learning may involve a certain degree of "restructuring of the acoustic-phonetic space encompassing both L1 and L2" (Leather & James, 1996, p. 279). Both in perception and in production, this restructuring may result in L1 parameter values that deviate from monolingual norms in the direction of the norms established for L2 (Flege, 1987b; Laeuffer, 1997; Leather & James, 1996). As a result, some L2 users are no longer perceived as native speakers of their L1. For instance, one of the American informants in Lomama's (1998) study of English L2 users of Finnish complained: "After five years here in Finland I went back to the States and the neighbors asked which country I am from" (p. 65).

Several studies indicate that even when L2 learning takes place post puberty, the second language phonology may affect that of the first language, for instance, in the perception and production of VOT (Fischer-Jorgensen, 1968; Flege, 1987a; Flege & Eefting, 1987; Major, 1992, 1993; Williams, 1979, 1980). In a very detailed study, Major (1992, 1993) looked at the VOT continuum of five American immigrants in Brazil, comparing them to monolingual speakers of Brazilian Portuguese and American English. The elicitation procedures included reading word and sentence lists, and tape-recorded conversations, thus allowing the researcher to examine formal speech (list reading) and casual speech (conversation). It was found that the VOTs in the participants' English deviated from the monolingual speaker values toward the direction of Brazilian Portuguese; for some, this deviation was highly significant ($p < 0.001$). Overall, the data suggested that L1 loss proceeds from casual to formal: For all participants it was greater in casual than formal style, which, in turn, may be due to greater monitoring in the formal register (Major, 1992). Similar L2 influence on L1 consonant production has been documented in the speech of French-Danish (Fischer-Jorgensen, 1968), Dutch-English (Flege & Eefting, 1987), and French-English and English-French bilinguals (Flege, 1987a).

Williams (1979, 1980) argued that L2 learning may also influence perception. Participants in Williams' studies were bilingual teenagers who were shifting from an L1 Spanish-like to an L2 English-like manner in producing both English and

Spanish word-initial voiced and voiceless tokens. The studies demonstrated that the teenagers were also undergoing changes in perception. As a function of exposure to English, they exhibited a gradual shift from a Spanish-like pattern to an English-like pattern of labeling the VOT series: All discrimination peaks were found close to the area of the English contrast.

To conclude this section, phonological transfer at the segmental level has been found in both perception and production, and in both the forward and reverse directions. Evidence for lateral phonological transfer—from an L2 to an L3—has also been documented (Hammarberg, 2001), but there is a general scarcity of existing research in this area. The research we have reviewed in this section shows that the occurrence of segmental transfer in the forward direction is very high, but that it also interacts with important universal principles (e.g., markedness, overgeneralization, universal effects of phonetic environment) and learner variables (e.g., age, phonemic mimicry ability). In the reverse direction, segmental transfer is much more subtle in that it usually does not involve segmental substitutions per se, but instead tends to affect certain segmental properties, such as voicing and aspiration. Nevertheless, even in the reverse direction, segmental transfer can be strong enough to affect listeners' ability to discriminate contrasting sounds.

3.2.2. CLI Effects on Syllable Structure and Suprasegmental Phonology

As pointed out by Leather (2003), "cross-linguistic influence in phonology is clearly not limited to matching and substitutions between the segmental inventories of L2 and L1. It extends to phonotactics" (p. 42), or, in other words, to the well-formedness constraints that govern the patterning of segmental sequences and levels of sound structure. Transfer related to phonotactics concerns both syllable structure and suprasegmental phenomena such as intonation, stress, and rhythm. Regarding syllable structure, most of the work on CLI effects in this area has dealt with problems that L2 learners have in producing consonant clusters in syllable onsets and codas (i.e., at the beginnings and ends of syllables). Such problems have been investigated in relation to several L1s, including but not limited to Arabic (Broselow, 1992), Chinese (Hansen, 2001), Japanese (Hancin-Bhatt & Bhatt, 1997), Korean (Archibald, 1998), and Spanish (Carlisle, 1998; Hancin-Bhatt & Bhatt, 1997; see also Abrahamsson, 1999 for related work involving L1 Spanish and L2 Swedish). Although not all of these studies explore the transfer issue, what is clear when comparing them is that learners who speak different L1s have different phonotactic problems and use different strategies for reducing consonant clusters that are difficult for them to produce. Moreover, this type of transfer is not just L1-specific, but is also L1 dialect-specific, as Broselow (1992) found in her investigation of Egyptian and Iraqi Arabic speakers' different

patterns of consonant cluster reduction. It is also important to point out that this type of transfer tends not to involve simple surface-level rules (e.g., of vowel insertion), but instead commonly involves deeper-level constraints related to allowable syllable structures and syllabification processes in the L1 (e.g., Archibald, 1998; Broselow, 1992). A final observation, however, is that when syllable-structure transfer does occur, it is conditioned by the phonetic environment (e.g., Abrahamsson, 1999; Hansen, 2001), and tends not to violate certain universal phonological principles related especially to markedness, sonority, and feature geometry (Archibald, 1998; Carlisle, 1998; Hancin-Bhatt & Bhatt, 1997; Hansen, 2001).

In addition to syllable structure, CLI effects have also been found in areas of prosody, including intonation, stress, and rhythm. At present, such prosodic or suprasegmental transfer has been examined in relatively few studies that deal with either forward or reverse transfer. In the forward direction, research prior to the 1990s indicated that listeners are generally unable to hear L2 intonation patterns objectively, but instead tend to perceive them in accordance with already-internalized L1 intonation categories (see Levis, 1999 for a review of these findings). The importance of forward transfer in learners' perception of L2 suprasegmental phonology is further confirmed by the work of Leather (1987, 1997), who has shown that speakers of non-tonal languages (English and Dutch) rely on L1 pitch patterns in their perceptual categorization of lexical tones in a tonal L2.

Recent research on suprasegmental transfer has given attention not only to perception but also to production, particularly as it relates to L2 learners' pitch range and the ways in which they distinguish levels of stress and prominence in their oral production of L2 syllables (see Celce-Murcia, Brinton, & Goodwin, 1996, p. 26; Leather, 2003). A study by Kaltenbacher (1997), for example, indicates that Japanese-speaking learners of German use syllable length as a means for realizing stress, presumably due to the influence of their L1. Crucially, such adjustments to syllable length also affect intonation and rhythm, and studies on L2 rhythm since the 1990s have shown that rhythm—especially the placement, regularity, and length of intervals between stresses (cf. Ladefoged, 2006, p. 245)—may be one of the most important indicators of a learner's accent (see, e.g., Celce-Murcia, Brinton & Goodwin, 1996; Munro, Derwing, & Burgess, 2003). (See Toivanen, 2001 for a thorough examination of the intonation of Finnish learners of English.) Concerning specifically the placement of stresses, Guion, Harada, and Clark (2004) found that late Spanish-English bilinguals differed from early Spanish-English bilinguals and from monolingual native speakers of English in their preference for initial syllable stress when using English. The authors argued that this preference may be due to the forward transfer of a Spanish distributional pattern in which penultimate stress is the most common pattern in the lexicon.

Research on suprasegmental transfer in the reverse direction has been far more limited, but two important studies need to be mentioned. One is Andrews (1999), who elicited spoken interview data from ten Russian-English bilinguals, all of whom were born in the Soviet Union and left for the United States either in late childhood or in early adolescence. The interviews, based on a picture series, involved a structured set of responses, and this facilitated comparisons between Russian-English bilinguals and American monolinguals. The author identified several areas where the L2 English influenced the L1 intonation of the study participants in ways that included the adoption of English-like high falls and rise-falls, a predominance of declarative utterances with falling tones where in Russian one would expect a rising tone, and the adoption of the English rising tone in yes/no questions where in Russian one would expect a falling tone.

Another important study that documents suprasegmental transfer in the reverse direction is Mennen (2004). In this study, five Dutch speakers who had learned Greek in adulthood were asked to read aloud several test sentences, first in Greek and then in Dutch. Their renderings of these sentences were digitally recorded and analyzed in relation to the timing of dips and rises in their intonation contours (i.e., fundamental frequencies). These contours were then compared with those of monolingual Dutch and Greek speakers who performed the same reading task in their native languages. The results of the study showed that four of the five Dutch-Greek bilinguals exhibited Dutch influence (forward transfer) in their Greek intonation, reaching the peak of their intonation contours considerably earlier than native speakers of Greek and at a point that was comparable to the mean for the native speakers of Dutch. The effects were bidirectional, however, and those same four speakers exhibited Greek influence (reverse transfer) in their Dutch intonation, showing far less sensitivity than the native Dutch group to vowel length in the timing of their intonation peaks. Given that Greek vowels are all “of equal phonological weight” (Mennen, p. 546), and therefore that there is no relationship between vowel length and intonation contours in Greek, the researcher concluded that L2 effects in this case seem quite likely. Of course, this study, like that of Major (1992, 1993), needs to be replicated with higher numbers of participants.

In short, the research on transfer at the suprasegmental level has documented important CLI effects related to syllable structure, intonation, stress, and rhythm, and has shown that CLI interacts with other important variables, including phonetic environment and universal phonological constraints. Most of this research concerns forward transfer, so there is still a great need for more research on lateral transfer (e.g., $L2 > L3$, $L3 > L2$) and reverse transfer. There is also a need for research on CLI as it relates to the perception of suprasegmental properties, as well as CLI related to the interaction between the segmental and suprasegmental levels of representation (as called for by Archibald, 1998 and Leather, 1999).

3.2.3. Orthographic Transfer

We use the term *orthographic transfer* to refer to a phenomenon that might more properly be referred to as writing system transfer—a phenomenon that Cook and Bassetti (2005b) have argued is distinct from language transfer:

Because of the distinction between language and writing system, it is not so much aspects of the language itself that may be carried over as the attributes of a particular writing system. It is not Chinese *per se* that is transferred by Chinese learners to the English writing so much as features of the Chinese morphemic writing system. (p. 29)

We agree that this is a necessary distinction, but we also see an important connection between orthographic transfer and language use, especially as it relates to the effects of orthography on pronunciation and the effects of phonology on spelling. When acquiring literacy skills in an L1 that uses a phonetic alphabet, people learn important sound-character correspondences that can transfer into their acquisition and use of a second language. One well-known but nevertheless poorly documented phenomenon is the tendency for language learners to pronounce L2 words following the sound-letter correspondences of their L1s. For example, in a personal communication with one of the authors of this book several years ago, a Finnish woman recounted a trip she had once made to the United States. She talked about how she had gone on a motorcycle ride through the desert with an American friend of hers, and when they stopped at a concession stand along the way, she asked for water, but no one could understand what she meant. She had pronounced *water* the way it would be read in Finnish, essentially as [vater]. After she had recounted this story, she was asked to listen to and repeat the American pronunciation of *water*, but she was so fixed on the orthographic representation of this word that it overrode her ability to hear the way it was actually pronounced. After some frustration, the person she was speaking with wrote the made-up word *uadö* and asked her to pronounce it. When she did, to her surprise, she was indeed able to say *water* intelligibly, even while relying solely on sounds from her L1.

The example just given concerns the effects of orthography on speech, but nearly all of the relevant research in this area deals with orthographic effects on the written language—on either reading or spelling. The research on reading has mainly considered the differential effects of alphabetic versus nonalphabetic L1 orthographies on learners' abilities to process and make judgments about written words in an L2. As usual, the L2 in question is typically English, and some of the alphabetic–nonalphabetic L1 pairings have included Indonesian versus Chinese (Muljani, Koda, & Moates, 1998), Korean versus Chinese (Wang, Koda, & Perfetti, 2003), Russian versus Japanese (Wade-Woolley, 1999), and Persian versus Chinese and Japanese (Akamatsu, 2003). As a group, the studies that have

compared learners from these L1 backgrounds have found that learners with alphabetic literacy backgrounds rely somewhat more on phonological information than on orthographic information when reading English words, with the result that they display superior performance in tasks that require them to manipulate sublexical phonological segments of written words, make lexical judgments based on intraword information, process constituent letters of a word, and make decisions about a word regardless of the case (e.g., cAsE) of its constituent letters. Learners with nonalphabetic literacy backgrounds, on the other hand, have been found to rely more on orthographic than on phonological information when reading English words, with the result that they tend to be superior at performing tasks that require them to choose the correct homophone (e.g., *rows* versus *rose*) in a semantic judgment test, identify a correctly spelled word in a pair of homophonic items (e.g., *room* versus *rume*), and decide whether pseudowords (e.g., *filv*, *filk*) follow legitimate orthographic patterns in the L2.

The findings of research on orthographic transfer in reading thus show that a person's L1 writing system can have an important effect on how that person processes written words in an L2, especially during the early stages of L2 literacy development (e.g., Wade-Woolley, 1999, p. 465). A necessary caution, of course, is that a learner's L2 reading abilities depend on far more than just the transfer of L1-related processes and abilities (e.g., Muter & Diethelm, 2001; Nassaji & Geva, 1999), although this should not diminish the importance of recognizing that transfer—whether language transfer or writing system transfer—is one of those many factors, and is often a rather powerful factor. Another notable point is the potential for reverse orthographic transfer (i.e., from L2 to L1), an area that has not yet been sufficiently explored. Investigations of societal CLI indicate that negative reverse orthographic and graphemic transfer does occur in L2 users (e.g., Clyne, 2003; Protassova, 2004). These investigations, however, do not differentiate between speakers with different acquisition trajectories. Kecskes and Papp (2000) offer evidence of positive reverse transfer in the development of some L1 literacy skills.

Concerning spelling, the research shows that CLI effects are widespread in this area. Perhaps the most fundamental finding in this area of research is that learners from different L1 backgrounds produce different types of spelling errors (e.g., Harding, 2000). There are, of course, many types of L2 spelling errors, and each type has multiple potential causes, such as speed and carelessness (Kung, 2004), overgeneralization of L2 spelling rules (Van Berkel, 2004), and homophone confusion (Harding, 2000), among other causes. However, some spelling errors are easily traceable to L1 influence. For example, Harding (2000) found that Spanish-speaking learners of English (whose L1 phonology does not distinguish between /b/ and /v/) produce a uniquely high proportion of errors involving the substitution of {b} for {v} (e.g., **bacume* and **berry* for *vacuum* and *very*), whereas Finnish speakers (whose L1 orthography uses {v} and {w})

interchangeably) commonly substitute {w} for {v}, and Chinese speakers (whose L1 does not have a /v/ phoneme) use {f}, {l}, {th}, {s}, and {w} as substitutions for {v}. In these cases, the spelling errors made by learners from different L1 backgrounds quite clearly reflect L1 phonological categories and/or sound-symbol correspondences between the L1 phonology and L1 orthography (Okada, 2005, p. 177; see also Bebout, 1985; Seeff-Gabriel, 2003). Orthographic transfer can also have a facilitative effect, and a study by Van Berkel (2004) shows that the words that Dutch-speaking learners of English have the least trouble spelling are those that use the same sound-symbol correspondences as exist in Dutch orthography (e.g., the way *pit* is spelled in English is the same way it would be spelled in Dutch if it were a Dutch word).

In conclusion, the findings on orthographic transfer that have so far come to light show interesting and complex ways in which the L1 writing system—and its partnership with the L1 phonology—can affect a learner's ability to read, process, and spell L2 words. As we have pointed out, transfer is only one of the relevant factors that affect reading and spelling abilities, but is certainly a constant potential source of influence, especially among lower-level learners who are less familiar with the L2 orthography and lexicon. We have also pointed to the unfortunate lack of research that considers orthographic transfer in the lateral and reverse directions (but see Cook & Bassetti, 2005b, pp. 45–50 for a discussion of reverse transfer in writing systems). We hope that future research will fill this void, that it will consider the potential effects of orthographic transfer on oral word production, and that it will also consider orthographic transfer in relation to L2s besides just English. Finally, with respect to orthographic transfer in reading, there is a need for more research on the specific effects of the source-language orthography that goes beyond the general effects of an alphabetic versus a nonalphabetic source language (see Koda, 2005 for a discussion of the research that has been and still needs to be conducted in this area).

3.3. LEXICAL AND SEMANTIC TRANSFER

Lexical transfer, stated simply, is the influence of word knowledge in one language on a person's knowledge or use of words in another language. To understand the scope of lexical transfer, one must of course have an understanding of what it means to know a word. Drawing from the fields of linguistics and psychology, Richards (1976), Faerch, Haastrup, and Phillipson (1984), Ringbom (1987), Nation (1990, 2001), and others have described the characteristics of word knowledge that are most relevant to bilingualism and L2 learning. Particularly lucid is Ringbom's (1987, p. 37) characterization of word knowledge as encompassing the following six dimensions, each of which constitutes a continuum from no knowledge to full knowledge:

1. accessibility—the ability to access a word in one's mental lexicon,
2. morphophonology—knowledge of how the word is pronounced and spelled in its various forms,
3. syntax—knowledge of the word's grammatical class and syntactic constraints,
4. semantics—knowledge of the meaning(s) of the word,
5. collocation—knowledge of the multiword combinations in which the word conventionally occurs, and
6. association—knowledge of the word's associations with other words and notions.

Beyond these dimensions, Richards (1976) explained that knowing a word also entails an awareness of how frequently the word occurs in the language, how formal it is, and in which registers of the language it can be used appropriately and conventionally (see also Nation, 1990, 2001). We would also add one additional, crucial dimension of word knowledge, which can be described as the mental concepts with which a word is associated. Unlike semantic and associational knowledge, conceptual knowledge involves extralinguistic mental representations that develop during the process of language socialization and which sensitize speakers of particular languages to certain conceptual distinctions, and also make it possible for them to identify, name, and categorize objects, events, and phenomena along the same lines (e.g., Levinson, 1997; Paradis, 1997a, 2004; see Chapter 4 of this book for a fuller definition of conceptual knowledge). Combined with semantic knowledge, conceptual knowledge allows a person to identify a word's existing and potential denotations, to conceive of and visualize situations and contexts in which the word has been or could be used, and to interpret the connotations of a word and to judge its affective strength. Clearly, not even native speakers of a language have all of these abilities with regard to all of the words in their lexicons; rather, their abilities vary in accordance with several factors, including but not limited to socioeducational factors and word frequency, so that, for instance, highly educated native speakers of a particular language tend to have a more extensive knowledge of low-frequency vocabulary than do less educated native speakers of the same language (Richards, 1976, p. 78). Although the number of low-frequency words a person knows is not a reliable indicator of whether that person is a native speaker, we argue in subsequent chapters that a person's mental representations of even high-frequency vocabulary (particularly words with concrete meanings) do often reflect whether the person has learned the language as an L1 or L2.

If knowing a word means having at least some knowledge in at least some of the above dimensions as they pertain to that particular word, then what does it mean to know many words? It is important to recognize that knowing many words is not just the sum of knowing many individual words; there are also

important mental interconnections among the words we know. With regard to accessibility, for example, when a person hears the word *wiggle*, this can make other words (such as *wriggle*) more accessible within her mental lexicon. With respect to morphophonology, we have the sense that the words *go*, *goes*, *going*, *gone*, and *went* are different forms of the same word. Concerning syntactic constraints, our knowledge of *thankful* includes a specification that it be accompanied by *for*. Regarding semantics, we know that *cat* and *feline* are similar enough that they can be substituted for one another in many contexts. Our awareness of polysemy also helps us to differentiate between the various meanings of words such as *bank* or *head*. With regard to collocation, we know that *launch* tends to be accompanied by words like *ship* and *rocket*. With respect to associations, hearing or thinking a word such as *chair* makes us think of other words, such as *bench*, *stool*, *couch*, *sofa*, *desk*, *table*, *furniture*, and so forth (unless we are in a departmental meeting and it is the department *chair* that comes to mind). We could not know or do such things if it were not for important mental associations that serve as links between words in our mental lexicon.

For bilingualism and second language research, a fundamental question is whether the words we know in different languages are mentally interconnected with each other, both directly through interlingual word–word associations and indirectly through links to extralinguistic representations. If the words we know in different languages are mentally interconnected, then it follows that our knowledge of words in one language may affect how we learn, process, and use words in another language. Indeed, the findings of past and current research on lexical transfer overwhelmingly support this hypothesis. In this section we will review the findings of such research, and will focus particularly on the dimensions of accessibility, morphophonology, and semantics—the three dimensions that have received the most attention in lexical transfer research. We view the dimensions of collocation and association as being integrated with semantic knowledge (which includes mental links between words and concepts, as well as mental links between words and other words), so our treatment of these dimensions will be embedded in our discussion of semantic transfer. Some of the research related to semantic transfer also deals with conceptual transfer, and we will briefly touch on the distinction between these two types of transfer while nevertheless reserving a more in-depth discussion of conceptual transfer for Chapters 4 and 5. The dimension of syntax as it pertains to lexical transfer will be addressed in later sections of the present chapter as well as in the following chapter.

Because of the abundance of research in this area and because much of our own research and expertise lies in the area of lexical transfer, this section will naturally be somewhat longer and more detailed than the others. For clarity and convenience, we divide the section into three subsections that represent the main foci of recent lexical transfer research: (a) transfer related to morphophonological

and semantic errors; (b) CLI effects related to lexical representation, accessibility, and activation; and (c) word choice transfer—a phenomenon that involves several dimensions of word knowledge simultaneously. As will be evident, morphophonological and semantic transfer are central to all three areas of inquiry.

3.3.1. MORPHOPHONOLOGICAL VERSUS SEMANTIC TRANSFER IN LANGUAGE USERS' LEXICAL ERRORS

Although lexical errors do not necessarily entail transfer, and although transfer often does not result in errors, most of the cases of lexical transfer discussed in the literature do involve either morphophonological errors or semantic errors, or both. This is because the field has traditionally found instances of negative transfer to be more compelling and easier to verify than instances of positive transfer. In the literature, morphophonological errors resulting from transfer are commonly referred to as cases of *formal lexical transfer*, or simply as *formal transfer*. In its most recognized forms, formal transfer involves (a) the use of a false cognate (e.g., *Many offers of violence have not enough courage to speak about it*, reflecting influence from Swedish *offer* = “victim”; Ringbom, 1987, p. 157), (b) unintentional lexical borrowing involving the use of a word from the wrong language (e.g., *and then nog one* = “and then another one”, reflecting an accidental code switch into Dutch; Poullisse, 1999, p. 148) or (c) the coinage of a new word by blending two or more words from different languages (e.g., *We have the same clothers*, reflecting a blend of the English word *clothes* and the Swedish word *kläder* = “clothes”; Ringbom, 1987, p. 153).

In contrast to formal lexical transfer, *semantic lexical transfer*—or *lexicosemantic transfer* or simply *semantic transfer*—is most evident in (a) the use of an authentic target-language word with a meaning that reflects influence from the semantic range of a corresponding word in another language (e.g., *He bit himself in the language*, reflecting semantic but not formal influence from Finnish *kieli* = “tongue”, “language”; Ringbom, 2001, p. 64) or (b) the use of a calque in the target language that reflects the way a multi-word unit is mapped to meaning in another language (e.g., *he remained a youngman all his life*, reflecting semantic and compositional influence from Swedish *ungkarl* = “bachelor,” composed of the elements *ung* = “young” and *karl* = “man”; Ringbom, 2001, p. 64).

It is also relevant to point out that semantic transfer differs from conceptual transfer in the sense that semantic knowledge involves the mapping between words and concepts—which determines how many concepts and which particular concepts a word can express—whereas conceptual knowledge relates to the nature and structure of those concepts. When a Finnish speaker says in English *He bit himself in the language* (meaning “He bit himself in the tongue”), the interference from Finnish is semantic but not conceptual. Although Finnish has only one word for both tongue and language, Finns clearly have separate

concepts for tongue and language that are very similar to the concepts that English speakers have. Finnish lexical semantics maps the word *kieli* to both concepts, and when a Finn uses *language* to refer to both concepts, the person is transferring the semantic map of the L1 word to the L2 word, but is not necessarily transferring any conceptual information. By contrast, when a Finn uses the word *jar* to refer to a tin can, the influence from Finnish is likely to be largely conceptual not only because Finnish does not lexically differentiate jars from cans (using the word *purkki* for both), but also because, in our experience, Finnish speakers seem to mentally categorize jars and cans as being members of the same category regardless of whether they are made out of glass, porcelain, plastic, or metal. Of course, conceptual transfer can be and probably usually is accompanied by semantic transfer (though the reverse does not necessarily hold), so it is perhaps not surprising that most of the relevant research fails to distinguish the two and simply refers to both as semantic transfer. We consider the distinction to be crucial to a complete understanding of the mechanisms and processes underlying second language acquisition, bi- and multilingualism, and CLI, but for the sake of space and in keeping with the literature, we will not attempt to maintain the distinction in this section, but return to it in the next two chapters. (See also Odlin, 2005 for a discussion of the distinction between conceptual transfer and meaning transfer.)

Returning to the distinction between formal and semantic transfer, although there are a number of clear differences between these two types of transfer, it is also true that there are many cases where formal transfer co-occurs with semantic transfer, or where it is at least difficult to distinguish the two. False cognates serve as a lucid illustration of this fact: When a Swedish speaker says *Many offers of violence have not enough courage to speak about it*, the person's use of the word *offers* to mean victims could be analyzed either as the use of a Swedish word in an English sentence (i.e., formal transfer or lexical borrowing), or as the use of an English word with a meaning borrowed from Swedish (i.e., semantic transfer). This example may also represent a case of both formal and semantic transfer since it is likely that the Swedish speaker who produced this sentence identified the English word *offer* with both the form and the meaning of the Swedish word *offer* ("victim").

While acknowledging that formal and semantic transfer are not always mutually exclusive, past research has found that the constraints that govern the transferability of formal properties are different from those that govern the transferability of the semantic properties of words. For instance, Biskup (1992) showed that the L2 English lexical errors of German speakers tend to reflect formal transfer (e.g., to *crunk* nuts = "to crack nuts," influenced by German *knacken* = "crack"), whereas the L2 English lexical errors of Polish speakers tend to reflect semantic transfer (e.g., to *drive* a bookshop = "to manage a bookshop," influenced by Polish *prowadzić* = "manage," "lead," "direct," "drive"). So, why would

speakers of one language tend toward one type of lexical transfer while speakers of another language tend toward another type of lexical transfer? Biskup's interpretation of these results is that formal transfer is more likely to occur when the source and recipient languages are closely related (as German and English are), whereas semantic transfer is more likely to occur when the source and recipient languages are typologically distant (as Polish and English are).

There is more to the story, however, and in fact the different constraints governing formal versus semantic transfer become clearer when one examines cases where learners have at least two previous languages (two source languages) to draw from, as is the case with Finnish speakers and Swedish speakers living in Finland who study each other's languages in addition to English. What is particularly interesting about the situation in Finland is not only that both Finns and Swedes have language abilities in both Finnish and Swedish, but also that Finnish is unrelated to English, whereas Swedish is formally quite similar to English. This situation makes it possible to examine more directly the effects of language distance on learners' patterns of transfer. That is, when learners have two previous languages that are typologically distinct—one that is similar to the target language and one that is not—we can see which of the two languages has a greater influence on the learners' formal and semantic errors. Work by Ringbom (1978b, 1987, 2001) has pursued this question, and has shown that the formal lexical errors of both Finnish speakers and Swedish speakers overwhelmingly reflect influence from Swedish (e.g., *He walked under a stedge* = "He walked under a ladder," influenced by Swedish *stege* = "ladder"). Their semantic errors, on the other hand, overwhelmingly reflect influence from their L1s (e.g., *I came happy in the autumn* = "I became happy in the autumn," influenced by Finnish *tulla* = "come," "become").

These results led Ringbom to several important insights concerning both formal and semantic transfer. First, Ringbom pointed out that formal transfer results from learners' assumptions concerning formal similarities between the source and recipient languages (see also, e.g., Kellerman, 1983). Although instances of formal lexical transfer must ultimately involve assumptions about individual words, the more similar the source and recipient languages are at the aggregate level, the more likely will be learners' assumptions about similarities among individual pairs of words across languages. Regarding Ringbom's finding that Finns' and Swedes' formal lexical errors in English reflect Swedish influence, it is important to understand that Swedish and English have so many close cognates and other conspicuous formal similarities (e.g., *hus* = "house," *mus* = "mouse," *man* = "man," *hand* = "hand," *arm* = "arm," *finger* = "finger," *gräs* = "grass," etc.) that people who know Swedish (whether Swedes or Finns) quite readily assume strong formal similarities between the two languages, even where no such similarities exist (e.g., *stege* = "ladder"). Finnish, on the other hand, shares very few formal similarities with English, and it is therefore not surprising that

people who know Finnish (whether Finns or Swedes) are unlikely to assume many formal similarities between Finnish and English.

Concerning semantic errors, Ringbom recognized that these, too, result from assumed similarities between the source and recipient languages, but they result from a different type of assumed similarities than those that lead to formal errors. Formal transfer in most or all instances arises as the result of similarities that the language user has observed (or perceived, though often incorrectly) between the source and recipient languages (cf. Andersen's 1983 notion of *transfer to somewhere*, or transfer conditioned by perceived crosslinguistic similarity), whereas semantic transfer can occur regardless of observed similarities and often even in the face of observable differences (cf. Kellerman's 1995 notion of *transfer to nowhere*, or transfer occurring without any perceived crosslinguistic similarity). In other words, the findings of past research on lexical transfer indicate that learners tend to assume that any two given languages are *formally different* until or unless they observe evidence of similarities, yet they tend to assume that any two given languages are *semantically similar* until or unless they become aware of the differences. We should also point out that becoming aware of semantic differences is no easy task given that differences in meaning are far more difficult to recognize than are differences in form. Differences in form can be recognized as soon as the learner sees the word written or hears it pronounced, whereas differences in meaning are more gradually cognized, and generally require an explicit introduction to such differences, extensive study, and/or exposure to how the word is used in various contexts. Until such knowledge is attained, language users tend to assume a semantic equivalence between words in the new language and their perceived translation counterparts in a language already known (see also, e.g., Hasselgren, 1994).

As Ringbom found, the source of semantic transfer is not just any previously acquired language, but strongly tends to be the L1. This is presumably because L1 meanings tend to underlie L2 words until the learner has become highly proficient in the L2. Take, for instance, the earlier example we gave of a Finn whose knowledge of the L1 word *kieli* ("tongue," "language") leads him to assume that the L3 English word *language* carries the meanings of both tongue and language (as reflected in the error *He bit himself in the language*). (The word *tongue* in English carries both meanings, but the word *language* does not.) That person quite likely also incorrectly assumes that the Swedish word *språk* ("language") carries the meanings of both tongue and language. Thus, even if there were evidence that this learner had mentally associated the word *language* with the Swedish word *språk* instead of with the Finnish word *kieli*, the semantic transfer in this case may still ultimately originate from L1 Finnish via L2 Swedish (e.g., *kieli* > *språk* > *language*).

Ringbom (2001) did point out, however, that semantic influence can originate from an L2 in cases where the learner is highly advanced in the L2, and his

summary conclusion concerning both formal and semantic transfer is that formal transfer tends to originate from a source language that the learner perceives as being closely related to the recipient language, whereas semantic transfer tends to come from *a language in which the learner is highly proficient*. Other researchers looking at other sets of source languages, such as Basque and Spanish (Cenoz, 2001), have largely confirmed Ringbom's findings.

Several researchers have also sought to clarify the implications of Ringbom's findings. One such finding that has been pursued further is the observation that both Finnish speakers and Swedish speakers show formal lexical influence from Swedish in their use of English. Odlin and Jarvis (2004) followed up on this observation by investigating whether the types of Swedish influence that Finns and Swedes exhibit are identical. In their examination of narratives written in English by adolescent Finnish speakers and Swedish speakers who had also studied each other's languages, the researchers found that both Finns and Swedes indeed show influence from Swedish in their use of English words that are similar to Swedish words (e.g., *for* vs. *för*, *some* vs. *som*, *what* vs. *vad*). However, they also found that even though knowledge of Swedish makes Finns more likely to use such words, the ways in which Finns use these words and the frequency with which they use them are different from how and how often Swedes use them. For example, in Swedish, the verb *berätta* ("tell") is most commonly followed by *för* ("for," "to"), so it is not surprising that both Finns and Swedes correspondingly use *for* with *tell* in English (e.g., *She told it for the baker* = "She told it to the baker"). But, unlike the Swedes, the Finns overgeneralize the use of *for* to additional verbs of saying (e.g., *She said it for the baker* = "She said it to the baker"), a pattern that is incongruous with Swedish but fully congruent with Finnish: Verbs of saying in Finnish share a uniform syntactic frame (e.g., *Hän kertoi sen leipurille* = "She told it to the baker," *Hän sanoi sen leipurille* = "She said it to the baker").

Odlin and Jarvis suggested that it is Swedish influence that causes Finns to choose *for* instead of *to* with such verbs, but Finnish influence that causes them to overgeneralize the use of *for* to all verbs of saying. In other words, Swedish influence seems to affect which words the learners use, while their L1s seem to have a greater effect on how they use those words. This finding is consistent with Ringbom's observation that formal transfer tends to originate from a source language that is closely related to the recipient language, while semantic transfer tends to originate from a source language in which the learner is highly proficient (most commonly the L1). But, besides reaffirming Ringbom's observation, the findings of Odlin and Jarvis are rather intriguing concerning how formal and semantic transfer can jointly affect the use of a given word in the target language, even in cases where the formal and semantic transfer originate from different source languages at the same time.

Another of Ringbom's (1978b, 1987, 2001) findings that has been further clarified in recent research is his observation that semantic transfer tends to originate

only from a source language in which the person is highly proficient. Ringbom's own data, in fact, show that semantic transfer originates almost exclusively from the L1. As mentioned earlier, however, he did also acknowledge on the basis of anecdotal evidence that semantic transfer does sometimes occur from one non-L1 language to another non-L1 language (i.e., laterally) when the person is highly proficient in the former. Unfortunately, the existing studies on lateral lexical transfer have neglected this claim by focusing almost exclusively on errors of form, but the claim has nevertheless received unambiguous confirmation by empirical evidence of an even more profound phenomenon: semantic transfer from an L2 to the L1, or reverse semantic transfer. Reverse semantic transfer is a more profound discovery than lateral semantic transfer because it defies a common assumption about transfer, which is that semantic transfer—or transfer in general—occurs only into a language that a person has not yet adequately acquired (e.g., Krashen, 1983). This is a myth, however, and studies by Jarvis (2003), Pavlenko and Jarvis (2002), and others have shown that advanced adult second language learners—or late bilinguals—who are fully proficient in their L1s do produce lexical errors in their L1s that reflect semantic and conceptual influence from their L2s.

Jarvis' (2003) investigation is a case study of a Finnish woman who had lived in the U.S. for over a decade and had acquired L2 English to a high level of proficiency. Even though she had continued to use Finnish on a regular basis throughout those years, her knowledge of English caused her to produce L1 errors in her informal conversations with other Finnish speakers that exhibited semantic and conceptual influence from L2 English (e.g., using *ottaa* = "to take" erroneously to refer to taking a shower, taking a bus, and taking a test; failing to distinguish between *pudota* = "to fall from a higher to a lower altitude" and *kaatua* = "to fall from a vertical to a horizontal position" on the model of the English verb *fall*, which carries both meanings). Her performance on a grammaticality judgment task and self-report interview showed that she failed to recognize many of her erroneous usages as errors, suggesting that her errors truly derived from changes to her L1 lexicosemantic knowledge (and possibly also changes to her conceptual representations of, e.g., falling events). However, her L1 errors also alternated with correct forms, leading Jarvis to conclude that L2 meanings did not replace but were added to her knowledge of corresponding L1 words. This supports an earlier finding by Graham and Belnap (1986) concerning forward semantic transfer from L1 Spanish to L2 English: They found that the learners' decisions about the semantic (or conceptual) boundaries of L2 English words reflect simultaneous influence from both Spanish and English.

Important additional insights into the nature of both formal and semantic transfer can be found in a study by Pavlenko and Jarvis (2002), which is an investigation of transfer errors in both the English and Russian of 22 Russian-English late bilinguals. One important result from the study is unambiguous empirical

evidence that formal and semantic transfer can be simultaneously bidirectional: On one and the same day, an L2 user can produce errors that reflect both $L1 > L2$ transfer and $L2 > L1$ transfer, both formal and semantic. This clearly shows that the onset of $L2 > L1$ transfer is not delayed until the person becomes fully proficient in the L2, and that $L1 > L2$ transfer does not end after $L2 > L1$ transfer begins. A second important implication is that a high level of proficiency in the source language as a whole is not a necessary prerequisite for semantic transfer. Semantic transfer takes place one word at a time, and can originate from any language through which a person has acquired a new or modified semantic representation for one or more words. Of course, the likelihood of encountering manifestations of semantic transfer rises with increasing levels of proficiency in the source language, but there is no necessary threshold level of proficiency in the language as a whole that must be crossed before it can occur. In fact, what is at play in semantic and especially conceptual transfer may not be necessarily the level of proficiency per se but the level of second language socialization. As demonstrated in Pavlenko (1997), Russian foreign and second language learners of English with similar levels of proficiency differ in their references to the domain of "private" and "personal," with the latter group exhibiting evidence of reverse transfer, linked to their internalization of the Anglo notions of "privacy" and "personal space" during the process of second language socialization. In other words, it is quite possible that a high level of proficiency in a language learned outside of the environment where it is spoken may not lead to the transfer of meanings in the same way as intense socialization into a second language environment. We will return to this issue in the chapters that follow.

To summarize, studies that have investigated formal and semantic transfer in relation to lexical errors have found that the two types of transfer are affected differently by different catalysts. Formal transfer tends to occur from a source language that the language user perceives as being closely related to the recipient language, whereas semantic transfer tends to originate from a source language in which the language user has successfully acquired new semantic (and conceptual) representations (e.g., Biskup, 1992; Kellerman, 1983; Ringbom, 1987, 2001). Semantic transfer thus usually entails a high level of proficiency in the source language, but all that is required in principle is a high level of proficiency in relation to the meanings of specific words, and not necessarily a high level of proficiency in relation to knowledge of or fluency in the language as a whole (Pavlenko & Jarvis, 2002). When semantic transfer does occur, there is evidence that it may involve the addition of source-language meanings to recipient-language words rather than the wholesale replacement of recipient-language meanings with source-language meanings (Graham & Belnap, 1986; Jarvis, 2003). The same factors seem to be in force regardless of the direction of the transfer: Whether $L1 > L2$, $L2 > L3$, $L3 > L2$, or $L2 > L1$, formal transfer is most likely when the source and recipient languages are perceived as being typologically

related (see also Hammarberg, 2001), and semantic transfer is most likely when the language user has successfully acquired language-specific meanings in the source language. Secondary factors that may also affect formal, semantic, and other types of transfer will be discussed in Chapter 6.

3.3.2. CLI Effects in Lexical Representation, Lexical Accessibility, and Lexical Activation

Linguistic transfer in most cases arises from interlingual associations formed between structures (e.g., words) in two or more languages. One of the important consequences of these interlingual associations is that the use of structures in one language will often activate the corresponding structures in the other language. This is the main concern of the present section, which will address the following three inter-related questions: How are words from two or more languages stored in the same mind, and what is the nature of the mental links between them? How do the mental links between languages affect our ability to access and retrieve words? Does the existence of such links mean that our use of words in one language will simultaneously activate words in another language?

Regarding the first question, although the field still has a long way to go in explaining how languages are stored in the mind and what types of mental links exist between them (see Singleton, 1996; Kroll & De Groot, 2005), a consensus is nevertheless building that word-related knowledge is represented at three distinct levels (e.g., De Bot, 2004b; Kroll & De Groot, 1997; Levelt, 1989; Pavlenko, 1999). The first level is the level of lexemes, or the forms of a word. This includes knowledge about the pronunciation and spelling of the inflectional forms of a word. Our knowledge of the word *go*, for example, would include phonological and/or orthographic representations for the following lexemes: *go*, *goes*, *going*, *gone*, and *went*. The second level is the level of the lexical lemma. The lemma level is an abstraction. It is the level at which we recognize *go*, *goes*, *going*, *gone*, and *went* as being forms of the same word (of the same lemma). It is also the level of the word's lexical entry—information about its grammatical class, subcategorization frame, and other syntagmatic (collocational and syntactic) constraints. Additionally, it is the level of the word's semantic specifications, or the level at which a blueprint is kept for how the word's forms map onto conceptual meaning (Levelt, 1989, p. 11). This includes polysemic information, such as a specification that the word *chair* maps onto the concept of a specific type of furniture as well as onto the concept of a person who heads a committee or department. The third level is the level of concepts. This is the level where visual, aural, olfactory, tactile, kinesthetic and other types of impressions, images, properties, schemas, and scripts are stored and organized into conceptual categories (Keil, 1989a, b, 1994; Malt, 1993; Murphy, 2002). These conceptual categories in turn are integrated into a person's web of knowledge about the world and of how

the world works. Some of the mental concepts we have are not directly linked to language, but a great number (perhaps most) of them are mapped onto words and other linguistic structures (cf. Levinson, 1997). Concepts that are mapped onto words can have links to multiple lemmas (e.g., [BUY] and [PURCHASE]), just as lemmas can be mapped onto multiple concepts (e.g., [CHAIR] is mapped to the concept of a type of furniture and the concept of a position of leadership). We will assume for present purposes that the lemma [GO] is mapped onto a single concept, and that our conceptual knowledge of this word includes, among other things, visual images related to going as well as image schemas that represent movement toward a distal goal and away from a proximal point of reference. Figure 3.1 is a simplified illustration of the relationship among the three levels of lexical representation for the word [GO].

As a person acquires a word in a new language, there are multiple ways in which the new word might become mentally associated with a word in an already-known language. One way is for various lexemes of the new word to become directly linked to their closest counterparts in the already-known language. For example, an L1 English speaker who is learning L2 Finnish might learn to associate the L2 lexeme *mennä* with the L1 lexeme *go*, the L2 lexeme *menee* with the L1 lexeme *goes*, the L2 lexeme *menossa* with the L1 lexeme *going*, and so forth (cf. Kroll & Stewart, 1994). Alternatively, the learner might link the newly acquired L2 lexemes directly to the L1 lemma [GO] (e.g., Jiang, 2000, 2002). A further possibility is for the learner to create within her mental lexicon a new L2 lemma ([MENNÄ]) for the newly acquired L2 lexemes, and to mentally link the L2 lemma to its L1 counterpart ([GO]). Yet one more possibility is for the learner to associate the L2 lemma [MENNÄ] with the concept that underlies the L1 lemma [GO] (e.g., Jarvis, 1998). Finally, any combination (or even all) of these types of interconnections may exist simultaneously.

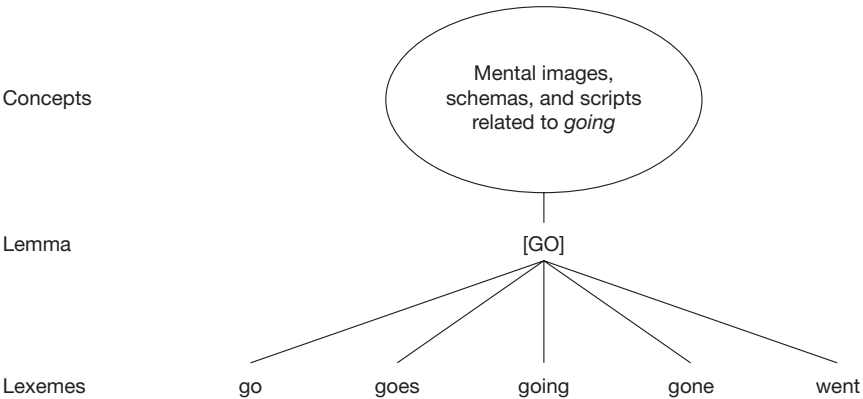


FIG. 3.1. Three Levels of Lexical Representation

The possibilities just described relate to typical cases where close translation equivalents exist across languages, but there are also numerous cases where close translation equivalents do not exist across languages. For example, Russian does not have a word or notion corresponding closely to [GO], but instead uses verbs that more specifically indicate the manner of movement. The types of motion commonly subsumed under *going* in English are differentiated in Russian as *idti/khodit'* (= "walking"), *ekhat'/ezdit'* (= "riding" / "driving"), *vesti* (= "driving"), and so forth, and an English-speaking learner of Russian would probably create mental links between English and Russian lexical representations related to [GO] that are far more complex than what we have described. Lexical acquisition is also more complex than what we described in the preceding paragraph when it involves the acquisition of new concepts and the restructuring of already acquired concepts. These are issues that will be discussed in depth in the following two chapters.

The foregoing discussion summarizes our current understanding of how mental lexical representations may be linked across languages, and the next question is how the mental links between languages may affect a person's ability to access and retrieve words. Now, there exists a great deal of anecdotal evidence that knowledge of words in one language may impede a person's ability to access words in another language. We, the authors, have experienced this phenomenon ourselves where, for example, during a conversation or lecture we had a thought that we wanted to express, but the only word for that thought that would come to mind was a word in the wrong language. Meara (1999, 2004) is one of the few researchers to have addressed this phenomenon in the literature, and his explanation relies on random Boolean networks that link words within and across languages, and simple Boolean rules that allow only select words in a person's bilingual mental lexicon to be accessible for production. Through the use of computer simulations of vocabulary attrition, Meara has demonstrated the importance of "understand[ing] how the processes we are interested in operate in a network, rather than at the level of individual words" (2004, p. 154). Among other things, Meara has demonstrated that the degree to which a word is activated or deactivated (i.e., accessible for retrieval or not) may depend largely on its links to other words that either are or are not activated.

Most of the relevant research has not approached lexical accessibility from the perspective of lexical networks, and most studies have also used human subjects instead of computer simulations. The way that most researchers have been addressing the question of lexical accessibility is by considering the mental processes and routes through which words in different languages are accessed. Normally, this is done by examining the time it takes (i.e., response times or latencies) to perform certain lexical retrieval tasks, such as accessing a word in one language from its translation equivalent in another language. In one such study, Kroll and Stewart (1994) found that a group of Dutch-English bilinguals could

translate words more quickly from L2 to L1 than from L1 to L2, and on this basis concluded that translating from L2 to L1 proceeds directly from the L2 word to the L1 word, whereas translating from L1 to L2 is indirect, proceeding from the L1 word to the conceptual level and then to the L2 word. (Kroll and Stewart did not distinguish between the lexeme and lemma levels.) This hypothesis is commonly referred to as the Asymmetry Model or the Revised Hierarchical Model, and the essence of the hypothesis is that mental links are typically stronger in one direction than in the opposite direction, and that mental processes tend to follow the paths of the strongest links. The authors interpreted their results as showing that the strongest link from an L1 word is to its conceptual representation, whereas the strongest link from an L2 word is to its L1 counterpart. Alternatively, these findings could also be explained in terms of activation levels—i.e., highly activated L1 words may be easier to access, while more inhibited L2 words may require a longer lexical search (cf. Green, 1993, 1998; Paradis, 1993, 2004).

In a very similar experiment, De Groot, Dannenburg, and Van Hell (1994) confirmed that, on the whole, translating from L2 to L1 does tend to be faster than translating from L1 to L2, but they also found that the speed of translation in both directions is affected by how concrete the meaning of the word is. Consequently, since translating in either direction is affected by the meaning of a word, the researchers concluded that both directions of translation involve the mediation of the conceptual level, though the involvement of the conceptual level in L2 to L1 translation may be less than in L1 to L2 translation, given that the former is still faster. The only situation in which concept mediation generally does not play a role in word translation, according to the authors, is where the learner or bilingual translates a close cognate from one language to the other. In fact, close cognates tend to be translated so readily and quickly in either direction that De Groot et al. suggested that L1 and L2 cognates have exceptionally strong formal links in the bilingual mental lexicon so that translation can take place directly at the lexeme level without calling up the associated conceptual representations.

Language users' attempts at accessing and retrieving words during translation tasks are sometimes met with failure, and when this happens, CLI does not appear to play a strong role. There are two general types of retrieval failure during a translation task: a complete failure to retrieve a translation equivalent after an extensive mental search, and the retrieval of an incorrect translation equivalent. According to Ecke (2001), both types of retrieval failure primarily involve influence from within the target language of the translation task. The lexical candidates for translation that come to learners' minds during their mental searches for the target word (and the erroneous translation equivalents that they may produce) tend to be target-language words that are semantically or associatively related to the target word. This, of course, does not mean that translation problems are devoid of CLI. As we discussed earlier, the lexical errors that learners produce during translation and other language tasks very frequently reflect

formal and/or semantic transfer (e.g., Biskup, 1992; Cenoz, 2001; Ecke, 2001; Ecke & Hall, 2000; Hasselgren, 1994; Ringbom, 2001).

We now turn to the third question, which deals with whether a person's use of words in one language will simultaneously activate words in another language. The researchers who have explored this issue have considered various types of experimental evidence, including neighborhood effects in word recognition, crosslinguistic semantic priming, and the processing of cognates and interlingual homophones/homographs (see De Bot, 2004b for a review of these types of evidence). There is also a body of research on background language activation that deals with empirical evidence that does not come from controlled experiments, and it is this type of evidence that we will review here. Most of the studies that have investigated crosslinguistic lexical activation in freestyle oral communication have done so from the perspective of formal lexical interference, which normally involves the use of words from the wrong language (Hammarberg, 2001; Poulisse, 1999; Williams & Hammarberg, 1998) or lexical coinages made by blending words from different languages (Dewaele, 1998; Poulisse, 1999). Poulisse's investigation of lexical activation examined 2,000 "slips of the tongue" in L1 Dutch speakers' use of spoken L2 English. She found that 459 of the 2,000 slips reflected influence from the L1, and the sheer number of the L1-based slips—or the extent to which L1 words were observed to interfere with the learners' use of the L2—led Poulisse to conclude that the learners' L1 was mentally activated during their oral production of the L2. She also concluded that certain factors seem to raise the activation level of an L1 word during L2 production, including how frequent the L1 word is and whether it has a close cognate in the L2.

Williams and Hammarberg (1998) and later Hammarberg (2001) addressed the question of simultaneous activation in the context of multilingualism, investigating a learner of Swedish with prior knowledge of English (native), German (near-native), French (advanced), and Italian (elementary). During recorded spoken interactions in Swedish over a two-year period, the learner was frequently observed to use words from both L1 English and L2 German, but very rarely from either French or Italian. Additionally, there was a substantial difference between her switches into English and her switches into German. Her switches into the L1 generally reflected metalingual comments, self-corrections, and appeals for assistance, whereas her use of L2 German words in otherwise Swedish utterances generally served no identifiable pragmatic purpose. The researchers concluded that the frequent and mainly unintentional interference from L2 German indicated that the participant's German lexicon was mentally activated during her use of Swedish, to such an extent that German words often intruded into her use of Swedish. L1 English, according to the researchers, was activated to a much lesser degree, as evidenced by the fact that English words rarely emerged as unintentional intrusions into her Swedish. The researchers attributed

the strong background activation of German over English, French, and Italian to four important factors: (a) the learner was *highly proficient* in German, (b) German is *closely related* to Swedish, (c) the learner had used German *recently*, and (d) German was *not the native language* of the learner. Regarding this last factor, Williams and Hammarberg assumed that learners have a higher propensity to suppress the L1 than they do a non-L1 background language (see also De Bot, 2004b).

Research by Dewaele (1998), however, has shown that the L1 can in fact be activated to a higher degree than a non-L1 background language in the use of a third language. His participants were L1 Dutch speakers who had learned English and French as additional languages. Some of the participants had begun learning English before French, and the others had begun learning French before English. Both groups were crucial to his findings. In the study, French was the language that the participants used during informal speaking tasks, and the focus of Dewaele's analysis was on the "lexical inventions" that they produced while speaking French. The results of his analysis show that the most common source of lexical inventions in the participants' oral production of French was French itself, involving, for example, the wrong form of a verb (e.g., using *pouver* instead of *pouvoir* = "to be able"). However, there were also a large number of lexical inventions that involved transfer from either Dutch or English, or both. The number of instances of transfer from Dutch and English was nearly equal when the data were examined as a whole, but the picture changed when Dewaele recategorized the results according to whether French was the L2 or the L3 of the participants. Viewed in this manner, "it appears that the French L2 speakers (who have English as an L3) transfer more from their L1 (Dutch) whereas the French L3 speakers transfer more from their L2 English" (pp. 486–487). These are intriguing findings concerning activation because they show, first of all, that words from more than one language at a time can be mentally activated during a person's use of the target language. Second, they confirm that background languages (or the words within those languages) are not simply either activated or not activated, but can represent various levels of activation. Third, Dewaele's findings provide an important contrast to the findings of Hammarberg (2001) and Williams and Hammarberg (1998) because they show that the background language with the highest level of activation can be either the L1 or a post-L1 language, depending on factors not recognized by Hammarberg and Williams, such as the order in which the language was acquired in relation to the language currently being used. These findings are confirmed and further expanded in a recent survey of the literature on multilingual lexical activation by De Bot (2004b).

To summarize, the existing research on CLI effects in multilingual lexical representation, lexical accessibility, and lexical activation suggests that word knowledge involves three levels of representation: lexemes, lemmas, and concepts. Mental links can be established between words within and across

languages, and these links may also be formed within (e.g., lexeme to lexeme) and across levels of representation (e.g., lexeme to lemma). However, lexical representations and the links between them appear to be of varying strengths—depending on factors such as frequency and recency of use—and their strengths are believed to affect how accessible they are, which mental routes they will be accessed through (e.g., during translation tasks), and what their likelihood is of being activated during the use of another language. In multilinguals, “words from more than one language compete for activation both in production and perception, but a . . . minimal level of proficiency [or strength of representation] . . . is needed to have words from a language play a role in the selection process” (De Bot, 2004b, pp. 23–24). This does not necessarily mean that words from any language are equally likely to be activated, however, because it appears to be possible to some degree to activate or inhibit the words of a language as a set (cf. Green, 1993, 1998; Paradis, 1993, 2004). The L1 seems to be particularly susceptible to inhibition as a whole (De Bot, 2004b; Hammarberg, 2001; Williams & Hammarberg, 1998), though the L1 may be less likely to be suppressed during the use of an L2 than during the use of an L3 (Dewaele, 1998). Besides frequency and recency of use, language proficiency (or strength of representation), L2 status, and order of acquisition, two other factors that have been noted to increase the likelihood of background activation are formal similarities between the background word and a word in the target language (Poulisse, 1999) and the typological similarity between the background language and the target language (Hammarberg, 2001; Williams & Hammarberg, 1998). When background words are at a high level of activation, they can affect the speed of lexical processing and lexical decisions in the target language (De Bot, 2004b) and can also emerge as lexical intrusions into the target language in the form of crosslinguistic lexical blends and unintentional language switches (Dewaele, 1998; Hammarberg, 2001; Paradis, 2004; Poulisse, 1999; Williams & Hammarberg, 1998).

3.3.3. Word Choice Transfer

An emerging line of inquiry within the lexical transfer literature is *word choice transfer*, which relates to the ways in which a person’s knowledge of one language can affect that person’s choice of words when using another language. Even though most of the studies on lexical transfer that we have already discussed do involve word choice at some level, these studies are largely concerned with formal and semantic errors rather than with the preferential selection of certain words over others in contexts where there exist multiple alternatives. Only a few studies have investigated transfer from this latter perspective. Most of the ones that have done so have taken the approach of looking at whether L2 users from particular L1 backgrounds tend to prefer certain types of words over others in contexts where two or more types of words are possible. A study by Hohenstein,

Eisenberg, and Naigles (2006), for example, has shown that Spanish-English bilinguals are more likely to choose L2 English verbs that carry path information (e.g., *go*, *come*, *enter*, *cross*) than are monolingual English speakers, who strongly favor verbs that carry manner information (e.g., *run*, *walk*, *skip*, *leap*) in the same contexts (see Chapter 4 for a closer examination of this particular issue). Other studies, such as Laufer and Eliasson (1993) and Sjöholm (1995), have examined whether people whose L1s lack phrasal verbs tend to choose one-part verbs over phrasal verbs in their use of an L2 that has both alternatives with essentially the same meaning (e.g., *tolerate* vs. *put up with*; *disappoint* vs. *let down*; *postpone* vs. *put off*). As a body, these studies have shown convincingly that L1 speakers of Finnish and Hebrew—which lack phrasal verbs—are more likely to choose one-part verbs over corresponding phrasal verbs in L2 English than are L1 speakers of languages (such as Swedish) that have phrasal verbs. Important caveats have been noted by Sjöholm (1995), however. For example, idiomaticity and semantic complexity make phrasal verbs especially unattractive to L2 users, and even Swedish speakers avoid L2 phrasal verbs that seem too L1-like. Additionally, regardless of L1, L2 users' preference for phrasal verbs increases with increasing levels of L2 proficiency.

Research related to CLI effects in the types of words that L2 users choose also includes Bongartz's (2002) work on transfer in determiner phrases and compound nouns, as well as studies that examine transfer in the use of lexical collocations, such as Biskup (1992) and Hasselgren (1994). It also includes work on transfer related to the linguistic structures and grammatical categories (e.g., parts of speech) that L2 users select when referring to certain notions, such as when they choose an adjective (*happy*) instead of an intransitive verb (*to rejoice*) to refer to someone's emotions (e.g., Pavlenko, 2002b; Pavlenko & Driagina, 2007; Pavlenko & Jarvis, 2002). This phenomenon represents an important area of overlap between lexical transfer and discursive transfer, and we will discuss it further in section 3.5.1.

In the meantime, it is important to recognize that the investigation of learners' preferences for certain types of words over others constitutes a general approach to word choice transfer. Some researchers have also adopted a specific approach—one involving the investigation of learners' preferences for specific words in specific contexts. Research following this approach was originally conducted through the use of structured discrete-point elicitation tasks (e.g., Graham & Belnap, 1986; Ijaz, 1986), but has since been replaced largely by studies employing extended production tasks, such as narrative film retells (e.g., Jarvis, 2000a; Jarvis & Odlin, 2000; Pavlenko, 2002b; Pavlenko & Driagina, 2007). Both types of studies have found that the choice of a specific L2 word in a specific context is indeed often motivated by a corresponding L1 preference.

Work by Ringbom (1998) highlighted a neglected dimension in the study of CLI effects in language users' choice of specific words. He looked not only at which specific words language users choose (in their L2 English argumentative

writing), but also at *how often* they choose those specific words. The analysis of word frequencies has of course been widespread in the investigation of authors' writing styles (see Holmes, 1998), but has rarely been used in CLI research. Through his analysis of the International Corpus of Learner English, Ringbom showed that L1 French, L1 Spanish, L1 Finnish, L1 Finland Swedish, L1 Swedish, and L1 Dutch adult learners of English at an advanced level of proficiency differ substantially in the relative frequencies with which they use several common English content and function words. For example, Swedish speakers use the definite article *the* with a relative frequency of only 503 times per 10,000 words, whereas Spanish speakers use it with a relative frequency of 616 times per 10,000 words. The other groups fall in between these two groups with respect to their use of *the*. The statistical significance of these numbers depends on how they are analyzed; using a chi-square test with multiple words and multiple L1 groups, the significance is $p < 0.001$.

The importance of taking relative frequencies into account is that word choice is not just a matter of choosing one word over another in a specific context, but also more fundamentally involves creating a context for the word to be used, in the first place (see also, e.g., Schachter, 1974). This gives an indication of a person's patterns—not just preferences—of word use. There is, nevertheless, one very notable limitation in Ringbom's approach to word choice transfer, which is a limitation that is shared by nearly all existing studies of word choice transfer. It is the practice of examining word choice tendencies individually and separately rather than collectively and as a conglomerated whole. By way of analogy, one could say that an important problem with investigating word choice transfer one word at a time is that it can result in seeing only individual trees and not the entire forest, or in seeing only individual stars and not the entire constellation. Crucially, where CLI effects may seem slight or nonexistent in analyses of individual words (e.g., Jarvis, 1998), the overall effect of CLI on language users' word choice constellations may be rather striking, as Jarvis, Castañeda-Jiménez, and Nielsen (2004) have found.

The study by Jarvis et al. set out to address weaknesses in existing research on word choice transfer, and received a good deal of its impetus from the evolving field of stylometry. *Stylometry* involves the use of sophisticated statistical procedures for identifying an unknown author according to his or her patterns of language use, especially according to the person's lexical signature (Holmes, 1998; Meara, Jacobs, & Rodgers, 2002). A lexical signature is understood to mean a person's unique, overall pattern of word choice, and this can be determined in different ways. One way is by creating a binary signature (e.g., 010010110) that reflects a person's use versus nonuse of a set of words (Meara et al., 2002), and another way is by creating a statistical model of the person's lexical signature on the basis of the relative frequencies with which the person uses those words. Jarvis et al. chose the latter approach.

Although stylometric analysis typically focuses on the identification of a specific writer, Jarvis et al. assumed that writers who speak the same L1 tend to share similar lexical signatures, and that it may be possible to identify the L1s of L2 writers on the basis of their lexical signatures. Participants in the study included 446 speakers of five L1s: Finnish, Swedish, Danish, Spanish, and Portuguese. The data were the participants' written English narrative descriptions of a silent film, and the words the participants used to describe the film were tabulated and converted into relative frequencies. The relative frequencies of the 53 most common words in the database were used as the basis for constructing a statistical model (through discriminant function analysis) of the distinguishing characteristics of the lexical signatures of each L1 group. Then, the statistical model was used to predict the L1s of each writer based on how closely their own lexical signatures matched the centroids for each group. With all 53 words included in the model, the L1s of 89.5 percent of the writers were correctly identified, and with just 24 carefully selected words included in the model, the classification accuracy rate remained above 80 percent. To confirm this finding, Jarvis et al. applied the model to 61 additional texts that were not used to construct the model, and the classification accuracy rate was still close to 70 percent—well above the 20 percent level of chance (i.e., chance would have classified a text randomly into any one of five L1 groups). These findings leave little doubt that a person's L1 can have an effect on his or her patterns of word choice in an L2, and likewise suggest that word choice transfer, which is often inconspicuous, can have very striking consequences.

A person does not always need to rely on statistics to appreciate this fact. The importance of word choice transfer on a person's lexical signature is well familiar to bilingual writers. The Dominican-American writer Julia Alvarez (1998), who writes in her L2 English, has observed that her own word choices are often influenced by her native Spanish, and she has recounted an amusing episode in this regard:

An editor who was working with me on a magazine story noted that I overused the word "little". A little coffee, a little desert, a little cough. And sure enough with the computer word-finder I discovered a dozen more examples of my overuse. Then I realized, I was translating from the Spanish diminutive, so common in family usage, where nicknames and small versions of large versions are always being distinguished and derived from each other. (p. 127)

In summary, the research on word choice transfer clearly shows that word choice preferences can and often do transfer from one language to another. They affect the types of words that language users tend to choose (e.g., phrasal verbs versus one-part verbs) as well as the specific words that they tend to choose in specific contexts (e.g., *be happy* versus *rejoice*, *in* versus *on*). Additionally, and at a

more fundamental level, word choice transfer affects how often language users create the contexts in which those words are relevant to begin with. Work by Ringbom (1998) and Jarvis, Castañeda-Jiménez & Nielsen (2004) suggests that this effect on the relative frequencies with which certain words are used may be stronger (if less conspicuous) than are the effects of CLI on the choice of one word over another once the relevant context has been created. So strong, in fact, are the effects of CLI on the relative frequencies with which learners choose certain words that, when combined into an appropriate statistical model, they appear to make possible the identification of learners' L1 backgrounds with a surprisingly high level of accuracy.

3.4. MORPHOLOGICAL AND SYNTACTIC TRANSFER

Whereas the importance of CLI has long been acknowledged in the areas of phonology and lexis, this has not been true for morphology and syntax. Morphological transfer and syntactic transfer have been treated with a great deal of skepticism all the way to the present. The skepticism has arisen in part from an overly narrow understanding of the ways in which CLI effects can be manifested, and has likewise arisen from a failure to recognize CLI effects obscured through their interaction with other variables, such as simplification and overgeneralization (e.g., Jarvis & Odlin, 2000).

3.4.1. Morphological Transfer

One of the long-perpetuated myths about morphological transfer is that bound morphemes (e.g., affixes such as the plural *-s* marker in the word *cars*) are impervious to transfer. This claim relates primarily to inflectional morphology, and Eubank (1993 / 1994) is one of the more recent scholars to endorse "the idea that inflection does not transfer even though other aspects of the [native language] may" (pp. 183–184). He later clarified that this claim concerns "overt inflectional morphology," such as the use of a German agreement marker with an English verb (e.g., *we go-en*), which he says "generally" does not happen (Eubank *et al.*, 1997, p. 176). On the other hand, although there have been only a few studies that have reported the overt transfer of bound inflectional morphemes, some of the studies that have documented it have suggested that it is not so uncommon. For example, data originally reported in Duškova (1984) and later discussed in Selinker and Lakshamanan (1992) show that L1 Czech learners of Russian often use Czech inflectional morphology with Russian words (e.g., using *rabotnice* instead of *rabotnicy* = "workwomen"). Likewise, De Angelis and Selinker (2001) showed that L1 English and L1 French speakers often transfer inflectional morphology from L2 Spanish into L3 Italian (e.g., using *personas mafiosas* instead of

persone mafiose = “mafia persons”). Other studies that point to the overt transfer of bound inflectional morphemes (both from L1 to L2 and from L2 to L1) are mentioned in Jarvis and Odlin (2000). Together, these studies indicate that the real question is not whether overt morphological transfer does occur, but rather what constrains this type of transfer, and what causes it to occur frequently in some circumstances and rarely or never in others. The cases of overt morphological transfer observed in the relevant studies generally involve instances where the source and recipient languages have similar word stems, but this finding is not consistent enough to allow us to conclude that crosslinguistic similarity is either a necessary or sufficient predictor of overt transfer of inflectional morphology. Clearly, more work in this area is needed.

In the meantime, for Jarvis and Odlin (2000), the claim that overt inflectional morphology does not transfer is not only inaccurate, but also obfuscates the fact that L2 users very frequently do exhibit CLI effects in their language comprehension and production that show that they have made interlingual identifications (or crosslinguistic associations) between bound morphemes in one language and corresponding structures in another language. Indeed, the scope of morphological transfer extends far beyond the transfer of overt inflectional morphology. To explicate this fact, Jarvis and Odlin examined written L2 English data produced by the Finnish-speaking and Swedish-speaking participants in the Jarvis (2000a) study discussed earlier. The researchers’ main focus was on the participants’ reference to certain spatial relationships depicted in a silent film that was used as the prompt for their writing task. The same task was also given to L1 control groups in their native languages. The clearest evidence for morphological transfer in the data was in the participants’ reference to a scene where the two protagonists in the film are sitting in the grass in front of someone’s house. The Finnish-speaking participants overwhelmingly described the protagonists as sitting *on* the grass, whereas the Swedish-speaking participants showed a preference for saying that they were sitting *in* the grass. The use of either preposition is acceptable in English depending on the length of the grass; the native English control group used *in* far more frequently than *on*, given that the grass in the film is quite high. The Swedish L1 control group used both of the corresponding Swedish prepositions, but showed a stronger preference for *i* (“in”), similar to the native English speakers. The Finnish L1 control group, on the other hand, without exception used the Finnish locative case suffixes that correspond with *on* (i.e., *-lla* / *-lle* = “on, onto, to”; e.g., *nurmikolla* = “on the grass”). The fact that the Finns’ and Swedes’ spatial reference patterns in English are different from each other but similar to their respective L1 patterns “suggests a strong role for semantic transfer in learners’ spatial reference and . . . shows that Finns, in particular, are capable of making interlingual identifications between postposed bound morphology in Finnish and preposed free morphology in English” (Jarvis & Odlin, p. 550).

In addition to morphological transfer involving semantics, Jarvis and Odlin also found evidence of morphological transfer involving structure. Although their database includes only one instance of overt Finnish morphology being transferred to English (i.e., *shelle* = “to her”), they found multiple instances of prepositional omissions—also referred to as zero prepositions (e.g., *sit the grass*)—whose source they attributed to Finnish. They reported that Finnish speakers used zero prepositions in all of the spatial contexts that were examined, whereas Swedish speakers never did. “Although the use of a zero preposition is a form of linguistic simplification, its use by the Finns also constitutes a form of transfer, given that the structural nature of . . . Finnish . . . predisposes Finns to disregard preposed function words as relevant spatial markers” (p. 550). This is because spatial relations in Finnish are generally expressed through nominal suffixes instead of prepositions, so the lack of prepositions in Finnish can lead Finnish speakers to overlook the need for spatial markers in the pre-nominal position in English. Similar conclusions about the effects of crosslinguistic structural differences have been reached by studies that have examined the acquisition and use of L2 English articles (e.g., Jarvis, 2002; Master, 1997), although these latter studies do not look specifically at transfer involving bound inflectional morphology. Where all of these studies do converge is on the finding that a person’s L1 grammatical morphology, both bound and free, can have important and multifaceted effects on the way the person uses a second language.

Although there has been little research on whether transfer involving grammatical morphology can also occur in the reverse direction (from L2 to L1), Pavlenko and Jarvis (2002) did find evidence of what might be the influence of the English pronominal case system on a Russian speaker’s erroneous pronominal case marking in the L1 (p. 206). The reality of L2 to L3 morphological transfer is even clearer, and Jarvis (2002) has shown that knowledge of L2 Swedish has a facilitative effect on Finns’ acquisition and use of English articles—to the extent that Finns with only two years of L3 English instruction but six years of L2 Swedish instruction use English articles more accurately than Finns with six years of L2 English instruction but only two years of L3 Swedish instruction. Jarvis’ explanation for this finding is that Swedish has articles that are functionally very similar to the English articles but are more perceptually salient, and this appears to enhance the rate at which Finnish-speaking learners of Swedish can learn the functions of articles and learn to recognize them as obligatory in certain contexts. They then appear to be able to transfer this knowledge successfully into their acquisition of L3 English (pp. 407–408).

Within the field of second language research, one of the most intensively investigated phenomena related to grammatical morphology is the expression of tense and aspect. Given the number of carefully designed studies that have examined this phenomenon, it would seem probable for the field to have uncovered a great deal of evidence for transfer. Yet, this has not been the case. In fact,

in a comprehensive book-length synthesis of the existing research on the acquisition of tense and aspect, Bardovi-Harlig (2000) noted that “no significant L1 effect has been identified in the longitudinal studies of the acquisition of temporal expression” and that “comparisons across studies have also revealed little first language influence” (p. 411). However, she also acknowledged that some studies, such as Collins (1999), have found some subtle effects of the L1 on the tense and aspectual forms that learners choose in a second language. This led Bardovi-Harlig (2000) to conclude that “it may thus be in the details rather than in the larger picture that first language influence is found” (p. 411).

Indeed, additional details have begun to emerge that have demonstrated important effects of learners’ L1s on their use of L2 English tense and aspectual forms. For example, in a follow-up to her 1999 dissertation, Collins (2002) found that L1 French speakers’ acquisition of tense and aspect in L2 English shows important differences from what has been reported for speakers of other L1s in past studies. On the one hand, Collins’ results are largely consistent with the Aspect Hypothesis (see Bardovi-Harlig, 2000), which predicts that when referring to the past, learners of all L1 backgrounds will use past tense marking more often and more accurately with telic verbs (verbs expressing a result, e.g., *bought the book*) than with atelic verbs (verbs with no definite endpoint, e.g., *chatted with one another*), will prefer progressive markers for activity verbs (e.g., *dancing*), and will prefer present tense with stative verbs (e.g., *see*). However, on the other hand, Collins found that her Francophone learners of English frequently used a perfect construction (e.g., *has bought* or *had bought*) as an alternative to simple past with telic verbs. This is a pattern that has not been found in previous studies with learners of other L1 backgrounds, and is a pattern that is “similar in form but not function to the French *passé composé*” (p. 85). In other words, simple past is expressed in French with morphology that is structurally similar to English perfect morphology, and French-speaking learners of English correspondingly show a tendency to mark simple past with perfect morphology. Moreover, this tendency increases with increasing proficiency in L2 English, which further highlights the fact that CLI effects are not limited to the early stages of acquisition, but in many cases can increase as learners make more and increasingly complex interlingual identifications between the L1 and L2. These findings do not directly contradict the Aspect Hypothesis, but they do show that transfer can and does occur during the acquisition and use of tense and aspect.

Collins’ findings relate primarily to formal (or structural) transfer, but a more recent study by Polunenko (2004) shows that functional transfer can also occur during the acquisition of tense and aspect. The researcher investigated L1 Russian-speaking learners of English in relation to their use of tense and aspectual markers on a cloze test similar to the one used by Collins and other previous researchers. Polunenko found that, although her participants’ patterns of verbal inflection do largely comport with the Aspect Hypothesis, there is also a clear and

significant effect of the Russian aspectual system on their choices. In particular, on cloze-test items that native English speakers use almost unanimously in the simple past, Russian speakers' responses are affected by whether the items would be marked as perfective or imperfective in Russian. The learners showed a significant tendency to use English perfect constructions with verbs that would unambiguously be marked as perfective in Russian, and conversely showed a significant tendency to use progressive constructions with verbs that would unambiguously be marked as imperfective in Russian. These findings, as well as those of Collins (2002) and Jarvis and Odlin (2002) provide strong evidence of morphological transfer even where universal principles may be primary. Additional studies discussed by Odlin (2005) present convincing evidence of morphological transfer in the areas of causation, grammatical gender, and topic continuity.

To sum up, although the wholesale transfer of bound morphemes from one language to another is a highly restricted phenomenon, it does occur quite frequently when the source and target languages are lexically and morphologically related. Even where overt morphological transfer does not occur, the relevant literature shows that language users do make interlingual identifications between the grammatical morphology (bound or free) of the source language and corresponding structures (bound or free) in the recipient language. The literature further indicates that there are no strict constraints on the directionality of such transfer. Although most of the literature focuses on L1 to L2 morphological transfer, other directions including L2 to L3 and L2 to L1 morphological transfer have also been documented. The effects of morphological transfer are highly salient when they involve the transfer of overt morphology, but when they involve subtle preferences in language users' choices of target-language constructions, they can often only be detected through careful and detailed comparative analyses designed specifically for this purpose. This is especially so where universal processes are at play.

3.4.2. Syntactic Transfer

Syntax, like morphology, has been widely assumed to be immune to CLI effects (see Kellerman, 1995 and Odlin, 1989, 1990 for in-depth discussions). Yet, as before, this assumption is not warranted, and recent studies have documented ample instances of syntactic transfer in various types of data. Syntactic transfer encompasses not only word order but also an entire gamut of well-formedness constraints, and it has been found in both reception and production. In the receptive domain of grammaticality judgments, Zobl (1992) found two types of CLI effects. The first was that learners from different L1 backgrounds often showed different patterns of acceptance and rejection in their grammaticality judgments. The second CLI effect was that multilingual language learners (i.e.,

learners who have previously learned another second language) were on the whole less likely to reject ungrammatical sentences (e.g., **She looked for her key, but she couldn't find anywhere*) than are language learners who have no prior L2s—a result Zobl believes indicates “an inverse relationship between the conservatism of the learning procedure and the pool of linguistic knowledge available” (p. 193). This does not mean that multilinguals will always be less conservative, however, and in fact Zobl's results show just the opposite pattern with respect to some grammatical constructions.

Syntactic transfer related to grammaticality judgments can also work in the reverse direction. Similar to what Zobl found in the forward direction, there is a great deal of anecdotal and some empirical evidence (Altenberg, 1991; Köpke, 2002) that learning a second language can cause a person to become more tolerant of ungrammatical constructions in the L1. Conversely, there is also some anecdotal as well as empirical evidence that learning a second language can sometimes lead a person to reject L1 sentences that are considered perfectly grammatical by monolingual native speakers. One example of this phenomenon was observed by Jarvis (2003) in a case study of a Finnish-English bilingual who rejected some grammatical L1 Finnish sentences that violated the less flexible word order constraints of her L2. That is, the relatively rigid SVO word order constraints of English appeared to influence her intuitions of well-formedness in her L1 Finnish (see Su, 2001 for additional evidence of L2 effects on L1 grammatical intuitions).

There are additional studies that have documented CLI effects in L2 users' grammaticality judgments (e.g., Gass, 1983; White, 1985, 1987), and the main thrust of such studies for present concerns is simply that CLI *does* affect language users' judgments. It is not the case that transfer is the only factor—or even usually the primary factor—that affects language users' grammaticality judgments; we have learned from numerous studies that L2 learners often make grammaticality judgments that violate or are irrelevant to the L1, and which seem to be accounted for best by an appeal to innate sensitivities and/or universal principles (e.g., Martohardjono & Flynn, 1995; White, 1987). Nevertheless, the cumulative empirical evidence does clearly confirm that grammaticality judgments are not immune to CLI effects.

Most of the research on syntactic transfer in comprehension and sentence interpretation has been conducted within the framework of the Competition Model (Bates & MacWhinney, 1982, 1989), which is concerned with how language users make use of surface cues (e.g., word order, inflectional morphology, semantics) in order to interpret the functional roles of sentence constituents. Most of the relevant research has focused on how listeners determine agent-patient relationships among noun phrases in a sentence, and the transfer issue has arisen from the finding that different languages differ with respect to which cues are given priority in the interpretation of such relationships. For example,

English speakers tend to rely mainly on word order when deciding which noun is the subject and which is the direct object, whereas Italian speakers tend to rely mainly on subject–verb agreement, and Japanese speakers tend to rely more heavily on whether the noun is animate or inanimate.

Numerous studies have been conducted within the framework of the Competition Model using bilinguals and second language learners representing a variety of L1s and L2s (e.g., Gass, 1987; Harrington, 1987; Heilenman & McDonald, 1993; Kilborn, 1989; Sasaki, 1991, 1994; Su, 2001). The results of these studies have shown quite consistently that learners do rely on the preferred cues from their L1s while interpreting agent–patient relationships in their L2s. The degree to which the L1 affects their interpretations is complicated by certain factors, however, such as the level of their L2 proficiency. Learners with higher levels of L2 proficiency generally show less reliance on the L1 as they adopt the appropriate L2 cue weightings. Nevertheless, this appears to be easier in certain L1–L2 combinations than in others. For example, it may be easier to abandon a word-order-based interpretation in favor of a semantics-based one than it is to do the opposite (e.g., Gass, 1987; Sasaki, 1991; but see Su, 2001 for counterevidence).

Nearly all transfer studies conducted with adult learners and late bilinguals within the framework of the Competition Model have investigated only forward transfer, but recent studies by Cook et al. (2003) and Su (2001) have expanded the scope of inquiry to include reverse transfer and bidirectional transfer. The study by Cook et al. investigated reverse transfer, and it included monolingual and bilingual participants who were L1 speakers of Greek, Japanese, and Spanish. The bilinguals were adult L2 learners of English as a foreign language. The results of the study showed several compelling differences between the monolinguals and bilinguals, such as indications that bilinguals are less likely to “trust familiar cues such as animacy or case” (p. 212). There was little evidence of direct influence from L2 English cue weightings on the bilinguals’ L1 responses, but Cook et al. nevertheless suggested that L2 effects on the L1 include “the overall changed state of the L2 user (i.e., their multi-competence)” (p. 212), which is reflected in the different patterns of responses produced by monolinguals versus bilinguals.

Su’s (2001) study, on the other hand, does show what appears to be direct L2 influence on participants’ L1 response patterns. As described in Chapter 2, the participants included Chinese-speaking learners of English at three levels of English proficiency, as well as English-speaking learners of Chinese at three levels of Chinese proficiency. All participants were tested in both their L1s and L2s. As expected, the results showed that the learners relied on L1-based cue preferences when interpreting L2 sentences, and their reliance on L1 strategies diminished as their L2 proficiency increased. A more profound finding, however, was that when they were tested in their L1s, the participants showed an increasing reliance on L2-based cue weightings as their L2 proficiency increased. In many cases in the L1 (especially Chinese), intermediate and advanced learners of the L2 exhibited

a shift toward L2 cue preferences (e.g., word order). However, the participants did not exhibit a complete shift to L2 strategies, and in fact what often appeared to be happening was an amalgamation of their L1 and L2 processing strategies—a finding that has correlates in other transfer research (e.g., Cook, 2002; Cook et al., 2003; Flege, Frieda, & Nozawa, 1997; Graham & Belnap, 1986; Guion et al., 2000; Jarvis, 2003).

Reverse transfer has also been documented in a series of studies by Dussias (2003, 2004) that examined the parsing strategies of monolingual Spanish and English speakers and Spanish-English bilinguals. The researcher looked at how participants resolve temporally ambiguous sentences containing a complex noun phrase followed by a relative clause, as in “Peter fell in love with the daughter of the psychologist who studied in California.” Monolingual Spanish speakers tend to attach the relative clause to the first noun in the complex noun phrase (non-local attachment), while monolingual English speakers attach the relative clause to the noun immediately preceding it (local attachment). The researcher found that under the influence of L2 English, the bilingual participants exhibited a preference for the local attachment strategy in their L1 Spanish.

As in the receptive domain, syntactic transfer has also been widely documented in language production, and here its effects are similarly both direct and indirect. The most direct—or at least the most conspicuous—cases of syntactic transfer are probably those that involve adverbial placement. Transfer related to adverbial placement has received empirical attention since Selinker’s (1969) seminal work on the phenomenon, and recent work by Alonso (2002) has affirmed its importance. Through a series of experiments with adolescent and adult Spanish-speaking learners of English, Alonso showed that transfer is quite often the primary source of non-target-like adverbial placement (e.g., *I speak at home Spanish*) in L2 production, and is also an important source of target-like adverbial placement. Alonso further showed that transfer related to adverbial placement occurs more often in less structured tasks (conversations) than in more structured tasks (guided interviews), and also occurs less among higher-level learners than among lower-level learners. The exception is that higher-level learners often produce more adverbial constructions than lower-level learners do, which results in more raw instances of transfer by higher-level learners, even while the proportion of adverbials affected by transfer decreases.

Another area of syntactic transfer that has received a good deal of attention concerns null subjects (e.g., *He didn’t come last night. stayed home.*) and null objects (e.g., *He is going to build .*). Most of the studies that have investigated this phenomenon have examined learners whose L1 allows null subjects and whose L2 does not. Several such studies have relied on learners’ grammaticality judgments (e.g., White, 1985; Yuan, 1997; Zobl, 1992), but several others are based on production data (e.g., Hilles, 1991; Phinney, 1987; Vainikka & Young-Scholten, 1994). Virtually all of these studies have found that learners whose

L1s allow null elements use null elements in an L2 that does not allow them. However, there has been debate over whether this is really a transfer effect because, in many cases, the use of null elements in the L2 parallels the use of null elements by L1 acquirers (e.g., Hilles, 1991; Vainikka & Young-Scholten, 1994), and because learners whose L1s do not allow null elements also sometimes produce null elements in the L2 (e.g., Gundel & Tarone, 1992). On the other hand, the few studies that have investigated the acquisition of an L2 that does allow null subjects and null objects (e.g., Chinese) have clearly indicated that learners whose L1s do not allow null elements (e.g., English) excessively overproduce subject and object pronouns in the L2 (e.g., Jin, 1994; Xie, 1992), and also use subject and object pronouns far more frequently than learners whose L1s (e.g., Japanese, Korean) do allow null elements (Xiao, 2004). Thus, even though the acquisition of well-formedness constraints related to null subjects and objects may involve a complicated interplay of factors, the evidence that transfer is one of those factors is difficult to dispute.

Additional evidence that supports this argument comes from Gürel's (2004) study of reverse transfer in the binding conditions related to overt and null pronouns in L1 Turkish (a pro-drop language, or language that allows null subjects) under the influence of L2 English (a non-pro-drop language). To give an example of differences in pronoun binding between the two languages, in the sentence "Brian said he would come," the embedded overt subject pronoun *he* can refer to the sentential subject Brian. In contrast, in the Turkish translation of the same sentence, "*Brian o-nun gel-eceğ-i-ni söyle-di*," the subject pronoun *o* is disjointed from the antecedent and cannot refer to the sentential subject. In interpreting such sentences, the participants were asked to decide whether the pronoun refers to the sentence subject, to some other person, or both. Altogether, there were three tasks in the study: a written sentence-interpretation task, a truth-value judgment following a story presented visually, and a truth-value judgment following a story presented aurally. The participants were native speakers of Turkish who immigrated to North America as adults and had been living in the L2 environment for at least ten years at the time of testing. The results revealed that the Turkish overt pronoun *o* was attributed binding properties of the English overt pronoun "s/he," in violation of the language-specific constraints in Turkish on the binding of this pronoun in the subject position.

Syntactic transfer involving both overproduction and underproduction has also been found in various other areas of grammar, including the use of relative clauses (e.g., Schachter, 1974), articles (e.g., Jarvis, 2002; Master, 1997; Pavlenko & Jarvis, 2002; Young, 1996), prepositions (e.g., Ijaz, 1986; Jarvis & Odlin, 2000; Schumann, 1986), and cleft and pseudo-cleft constructions (Boström Aronsson, 2001). In some cases, such overproductions and especially underproductions constitute grammatical errors. However, in a great many cases they do not involve grammatical errors, and the fact that transfer research has historically

concentrated on errors may account for why syntactic transfer has so often been overlooked.

There are, of course, also a number of cases of syntactic transfer that do involve overt grammatical errors, even beyond the cases of adverbial placement, overproduction, and underproduction that have already been discussed. These include, in particular, CLI effects on the lexical entries, argument structures, and subcategorization frames that L2 users ascribe to individual verbs in the target language (e.g., Adjémian, 1983; Chan, 2004; Helms-Park, 2001; Jarvis, 2003; Pavlenko, 2002b; Pavlenko & Driagina, 2006, 2007; Pavlenko & Jarvis, 2002). Even though the processes underlying such cases could be described in terms of lexical transfer, they often manifest themselves in the form of syntactic errors (e.g., **She kissed with him*). It is also relevant to point out that these types of transfer-induced errors in L2 users' language production have been documented in the forward (e.g., Chan, 2004; Pavlenko & Driagina, 2006, 2007), lateral (e.g., Odlin & Jarvis, 2004), and reverse (e.g., Jarvis, 2003; Pavlenko, 2002b; Pavlenko & Jarvis, 2002) directions. There is also evidence of word-order transfer in all three directions (see, e.g., Bohnacker, 2005; Odlin, 1990).

A number of the studies already discussed in this section—particularly the studies involving grammaticality judgments and the studies dealing with null subjects—were conducted within the framework of generative grammar (e.g., Gass, 1983; Gürel, 2004; Vainikka & Young-Scholten, 1994; White, 1985; Yuan, 1997; Zobl, 1992). These studies are part of a rather robust line of inquiry that investigates the relationship between transfer and access to an innate, universal grammar (UG). UG is assumed to consist of well-formedness principles that apply to all languages, as well as a number of parameters (such as pro-drop, or the parameter that determines whether null subjects are allowed in a language) that are set in a language-specific manner (see, e.g., White, 2000, 2003). Although most studies within this line of research have emphasized the importance of access to UG during the process of second language acquisition, many have also pointed to the importance of transfer, especially in relation to the question of whether learners can access UG directly or only through the parameters that have already been set by the L1, or both (e.g., Camacho, 1999; Schwartz & Sprouse, 1994, 1996). Whereas the theoretical concerns of studies conducted within the generativist framework—such as what specific UG parameters are available to learners, how they are set, and whether they can be reset during L2 acquisition—are not always relevant to research outside of the UG framework, it is important to recognize that these studies have nevertheless produced a wealth of evidence of various types of syntactic transfer (and constraints on syntactic transfer) in both language reception and language production, some of which we have reviewed in this section. Accordingly, we believe that investigators of syntactic transfer who work outside of the UG framework need to be aware of the findings of UG research. Likewise, UG researchers need to be aware of the research on syntactic

transfer that has been conducted outside of the UG framework in order to avoid “the risk of making empirically unsound claims” (Odlin, 2003, p. 461).

To summarize, previous denials of the occurrence and importance of syntactic transfer can no longer be taken seriously. Research especially since the early 1990s has documented at least some CLI effects in most of the areas of syntax that have been analyzed in data elicited from bilinguals, multilinguals, and language learners, and in many areas (e.g., adverbial placement, underproduction of relative clauses, overproduction of cleft constructions), CLI effects have been found to be quite robust. Some of the most robust effects involve language users’ preferences for certain types of syntactic structures over others; given that these preferences often do not entail errors, such effects are more susceptible to being overlooked than are instances of syntactic transfer that do result in errors. With regard to both errors and non-errors, the literature has shown that syntactic transfer occurs both in language comprehension/interpretation and in language production, and occurs in both the forward and reverse directions. We have not yet seen much evidence of lateral syntactic transfer (but see Bohnacker, 2005; Odlin & Jarvis, 2004), yet we assume that this is because of the paucity of research that has so far explored this possibility.

3.5. DISCURSIVE, PRAGMATIC, AND SOCIOLINGUISTIC TRANSFER

The three types of transfer dealt with in this section extend beyond the segment, word, and sentence levels to the larger realm of discourse, rhetoric, communicative interaction, and the illocutionary functions that are performed through language. As we show in this section, CLI effects in these areas are not limited to structural matters. On the one hand, CLI certainly can and does affect the structure and organization of discourse, conversation, and speech acts. However, on the other hand, it also affects the interlocutors’ assumptions concerning the rules of polite and cooperative communication, their own roles and responsibilities within the interaction, and the types of information and the types of illocutionary acts that have been, should have been, and still need to be expressed during a particular communicative exchange.

3.5.1. Discursive Transfer

Discursive transfer concerns the ways thoughts are introduced, organized, and contextualized within an oral or written discourse, and also relates to the conversational strategies that are used to maintain a conversation, as well as the concepts and notions that are conventionally expressed in a particular discursive context. This definition of discursive transfer is quite broad given that the term

“discourse” itself has so many competing definitions. Most of the relevant research on discursive transfer has been conducted within the framework of contrastive rhetoric, which began with Kaplan’s (1966) groundbreaking work that “hypothesized that each language and culture has unique rhetorical conventions and that they negatively interfere with L2 writing” (Kubota, 1998, p. 69). The focus of contrastive rhetoric research has largely been on the way writers organize the information they present, the degree to which they contextualize it, and how and where they present their main idea(s). Recognizing that rhetorical patterns reflect not just language ability but also writing conventions, we acknowledge that our discussion of rhetoric-related transfer blurs the distinction between language transfer and writing system transfer (Cook & Bassetti, 2005b, p. 29). We will not attempt to maintain this distinction in this section, however, because we view all forms of discursive transfer as extending beyond language ability and involving conventions for organizing information, enhancing communication, and expressing thoughts and feelings—as determined by the discourse communities to which a person belongs.

A number of studies have shown that there exist different rhetorical conventions in different languages, and other studies have similarly shown that such conventions often transfer from L1 to L2 writing (for a review of both types of studies, see e.g., Connor, 1996; Kubota, 1998). For example, Japanese writers have been shown to prefer inductive rhetorical patterns, where the information presented in the writing leads up to the main idea, whereas English-speaking writers have been shown to prefer deductive rhetorical patterns, where the main idea is presented before supporting information is given. This is true of their writing in both Japanese and English (e.g., Kobayashi, 1984; Kubota, 1998). Spanish speakers, in turn, have been found to prefer an elaborative style of writing—in both Spanish and English—in which they provide more contextual details than are conventional in English writing (e.g., Montañó-Harmon, 1991; Reppen & Grabe, 1993; Thatcher, 2000; but see Lux & Grabe, 1991 for counterevidence). Additional evidence of CLI effects in rhetoric and information organization—both in speech and in writing—has been found in relation to L2 users whose native languages include Arabic, Chinese, Czech, English, German, Finnish, French, Japanese, Korean, Russian, Spanish, Thai, and Vietnamese, among others (see, e.g., Carroll et al., 2000; Connor, 1996; Lee, 2003).

Three additional profound findings from contrastive rhetoric research are worthy of mention here. The first is that discursive transfer occurs not only during production but also during reception. Previous to the 1990s, a study by Connor (1984) suggested that knowledge of L1 rhetorical conventions can interfere with a learner’s ability to recall information from an L2 reading passage that uses rhetorical conventions that are different from the L1. Also, in a more recent study, Thatcher (2000) showed that L1 (country-specific) rhetorical conventions affect the decisions that English-speaking and Spanish-speaking translators and

editors make about how texts originally written in one language need to be reworked for an audience who speaks another language. One of the probable sources of CLI effects in these cases is the participants' schemata—or background knowledge and "expectations about how discourse types are likely to be organized" (Tyler, 1995, p. 140).

The second finding is that discursive transfer occurs not only in the forward direction, but also in the reverse direction. For example, Shi (2002) found "that mainland Chinese TESOL professionals who were educated in the West tend to use Anglo-American conventions of academic writing in publishing their papers in both Chinese and English" (Kubota & Lehner, 2004, p. 11; see also Kirkpatrick & Zhichang, 2002). Moreover, Kecskes and Papp (2000) found that training in L2 English writing conventions helps improve the quality of Hungarian-speaking pupils' L1 writing.

The third finding is also illustrated by the Kecskes and Papp study. It is that the transfer of writing skills is often positive. This is true in the reverse direction, as Kecskes and Papp have shown, and also in the forward direction. With regard to forward discursive transfer, Kubota (1992) showed that Japanese and English writing share a number of similarities in their information organization, and suggested that Japanese-speaking learners of English may take advantage of these similarities in their L2 English writing. Later work by Kubota (1998) and Sasaki and Hirose (1996) similarly showed that L2 writing ability correlates positively with L1 writing ability, which implies that proficient L1 writers successfully transfer at least some of their writing skills to L2 writing.

Although the accumulated evidence for discursive transfer has by now become quite compelling, a person would be mistaken to assume that CLI effects are the only—or necessarily even the primary—effects that determine an L2 user's discourse style and organization of information. In fact, some studies that have looked for evidence of L1 transfer in L2 written discourse have failed to find such evidence (see Kubota, 1998, pp. 72–73 for a review of these studies). Other studies, such as Kubota (1998), have found that the number of L2 writers who show similarities in their L1 and L2 writing is sometimes only moderate. (Kubota found that about half of her writers showed similarities in their L1 and L2 writing.) Other factors that affect L2 rhetorical patterns include age, L2 proficiency, and experience in writing (e.g., Kubota & Lehner, 2004; Pellegrini, Galda, & Rubin, 1984).

Before we conclude our discussion of discursive transfer, we will point to two additional, important perspectives on discursive transfer, which fall outside of the contrastive rhetoric framework. The first relates to the use of conversation management strategies, and the second deals with what has sometimes been referred to as framing transfer (e.g., Pavlenko & Jarvis, 2002), which concerns CLI effects in the linguistic structures used to refer to events, relationships, emotions and other types of phenomena. Concerning the former, a study by Scarcella (1992) and several earlier studies reviewed by Scarcella have investigated the use

of conversation management strategies in the spoken language of nonnative speakers of English. The strategies under investigation have included topic shifts, topic selection, backchannel cues, pause fillers, and interruptions. The use of these conversation management strategies by nonnative speakers, according to Scarcella, not only differs from target-language norms, but also often reflects at least a trace of direct L1 influence. Scarcella's work focuses on forward transfer, but it is important to point out that the transfer of conversation management strategies can also occur in the reverse direction. For example, a study by Tao and Thompson (1991) documents L2 effects in the L1 backchannel behavior of Chinese-English bilinguals, and a subsequent study by Heinz (2003) similarly shows that German-English bilinguals exhibit L2 English influence in the frequency with which they produce backchannel responses in their L1.

Concerning framing transfer, a few recent studies have shown that discursive transfer can influence how (and even whether) concepts such as definiteness, topic continuity, causation, and emotion are referred to in a person's spoken or written discourse, and can also affect the listener's or reader's judgments about whether a particular notion (such as causation) has been expressed and about whether it has been expressed appropriately. With respect to definiteness and topic continuity, studies by Chaudron and Parker (1990), Jarvis (2002), and Young (1996) have indicated that, although these discourse notions may be subject to certain universal constraints, the ways in which learners structurally mark these notions in their L2s (e.g., with the zero article versus the definite article) often reflect clear L1 influence. Regarding causation, a study by Helms-Park (2001) has demonstrated that Vietnamese and Hindi-Urdu learners of L2 English differ significantly from each other at all levels of proficiency in their grammaticality judgments of the use of forced motion causatives (*run, walk, dance, jump*), with Hindi-Urdu speakers accepting twice as many direct causatives in this class as speakers of Vietnamese, including some ungrammatical or borderline causatives (e.g., *he ran the dog; the sitter danced the child all morning*). Another study of causation—this time dealing with production data—by Vermeulen and Kellerman (1999) shows that Dutch-speaking learners of English living in the UK exhibit an L1-like tendency not to express causation when describing certain wordless-picture-book episodes that native English speakers overwhelmingly describe with explicit causation (e.g., *The deer is moving to a cliff and the boy and the dog fall off of the cliff* [zero causation] versus *The deer dumped him into the pond* [explicit causation]). A follow-up study by Fischer (2003), using the same method of data elicitation and analysis, indicates that German-English bilinguals show a combined influence of English and German in the linguistic options they choose for expressing causation in both languages.

Finally, concerning reference to emotions—which is discursive inasmuch as it relates to how a person's participation in a particular discourse community predisposes that person to framing or expressing certain ideas in a certain way—

studies by Pavlenko (2002a, b) and Pavlenko and Driagina (2007) have shown that Russian and English offer their speakers somewhat different lexical options for referring to emotions. Both languages have emotion nouns, adjectives, verbs, and adverbs, but English favors adjectives and has only a few intransitive emotion verbs (*to worry, to pine, to rejoice*), whereas Russian favors intransitive emotion verbs above all other options. In a series of empirical studies, the researchers used the same stimuli to elicit narratives from monolingual speakers of Russian and English, advanced Russian L2 users of English living in the US, and advanced American foreign-language learners of Russian (also living in the US). A comparison of emotion vocabulary use in the four corpora demonstrated that bilingual participants in both groups used emotion adjectives (with copular verbs) in contexts where monolingual Russian speakers favored verbs and where adjectives were both unconventional and ungrammatical in Russian (Pavlenko, 2002b; Pavlenko & Driagina, 2007). The results from both groups (English-Russian and Russian-English bilinguals) thus provide evidence of both forward and reverse *transfer to somewhere* in which the participants carried over certain ways of framing particular ideas from English into an area of Russian that they perceived as being equivalent.

To summarize our discussion of discursive transfer, the relevant research indicates that discursive transfer related to textual organization, contextualization, conversation management, and the expression of events and relationships occurs in both comprehension and production. Discursive transfer has also been documented in both the forward and reverse directions, and is often positive. To our knowledge, discursive transfer has not been documented in the lateral direction—from one nonnative language to another—but we are also not aware of any studies that have specifically looked for this type of discursive transfer, so this may be a fruitful avenue for future research.

3.5.2. Pragmatic Transfer

In Bachman's (1990) model of communicative competence, pragmatic competence is characterized as including both illocutionary competence and sociolinguistic competence. Illocutionary competence is defined as the ability to recognize and carry out fundamental language functions, such as conveying information, requesting information, using language to affect the beliefs and actions of others, using language to amuse and inspire, and so forth. These functions are further classified into more specific categories of speech acts, such as apologizing, complimenting, inviting, and requesting. Sociolinguistic competence, by contrast, is related more to a person's sensitivity to and ability to adjust one's language in accordance with social conventions that call for different forms of address, different pronunciations, different words, different grammatical structures, different discourse patterns, and so forth, in different social contexts.

From Bachman's characterization of pragmatic competence, it follows that the transfer of such competence involves CLI effects both in a person's perception and performance of speech acts and in the socially influenced variation that occurs in that person's language comprehension and use. Most of the literature that uses the term *pragmatic transfer*, however, refers only to the former perspective—the illocutionary perspective—in which transfer is investigated in relation to how language learners and bilinguals perceive and perform speech acts in one or both of the languages they know. In this section, we will review the findings of research related to this illocutionary perspective on pragmatic transfer, and will turn to findings related to the sociolinguistic perspective in section 3.5.3.

Although some of the earliest investigations of the pragmatics of language learners did not find evidence of transfer (e.g., Rintell, 1979; Walters, 1979), the bulk of the studies that have followed since then have found considerable evidence of pragmatic transfer in both perception and production. In the area of perception, for example, Takahashi (1996) determined that Japanese-speaking learners of English at both low and high levels of L2 proficiency base their judgments of the contextual appropriateness of indirect English request strategies (e.g., *Would it be possible for you to extend the due date . . .*, *Would you please extend the due date . . .*) in various situations on how structurally similar they are to the request strategies that would conventionally be used in Japanese. Another example of pragmatic transfer in the area of perception is the finding by Takahashi and Beebe (1993) that Japanese-speaking learners of English tend to transfer their perception of the status relationship between professors and students from their L1 into the decisions they make about how English should be used in interactions between professors and students (see Byon, 2004 for related findings regarding Korean learners of English). This type of pragmatic transfer—which concerns decisions about how the social setting might affect the performance of a speech act—is referred to as sociopragmatic transfer, whereas the type of pragmatic transfer investigated in the Takahashi (1996) study—which relates to the linguistic means through which a speech act is realized—is referred to as pragmalinguistic transfer (e.g., Takahashi, 1996, pp. 189–190).

Several cases of sociopragmatic and pragmalinguistic transfer have also been found in production. An example of sociopragmatic transfer in production is Olshtain's (1983) observation that English-speaking and Russian-speaking learners of Hebrew display an L1-induced tendency to apologize more frequently than do native speakers of Hebrew in the same situational contexts (see Hassall, 2001 for similar findings regarding the thanking tendencies of English-speaking learners of Indonesian). An example of pragmalinguistic transfer in production is the finding by Eisenstein and Bodman (1993) that Japanese-speaking learners rely on apologetic formulas, and Middle Eastern learners rely on proverbial constructions, when expressing gratitude in English. A study by Beebe, Takahashi,

and Uliss-Weltz (1990) likewise found evidence of pragmalinguistic transfer in learners' production of speech acts, and made the further important observation that a given speech act—in this case, a refusal to a request, invitation, or offer—will often be carried out through the use of multiple semantic formulas (e.g., expressing empathy toward the interlocutor, giving an excuse, expressing regret). The researchers found evidence of transfer not just in the language structures that the learners used to make refusals, but also in the specific combinations of semantic formulas they chose to use, as well as in the order in which they used them (see also Felix-Brasdefer, 2003, regarding the use of semantic formulas by English-speaking learners of Spanish when declining an invitation).

Transfer is of course not the only factor that affects learners' pragmatic perceptions and behavior. Other important factors include overgeneralization of target-language pragmatic conventions (e.g., Robinson, 1992), length of stay in the target-language environment (e.g., Bardovi-Harlig & Hartford, 1993; Blum-Kulka & Olshtain, 1986; Omar, 1992), type and amount of instruction (e.g., House, 1996; LoCastro, 1997), and target-language proficiency (e.g., Koike, 1996; Scarcella, 1979). In many cases, learners' pragmatic performance appears to be influenced by a combination of factors, particularly by the interaction between L1 transfer and L2 proficiency (e.g., Maeshiba et al., 1996; Robinson, 1992, Takahashi & Beebe, 1987), as well as by the interaction between L1 transfer and length of stay in the target environment (e.g., Bardovi-Harlig, 1999; Bardovi-Harlig & Hartford, 1993; Blum-Kulka & Olshtain, 1986; Bouton, 1992, 1994; Hoffman-Hicks, 1999; Olshtain & Blum-Kulka, 1985; Omar, 1991, 1992). The nature of these interactions is discussed in more depth in Chapter 6.

We conclude this section, first, by reiterating that CLI effects are widespread and well known in adult language learners' sociopragmatic and pragmalinguistic behavior in a second language. It is clear that transfer is only one of many factors that affect learners' pragmatic perceptions and performance, but in this area of language use, it also happens to be a very prominent factor in the pragmatic behavior of beginning to advanced learners. While searching through the literature, we found very few studies that examine pragmatic transfer in the lateral or reverse directions, but the studies we did locate provide evidence that pragmalinguistic transfer can and does occasionally occur both laterally (e.g., from L2 Japanese to L3 Korean, see Fouser, 2001), and in the reverse direction (e.g., from L2 English to L1 Spanish, see Cenoz, 2003; Pavlenko, 2000). Nevertheless, we believe that it is wise to be cautious about claims concerning the directionality of pragmatic transfer until more research has been conducted. In the meantime, we wish to point out that the range of issues relevant to pragmatic transfer is somewhat broader than what we have been able to cover in this section, and we refer interested readers to the following excellent sources of additional information: Bardovi-Harlig (1999), Kasper (1992, 1997), Kasper and Rose (1999), and Kasper and Schmidt (1996).

3.5.3. Sociolinguistic Transfer

As we indicated in the preceding section, sociolinguistic competence involves sensitivities to distinctions made by a speech community that determine how language is to be used in specific socially and culturally defined contexts. One of the ways in which the transfer of sociolinguistic competence has been examined is in relation to the social variables that account for systematic variation in the use of specific language features. Another way of investigating sociolinguistic transfer is by looking at how a person becomes socialized into a new speech community. We will begin this section by reviewing findings related to the former perspective, and will then turn to the latter perspective.

In the former approach—i.e., the variationist approach—sociolinguistic transfer is defined as occurring when the social variables that guide a person's use of one language carry over into the use of another language. The two classic investigations of sociolinguistic transfer cited by Gass and Selinker (2001, pp. 227–229) and Odlin (1989, pp. 140–150) relate to the effects of prestige on language use. The first study is Schmidt's (1977) investigation of the use of interdental fricatives by speakers of Egyptian Arabic. In colloquial Egyptian Arabic, the voiceless interdental fricative alternates with /s/ and /t/ depending on the level of formality and prestige involved. The interdental fricative is the most prestigious form, and is the one used in Classical Arabic. In English, Schmidt found that Egyptian Arabic speakers who have a university education are much more likely to pronounce {th} as an interdental fricative than are Egyptian Arabic speakers who have only a secondary education, and both groups are much more likely to produce the interdental fricative in more formal than in less formal contexts. Thus, Egyptian Arabic speakers' use of the voiceless interdental fricative in English appears to be affected by a social constraint transferred from their L1.

The second classic study of sociolinguistic transfer is Beebe's (1980) investigation of the use of /r/ in both initial and final position by Thai-speaking learners of English. One would expect pronunciation to be more accurate in formal than in informal contexts, and this is indeed what Beebe found regarding the use of final /r/. However, initial /r/ was produced more accurately in informal than in formal contexts, and this led Beebe to conclude that sociolinguistic transfer was at play. More specifically, she found that the segmental variant of /r/ that the Thai participants tended to use in initial position in the formal task was a socially prestigious form from Thai. In other words, the formality of the L2 task seemed to trigger the L1 prestige form, and this was taken as evidence of sociolinguistic transfer from the L1.

Both of these classic studies of sociolinguistic transfer were conducted well before the 1990s, and we have encountered very few studies of the same type in the literature published since then. However, a number of the studies that we

cited in the previous section—particularly the ones that deal with sociopragmatic transfer—do have clear implications for sociolinguistic transfer. There are also a number of additional studies—which we did not cite in the previous section—that show how social variables from the L1 can affect the ways in which language learners perform various speech acts in an L2. The social variables that have been the focus of most of this research have been social distance, status relationships, and gender. Studies by Lee (2000) and Yu (2004), for example, show that Chinese- and Korean-speaking learners of English vary their apology, complaint, and compliment-response strategies in accordance with socioculturally defined distinctions from their L1s that relate to social distance and status hierarchies. The study by Yu (2004) and another study by Itakura (2002) similarly show that Chinese- and Japanese-speaking learners of English vary in their patterns of compliment responses and topic development in accordance with gender-specific patterns from their L1s.

As we mentioned earlier, besides the variationist approach to sociolinguistic transfer, which relates to the effects of social variables on language use, sociolinguistic transfer (or perhaps sociocultural transfer) has also been explored through the perspective of the process of becoming socialized into a new speech community. Gender remains an important concern in this perspective, as does language identity more generally. Concerning both gender and identity (or personhood), a number of studies have pointed out that learning to be man or woman in another language and culture is not at all the same as being a man or woman in one's native language and culture. One has to learn a new set of social and cultural constraints that determine the appropriate pitch range of one's voice, which words to use and which words to avoid, how to refer to oneself and how indirect and polite one needs to be with interlocutors at various levels of status, how the status hierarchy of the target culture is defined and how one fits into that hierarchy, and so forth. We will return to these issues in the following two chapters, so we will not discuss them further in this section except to point out that language learners have been found to transfer their sense of personhood and their understanding of gender-appropriate language behavior from their native languages to their use of a second language (e.g., Pavlenko, 2001), and that advanced bilinguals who have acquired a new sense of self in a second language have been found to transfer this new L2 sociocultural knowledge to the use of their L1s (e.g., Mori, 1997). Insights into the interplay of factors (including transfer) that affect the acquisition of sociolinguistic competence in a second language (in study abroad contexts) can be found in DuFon and Churchill (2006).

3.6. CONCLUSIONS

The research we have reviewed in this chapter has documented abundant CLI effects in all of the major areas of linguistic and communicative competence, including phonology, orthography, lexis, semantics, morphology, syntax, discourse, pragmatics, and sociolinguistics. The research has also shown that in each of these areas of language competence, CLI can be either positive or negative, can affect both perception and production, and can occur in multiple directions—not just from the L1 to the L2. Additionally, in most of these areas of research, CLI effects have been found in both the spoken and written channels of communication. The research on lexical transfer, in particular, has also shown that CLI effects can involve either implicit or explicit knowledge, and can be either intentional or unintentional, and either overt or covert. Although the findings we have reviewed in this chapter have shown that the likelihood of transfer in any particular instance is affected by multiple complex factors (to be discussed more fully in Chapter 6), the research since 1990 clearly validates Odlin's (1989) claim that there are no categorical constraints on where or how transfer may occur (p. 23). This is noteworthy because a good deal of the transfer research that has taken place since Odlin made that claim has ventured into new frontiers not yet explored prior to 1990. One implication of this is that future transfer research may be equally likely to uncover CLI effects in areas that are unimaginable today. Although the complexity of languages and the people who use them will probably never make it possible to predict where or when transfer will definitely occur, it will probably also never be possible or prudent to predict where or when it definitely will not occur. Instead of prediction, the ultimate goal of transfer research must remain the explanation of how the languages a person knows interact in the mind. The goal of the following chapter is to deepen our understanding of this process by considering ways in which conceptual categories affect and are affected by this interaction.

Conceptual Transfer

4.1. INTRODUCTION

As illustrated in the previous chapter, discussions of CLI typically explain transfer through similarities and differences between the structural properties of the source and recipient languages. The aim of the present chapter is to point to another potential locus of transfer: similarities and differences in conceptual categories corresponding to lexical and grammatical categories of the source and recipient languages.

We begin this chapter by describing our adopted approach to language and concepts. Then we discuss how and why this approach requires us to differentiate between semantic and conceptual levels of representation. In the rest of the chapter, we examine crosslinguistic differences and conceptual transfer in eight foundational domains of reference, that is domains that are based on sensory-motor experiences and encoded in most, if not all, human languages. Before we begin, however, we would like to emphasize once again that the source of CLI is not exclusively crosslinguistic differences, and that crosslinguistic differences do not always result in CLI. Yet because research into the conceptual impetuses of CLI is still in its infancy, and because CLI effects that arise out of crosslinguistic differences are usually more pronounced and easier to confirm than those that involve crosslinguistic congruities (but see, e.g., Jarvis, 2000a), we have chosen to focus in this chapter exclusively on crosslinguistic differences in relation to conceptual transfer.

The goal of our discussion is twofold. In addressing CLI researchers, we aim to show that a great number of instances of transfer previously seen as unrelated stem from ways in which conceptual representations are structured and mapped to language. In addressing researchers working on language and cognition, we aim to show how instances of CLI, and more generally studies with bi- and multilingual speakers, can contribute to our understanding of the relationship between language and cognition. Whenever possible, we refer the reader to specific studies of CLI that offer evidence of conceptual transfer. In areas that have

not yet been empirically examined, we offer hypotheses as to possible manifestations of conceptual transfer. Most of the studies discussed here illustrate the influence of the first language on one's performance in a second, or additional, language. Yet we do not want to claim that conceptual transfer is a unidirectional phenomenon. Rather, these examples reflect the fact that to date transfer scholars have focused predominantly on forward transfer. In the next chapter, we will consider cases of reverse conceptual transfer.

4.2. LANGUAGE AND CONCEPTS

4.2.1. Language-mediated Concepts

Our discussion will refer to two closely related notions, concepts and conceptual categories. Our use of these terms will follow the tradition in concept research, where the term *concepts* commonly refers to mental representations of classes of things, and the term *categories* to the classes themselves (Murphy, 2002, p. 5). Undoubtedly the two go together and a reference to concepts implies categories and vice versa. At times, however, we will differentiate between the two: Discussions of central and peripheral category members, for instance, will entail conceptual categories as a whole, whereas discussions of prototypes and mental imagery will entail mental representations of particular category members.

Conceptual development is seen here as an experience-based developmental process that results in two types of conceptual representations: language-independent and language-mediated. This differentiation between language-independent and language-mediated concepts is consistent with Whorf (1956), who acknowledged the existence of language-independent thought but emphasized his interest in *linguistic thinking*, or "thought insofar as it is linguistic" (pp. 67–68). The notion of language mediation is also reminiscent of ideas of another prominent scholar, Lev Vygotsky (1978, 1986), yet we do not draw on his ideas directly since Vygotsky himself was not interested in crosslinguistic differences. As pointed out in Lucy and Wertsch's (1987) insightful comparative analysis of Vygotsky and Whorf, the two scholars shared a view of language as a social and cultural phenomenon, yet Vygotsky's interest in the relationship between language and thought had more to do with the general nature of human consciousness than with differences in how speakers of different languages conceptualize experience (p. 83). Consequently, we acknowledge our intellectual debt to Vygotsky yet do not see his approach as directly applicable to the present discussion (for an informative discussion of second language learning from a Vygotskian perspective, see Lantolf & Thorne, 2006). We also acknowledge the influential ideas of another prominent psychologist, Jean Piaget, whose work made major contributions to the study of children's conceptual development, yet do not draw on his ideas directly, as his view of concepts as logical entities that

can be clearly delineated is inconsistent with that of contemporary cognitive psychology (Murphy, 2002, pp. 14–15).

In the view adopted here, mental representations of *language-independent concepts* develop experientially and have no predetermined means of linguistic expression. *Language-mediated concepts* develop in the process of language socialization where word learning and category acquisition influence each other over an extended period of time. In his synthesis of research on word meaning development, Murphy (2002) outlines this process as follows: “as conceptual structure develops, word meanings have to reflect that development. But as word learning progresses, this also creates changes in conceptual structure” (p. 402).

How exactly does this process work? Infants are ready to make a variety of perceptual distinctions. In the process of conceptual development, their perceptual and cognitive capacities interact with distinctions and categories encoded in the language or languages to be learned. These processes selectively promote or maintain sensitivity to language-specific distinctions and inhibit sensitivity to distinctions not relevant in a particular language. For instance, the work by Bowerman and Choi (Bowerman, 1996a, b; Bowerman & Choi, 2001, 2003; Choi & Bowerman, 1991; Choi et al., 1999) shows that 9-month-old infants can easily make spatial distinctions encoded in Korean and English, but by the age of 18 months children make only language-specific distinctions. English-speaking children begin to differentiate between types of movement across space specified by the prepositions *in* and *out* (e.g., “put the apple *in* the bowl” vs. “take the apple *out* of the bowl”), while children learning Korean begin to distinguish between types of movement involving a tight and loose fit (e.g., “put the ring on the finger [tight fit]” vs. “put the apple in the bowl [loose fit]”). Bowerman and Choi (2003) show that children’s patterns of correct and incorrect usage of spatial words differ systematically across languages. These findings suggest that children try to make sense of linguistic input rather than simply match words to preexisting mental representations.

Studies conducted with older children (Berman & Slobin, 1994; Strömquist & Verhoeven, 2004) show that once children internalize basic conceptual distinctions characteristic of their language or languages, these language-mediated concepts guide their attention to and selection of aspects of referential reality for subsequent memorization and description. Thus, speakers of Turkish will pay attention to whether the events in question were witnessed or not, because Turkish grammar requires its speakers to differentiate between witnessed and non-witnessed events, while speakers of English will focus on the state of completion of events, because English requires its speakers to differentiate between events in progress and those that have been completed. Linguists vary in their views of the scope of this process: Some, like Lucy (1992a, b, 1996, 1997, 2000) and Levinson (1996, 1997, 2003a, b), are concerned with the influence of grammar on nonverbal cognition, that is performance on nonverbal tasks and habitual

thought, while others, like Slobin (1996, 2000, 2001, 2003), limit their investigations to the effects of language on ways in which speakers of a particular language mentally prepare their thoughts for verbalization, a process Slobin (1996) calls "thinking for speaking" (p. 76).

Given the magnitude and diversity of empirical studies that have demonstrated linguistic effects on nonverbal cognition, our own views are akin to those of Lucy and Levinson. Nevertheless, since the phenomenon we are focusing on is crosslinguistic influence and not linguistic relativity per se, our discussion will concentrate on the effects of one language on the verbalization of thoughts in another. We see important differences between the two types of inquiry. Linguistic relativity begins with language and ends with cognition, hypothesizing that structural differences between languages result in cognitive differences for their speakers. This hypothesis is best tested by linguists, psychologists, and anthropologists concerned with nonverbal cognition. In contrast, conceptual transfer starts with language and ends, via cognition, with language, hypothesizing that certain instances of CLI in a person's use of one language are influenced by conceptual categories acquired through another language. This hypothesis is best tested by scholars concerned with second language acquisition, bilingualism, and multilingualism. Consequently, our discussion of conceptual transfer will mainly examine the influence of the language-mediated conceptual categories of one language on verbal performance in another language. Whenever relevant, however, we will also discuss evidence from studies of nonverbal cognition that clarify whether performance differences indeed stem from differences in mental representations.

In what follows, then, *language-mediated concepts* are seen as multi-modal mental representations that develop in the process of language socialization, sensitize speakers of particular languages to particular conceptual distinctions, and allow them to perform naming, identification, comprehension, and inferencing tasks along similar lines. We will differentiate between two kinds of language-mediated concepts: (a) *lexicalized* concepts, that is concepts linked to words, such as "bird" or "chair"; and (b) *grammaticalized* concepts, that is concepts linked to morphosyntactic categories, such as number, gender, or aspect (Slobin, 2001). Notably, the terms "lexicalized" and "grammaticalized" are somewhat imprecise as they appear to refer to lexical or grammatical instantiations of independent concepts. We will use them, however, in accordance with the current work in cognitive psychology and language development, to refer to conceptual representations that have developed to reflect language-specific lexical and grammatical categories. We also note that the scope of conceptual transfer goes beyond the effects of lexicalized and grammaticalized concepts, and includes the influence of acquired patterns of conceptualization (or ways of thinking), visible, for instance, in patterns of linguistic framing or organization of information in discourse (e.g., Von Stutterheim, 2003). In the discussion below, however, we will mainly focus

on lexicalized and grammaticized concepts because these are the two areas where most research has been conducted to date.

4.2.2. Conceptual Structure

With regard to structure, we assume that concepts are neither atomistic nor purely feature- or prototype-based. Rather, we follow the knowledge-based approach that views concepts as an intrinsic part of our general knowledge about the world (Keil, 1989a, b; Murphy & Medin, 1985). In this view, no single form of conceptual representation accounts for everything; rather, concepts exhibit a hybrid structure that contains at least three kinds of information: (a) knowledge of properties and/or scripts associated with a particular category; (b) knowledge of which members or properties of the category are prototypical and which are borderline or fuzzy; and (c) knowledge and beliefs about the internal structure of the category and about its external links to other categories (Keil, 1989a, b, 1994; Malt, 1993; Murphy, 2002). Here and further on, the term *knowledge* refers to implicit knowledge that can be examined empirically, for instance, through typicality judgments. The term *prototypical* refers to the most typical or representative members of a particular cognitive category (Rosch, 1975). The term *script* refers to hierarchically structured scenarios involving roles and actions, which in turn can be decomposed into further scripts or schemas (Fillmore, 1977; Rumelhart, 1980; see also Markman, 1999).

Five caveats need to be noted with regard to our assumptions about conceptual structure; these involve cultural specificity, modality, individual variation, and the dynamic and context-specific nature of conceptual representations. Let us begin with cultural specificity, and thus with assumptions made here about the relationship between culture and cognition. Cognition is viewed here as a phenomenon shaped by both language and culture; and while some forms of cognition may be non-linguistic, human cognition does not fully develop outside of culture. Consequently, we agree with Lakoff (1987) and Ungerer and Schmid (1996, p. 50), who argue that cognitive and cultural models are two sides of the same coin: the term *cognitive* stresses the psychological nature of these representations and allows for the consideration of inter-individual differences, whereas the term *cultural* stresses their sociocultural and sociohistoric nature and allows for the consideration of inter-group differences. Since the focus of our inquiry is the relationship between language and cognition, in what follows we favor the terms *conceptual* and *cognitive*, while recognizing the cultural, as well as linguistic and perceptual, bases of concepts.

Second, consistent with this view, we see concepts as multi-modal mental representations that develop at the interface between conceptual and sensory-motor processing, and that encode visual, auditory, perceptual, and kinesthetic information, including but not limited to color, shape, motion, sound, and

texture (Barsalou, 2003). These representations are preserved in cases of paroxysmal aphasia, that is in the absence of any ability to comprehend or produce language either orally or in written form (Lecours & Joanette, 1980; Paradis, 2004). We will return to the importance of this finding later, in our discussion of the distinctiveness of the conceptual and semantic levels of representation.

Third, we recognize the dynamic nature of conceptual categories. They are subject to developmental change that takes place through participation in communicative practices, and to sociohistoric change, an ongoing process through which people's conceptual knowledge is modified to reflect social, political, and cultural changes in the world around us. Developmental changes are visible in children who, in the intertwined processes of category acquisition and word learning, begin by overextending and underextending conceptual categories and take time to form categories similar to those of adult speakers of the language in question (cf. Keil, 1989a; Murphy, 2002). Sociohistoric changes are visible in generational differences in conceptual category structure. For instance, older speakers of English see handleless *plastic cups* as borderline members of the category *cup* and not as prototypical or "real" cups, such as traditional china cups. In contrast, younger speakers who use both paper and plastic cups on an everyday basis perceive these containers as "real," that is prototypical, cups and not simply as peripheral category members. They also see traditional china cups as real cups, yet treat them as a marked variety, often referred to as a *coffee cup* or *tea cup* (Goddard, 1998).

Fourth, we acknowledge that conceptual representations of lexical, grammatical, and discursive structures are not necessarily identical within the same speech community, or even across speakers of the same generation. Especially where lexical categories are concerned, differences may exist between speakers of different language varieties or dialects, or between members of different subcultures—in other words, between speakers who may have had different experiences with, knowledge of or expertise in the area in question (Kempton, 1981; Murphy, 2002). Particular disagreements may arise between speakers with regard to borderline members of a particular category.

Finally, we assume that concepts do not have fixed category boundaries; rather they function in a context-dependent manner, whereby boundaries are flexibly adjusted in accordance with the demands of different tasks (Malt, Sloman, & Gennari, 2003). This means that language-mediated concepts are not activated in their entirety at any given time; rather different aspects are activated in different communicative settings (Barsalou, 2003; Barsalou & Medin, 1986; Damasio, 1989). For instance, in conversations between native speakers of English residing in the United States, utterances involving the word *bird*, such as "Big Bird is talking to Ernie" or "The bird is in the oven" do not necessarily activate prototypical members of the [BIRD] category, such as robin. The linguistic and social context will presumably constrain the mental representation to, respectively, a popular character from a children's show and a Thanksgiving turkey.

This view of conceptual categories allows us to see language-mediated concepts as largely shared by speakers of the same language, yet not predetermined—rather, they are subject to individual variation and sociohistoric and developmental changes that take place through communicative practices. Together with the phenomenon of context dependence in concept retrieval, these properties of conceptual structure allow us to approach word and utterance meanings as constructed and negotiated in discourse rather than predetermined.

4.2.3. Semantic and Conceptual Levels of Representation

Until now, our discussion has relied on research findings and theoretical assumptions developed in the fields of cognitive psychology and language acquisition, largely based on studies with monolingual participants. Now we want to highlight a unique aspect that distinguishes our approach to CLI and the mental lexicon and that has developed through our work with bi- and multilingual speakers. This aspect involves a differentiation between the semantic and conceptual levels of representation (see also Pavlenko, 1999), as well as between implicit and explicit representations.

As already outlined above, *conceptual representations* involve the following types of mostly implicit knowledge: (a) that of properties and/or scripts associated with a particular category; (b) that of category prototypes and borderline or peripheral members; and (c) that of the internal structure of the category and its links to other categories. This knowledge includes but is not limited to visual (mental imagery), auditory (sound), perceptual (texture), and kinesthetic (sensory-motor) information. *Semantic representations* involve the largely implicit knowledge of: (a) the mapping between words and concepts determining how many concepts and which particular concepts are expressed by a particular word (polysemy); and (b) connections between words, which account for phenomena such as collocation, word association, synonymy, or antonymy. In both cases, *implicit knowledge* refers to the knowledge that individuals may not be aware of but which researchers can infer from their systematic verbal performance. *Explicit knowledge*, on the other hand, involves knowledge, such as word definitions and grammar rules, that individuals are aware of and are capable of verbalizing on demand (Paradis, 2004). The extent of this metalinguistic knowledge in the L1 varies and largely depends on the speaker's level of education. In a second or additional language learned in the classroom, the extent of this knowledge is much greater; it may play a central role in the language performance of beginning and intermediate students (Paradis, 1994).

The differentiation between implicit and explicit knowledge is commonly accepted in the fields of second language acquisition and bilingualism (N. Ellis, 1994; R. Ellis, 2006; Paradis, 1994, 2004), although it has not been incorporated

yet into models of the bilingual lexicon. We are also not the first to argue for the differentiation between the semantic and conceptual levels. Psychologists commonly differentiate between concepts/thought and word meanings/language (Hampton & Moss, 2003; Murphy, 2002). Empirical and clinical evidence from the fields of psycholinguistics and neurolinguistics also suggests that the two types of representation are distinct (Paradis, 1997a, b; 2000) and susceptible to selective inhibition or pathological damage, with semantic knowledge vulnerable to anomia and aphasia, and conceptual knowledge unaffected by these conditions (Caplan, 1992; Lecours & Joanette, 1980).

Nevertheless, psycholinguistic studies and models of the mental lexicon rarely differentiate between conceptual and semantic levels of representation. Instead, studies of conceptual representations commonly examine such representations via verbal labels (cf. Barsalou, 2003) and the two terms are used interchangeably to refer to an integrated semantic/conceptual system (Cruse, 2001; Francis, 1999, 2005). In the study and modeling of the monolingual lexicon, this approach is fully justified by the fact that in healthy monolinguals there is direct one-to-one mapping between semantic knowledge and lexicalized and grammaticized concepts, which, after all, have developed through experience with particular semantic constraints. Consequently, in research on monolinguals, there is little real need to differentiate between the semantic and conceptual levels of representation. There is also little need to account for the potential effects of speakers' explicit knowledge of word definitions and grammar rules, since interaction in a native language tends to rely overwhelmingly on implicit memory.

The bi- and multilingual lexicon, on the other hand, is not a carbon copy of the monolingual one. The need to represent the relationship between two or more languages in the mind of a single speaker requires careful differentiation between the semantic and conceptual levels of representation. To begin with, languages A and B may differ in the structure of particular conceptual categories (conceptual representation) and also in the links between these concepts and words, as well as between words and other words (semantic representation). Even in cases where speakers of the two languages may rely on similar conceptual categories, these categories may be linked differently to the words of languages A and B and thus the two languages will differ on the semantic but not necessarily on the conceptual level. Furthermore, due to their individual linguistic trajectories, particular bi- and multilinguals may not have acquired semantic and conceptual representations identical to those of monolingual native speakers of the languages in question. They may also lack representations of conceptual categories specific to their less proficient language, or the language learned mostly in the classroom and not through socialization in the target language environment.

What happens when learners' L2 lexical items do not have strong, direct links to multi-modal conceptual representations? In classroom tasks, such as fill-in-the-

blanks, that allow sufficient time for information retrieval, they may draw on their explicit knowledge and demonstrate more or less target-like performance. In on-line communication, on the other hand, the time available is much more limited. In this case, learners commonly rely on the links between L2 forms and their L1 translation equivalents (Kroll & Stewart, 1994), and this also entails a reliance on L1-mediated concepts.

This reliance on the L1 may result in target-like performance in cases where L1- and L2-mediated concepts are fully congruent—all the learners need to develop in this case are direct links to already existing concepts. In many cases, however, lexicalized and grammaticized concepts mediated by the L1 and L2 are distinct; in such cases, reliance on L1-mediated concepts leads to instances of CLI theorized here as *conceptual transfer*. In turn, reliance on the links established between L1 words (e.g., synonymy), or between L1 words and L1-mediated concepts, is theorized here as *semantic transfer*. Let us now exemplify each notion in turn.

4.2.4. Semantic and Conceptual Transfer

Each language has its own set of semantic and conceptual constraints, which are best represented in the lexicons of adult monolingual speakers of the language in question. The lexicons of bi- and multilingual speakers, as already mentioned earlier, may differ from those of monolingual speakers and constitute an amalgam of conceptual and semantic representations underlying the use of the respective languages, where some representations may be missing or incomplete, where words of one language may be linked, at times inappropriately, to concepts acquired through the means of another, and where two or more concepts may be linked, equally inappropriately, to a single word.

To show how and when the incomplete representations and inappropriate links may lead to semantic and conceptual transfer, let us return to the example used in the previous chapter of a Finnish speaker who said in L2 English *He bit himself in the language* (meaning “He bit himself in the tongue”). We argue that here the interference from Finnish is semantic but not conceptual. While Finnish has only one word for both tongue and language (*kieli*), this is a polysemous word, i.e. a verbal label linked to discrete concepts, representing entities with which speakers have had distinct experiences. The interference occurs not at the level of conceptual representation but at the semantic level, that is at the point of mapping. In what follows, this type of transfer will be referred to as semantic transfer because it originates at the semantic level, that is at the level of links between words and concepts, or between words and other words, and does not involve conceptual categories per se.

On the other hand, when an English learner of Russian asks for a *chashka* (= cup) in reference to a paper cup, the transfer is both semantic (inappropriate

link) and conceptual (inadequate knowledge of the contents of the conceptual category). In English, plastic and paper containers used for hot and cold drinks are peripheral members of the conceptual category of cups. In Russian, on the other hand, these containers belong to the conceptual category of *stakany* (= glasses). In everyday speech, they are referred to as *stakanchiki* (= [little] glasses), because Russian also requires its speakers to use a diminutive suffix to mark objects smaller than the standard size. Thus, while both languages have translation equivalents *cups/chashki* and *glasses/stakany*, the conceptual categories mediated by these words differ in Russian and English in terms of peripheral or borderline members. The process of L2 learning will thus involve a restructuring of already existing conceptual categories. In the case of such differences, reliance on the conceptual category acquired in the source language (the L1, in this case) will be referred to as conceptual transfer because the transfer originates with conceptual representations, even though it also involves semantic representations, that is links between concepts and words.

The differentiation between the semantic and conceptual levels of representation, captured in the three-level model illustrated in Chapter 3, allows us to differentiate between different sources of transfer, conceptual versus semantic, and to consider what is involved in L2 acquisition in each case. Regarding the first example above, in order to acquire English successfully, the Finnish learner of English who said *He bit himself in the language* needs to inhibit the mental link between the word *language* and the concept of the body part (tongue); this learner could also link both concepts (tongue and language) to the polysemic English word *tongue*, which carries both meanings like the Finnish word *kieli*. This process involves relinking, but no learning of new conceptual knowledge.

In the second case, English-speaking learners of Russian need to restructure their category of glasses, expanding it to new peripheral category members, such as plastic and paper containers, and transforming the defining property of [GLASSNESS] from material to shape. Importantly, the acquisition of new conceptual knowledge is not always limited to a few peripheral category members as in the case of cups and glasses. L2 learners may face much more complex tasks, less clearly tied to perceptual reality, such as the acquisition of the lexicalized conceptual distinction between two ways of being, *ser* and *estar*, faced by American learners of Spanish, or of the grammaticized concept of (in)definiteness faced by Russian learners of French or English. It is possible that errors due to negative conceptual transfer will persist longer than errors due to negative semantic transfer because of the challenges involved in inhibiting and restructuring already existing conceptual representations and developing new ones. We hope that future empirical work on CLI will test the similarities and differences between the two.

Meanwhile, in what follows, we will examine several areas where language-mediated conceptual categories differ across languages and where adult L2

learners may fail to use conceptual distinctions specific to the target language, relying instead on L1-mediated concepts established in childhood. This means that L2 learners of Turkish may fail to differentiate verbally between witnessed and non-witnessed events, L2 learners of Korean between tight and loose fit, and L2 learners of Spanish between permanent and temporary states of being, if such distinctions are not habitually reinforced by their native languages, either through obligatory grammatical structures or through conventions of discourse. This relativistic view of language learning and CLI is not, however, deterministic. As emphasized earlier, we assume that all healthy humans have the necessary perceptual and cognitive abilities to attend to input, to form new conceptual categories, and to restructure existing representations, and that these abilities can be exercised throughout the lifetime, in schooling, in apprenticeships, and in foreign/second language learning. In the next chapter we will show that prolonged interaction in the second language leads to the development of new conceptual categories and the restructuring of the already existing ones. In the meantime, in the present chapter, we aim to show that language-mediated concepts differ across languages and give rise to L1 conceptual transfer. Before we do so we would like to once again emphasize that although the discussion below privileges lexicalized and grammaticized concepts, our understanding of conceptual transfer encompasses other areas of conceptual knowledge, such as the knowledge of pragmatics and discourse conventions.

4.3. CROSSLINGUISTIC DIFFERENCES AND CLI IN EIGHT CONCEPTUAL DOMAINS

Our goal here is to examine crosslinguistic differences and conceptual transfer in eight foundational domains of reference that allow us to talk about ourselves and our surroundings: objects, emotions, personhood, gender, number, time, space, and motion. The first domain represents lexicalized concepts; the other seven involve both lexicalized and grammaticized concepts. Clearly, this is not an exhaustive list of conceptual domains where crosslinguistic differences exist—our focus is restrictive in a number of ways. First, it is restrictive because there are many more domains of reference that are experience-based and can potentially be considered foundational, and the present choices are but a selection. This selection, however, favors areas that in previous research have been shown to lead to systematic differences in the verbal and nonverbal behaviors of members of different speech communities. Second, the selection may appear limiting because in focusing on experience-based conceptual categories, such as [PERSON] or [EMOTION], we intentionally avoid purely abstract concepts, such as [FREEDOM] or [TRADITION]. This is not because we do not see the importance of differences in representations of abstract notions, but because such differences are well

recognized in the fields of SLA and bilingualism (cf. De Groot, 1993) and do not need to be defended.

In the sections that follow, we will begin by outlining selected crosslinguistic differences in each domain that may give rise to conceptual transfer. Then, we consider manifestations of such transfer, and, where possible, support our discussion with examples from scholarly research. Throughout, our discussion underscores the mediated nature of these domains: while all humans engage in activities that involve motion, the sequencing of events, and placing objects into locations, language mediates these experiences, requiring speakers to categorize objects as definite or indefinite, events as ongoing or completed, and locations as topological or projected (Slobin, 1993, p. 47).

4.3.1. Objects

Traditional models of the bilingual lexicon commonly assume conceptual equivalence in the referents of concrete words (Chen, 1992; De Groot, 1993). Recent empirical studies, however, have refuted this view, showing that objects, and in particular artifacts, do not constitute universal categories—rather, speakers of different languages may categorize the same objects in different ways (Ameel et al., 2005; Kronenfeld, 1996; Kronenfeld, Armstrong, & Wilmoth, 1985; Malt, Sloman & Gennari, 2003; Malt et al., 1999; see also Paradis, 1997b, 2000). The issue of language-mediated object category membership was explored in depth in a series of studies by Malt and associates (1999, 2003). The researchers found substantial differences in the naming patterns for 60 common containers between speakers of American English, Mandarin Chinese, and Argentinean Spanish. Based on these findings, they argued that linguistic categories are not necessarily formed around the same prototypes across languages; rather, there exist different types of relationships between the linguistic categories of different languages: (a) some may differ in the level of abstraction at which categorization is made, which means that some languages offer finer distinctions within a domain than others; (b) others may overlap, with variability occurring only in the naming of peripheral items; (c) and some languages may use “radically different linguistic categories, forming their categories around different dimensions or combinations of dimensions, or simply following such language- or culture-idiosyncratic paths in the evolution of their linguistic category membership that the end result is substantially divergent category membership” (Malt, Sloman & Gennari, 2003, p. 22).

Let us begin with the situation where one language makes more linguistic distinctions than another. Malt et al. (1999, 2003) found that the 16 objects named *bottle* in English were spread across seven linguistic categories in Spanish. This means that English speakers learning Spanish need to form new conceptual categories with specific properties, one for bottles that hold liquids, for instance, and another for those that hold dry materials.

In the second case outlined by Malt et al. (2003), two languages may have translation equivalents referring to the same prototypes and yet differ in peripheral category members. For instance, as already mentioned earlier, both English and Russian have translation equivalents for *cups/chashki* and *glasses/stakany*. Speakers of the two languages make similar judgments as to the central exemplars of the two categories. They vary, however, in the categorization of certain borderline objects, such as paper and plastic containers. A defining feature of [GLASSNESS] for English speakers is typically material, although some English speakers may include tall plastic and metal containers in the category of glasses. Yet even these speakers categorize and name paper and plastic containers in which drinks are served in fast food establishments as *cups*. In contrast, Russian speakers categorize the same paper containers as *stakanchiki* (= [little] glasses), since in Russian [GLASSNESS] is commonly defined through the shape of the container and the absence of handles, rather than through material. In the case of such differences between language-mediated conceptual categories, conceptual transfer effects will be visible in the case of Russian learners of English who refer to paper cups as *glasses*. We see this as conceptual and not simply semantic transfer, because the task faced by the learners goes beyond relinking words and certain mental representations; they have to restructure their conceptual categories of cups and glasses, both in terms of peripheral category members and in terms of category properties, such as [GLASSNESS].

The third case outlined above involves radically different linguistic categories. Malt et al. (2003) state that while they did not identify such categories in their data, they found significant differences in category memberships whereby English *containers* include objects with seven different Spanish names, some of which involve a category that better corresponds to a different English category (e.g., *frasco* [= a glass jar or bottle], *bidon* [= a plastic jug]). In the case of such differences the learning task involves the development of new conceptual categories.

Empirical evidence for difficulties in the acquisition of new conceptual categories and in the restructuring of already existing categories comes from a study by Malt and Sloman (2003), who asked three groups of L2 users of English to name common household objects in English and in their native language and to provide familiarity and typicality judgments. The stimuli consisted of 60 pictures of storage containers (bottles, jars, etc.) and 60 pictures of housewares (dishes, plates, bowls, etc.), and the L2 users' performance was compared to that of monolingual native speakers of English. The researchers reported that even the most advanced L2 speakers, who had been in the U.S. for eight or more years and had ten or more years of formal instruction in English, exhibited some discrepancies from monolingual naming patterns and typicality judgments. A study by Graham and Belnap (1986) suggests that at least some of the difficulties may be attributed to conceptual transfer. The researchers examined linguistic

categorization patterns of Spanish-speaking learners of English in cases where boundary differences in English did not correspond to those in Spanish (e.g., *chair*, *stool*, and *bench* vs. *silla* [= chair] and *banco* [= bench]). They found that intermediate and advanced Spanish-speaking learners of English who had resided in the U.S. less than a year exhibited CLI in the form of L1-based categorization patterns.

To sum up, translation equivalents referring to concrete objects do not necessarily refer to identical conceptual categories: some categories may share only prototypes; in other cases we may see nesting (categories of one language contained within those of another); and in others cross-cutting, i.e., only partial overlap (Malt et al., 2003). This means that learning to name objects in a language-specific manner involves much more than the memorization of translation equivalents. Rather, in the process of L2 socialization speakers may need to develop new conceptual categories linked to L2 verbal labels: in some cases this development will require the restructuring of the category boundaries and in others the internalization of new category prototypes. These new representations will minimally involve knowledge of: (a) category-specific properties; (b) central and peripheral category members; (c) category-internal structure and its links to other categories. Conceptual transfer in this area involves reliance on the conceptual categories of the source language when naming and categorizing objects in the recipient language.

4.3.2. Emotions

The second language-mediated category we consider is that of [EMOTIONS]. Crosslinguistic studies reveal numerous differences in the conceptualization and categorization of [EMOTIONS] (Athanasiadou & Tabakowska, 1998; Harkins & Wierzbicka, 2001; Harré, 1986; Heelas, 1986; Lutz, 1988; Lutz & White, 1986; Markus & Kitayama, 1991, 1994; Pavlenko, 2005b; Rosaldo, 1980; Russell, 1991; Wierzbicka, 1999). While there is an ongoing controversy as to the universality of basic emotions (for an in-depth discussion see Pavlenko, 2005b; Russell, 1991; Wierzbicka, 1999), all of its participants agree that there exist crosslinguistic differences in emotion encoding, and it is these differences that are of interest in the present discussion. In what follows, we acknowledge the neurobiological and physiological bases of emotional experiences, while assuming that in the process of language socialization, speakers learn to discriminate, elaborate, and suppress bodily feelings in accordance with the local conventions of how one should feel in a particular socially defined situation (Harré, 1986). Each emotion term then evokes a culture-specific conceptual representation. In the words of Lutz:

To understand the meaning of an emotion word is to be able to envisage (and perhaps to find oneself able to participate in) a complicated scene with actors,

actions, interpersonal relationships in a particular state of repair, moral points of view, facial expressions, personal and social goals, and sequences of events. (Lutz, 1988, p. 10)

Let us now consider ways in which language-mediated concepts of [EMOTIONS] may differ across languages. The first area of differences involves the structure of the conceptual category [EMOTION]. Based on her research with the Ifaluk, Lutz (1988) argues that the conceptualization of emotions/feelings as individual and distinct from thought is a Western invention. The Ifaluk, on the other hand, see emotions and thoughts as intrinsically linked to each other and as public, social, and relational, so that one individual's *song* (= justifiable anger) entails another's *metagu* (= fear/anxiety). Similar arguments have been made about the Balinese, Fula, Ilongot, Kaluli, Pintupi, and Samoans, who conceive of [EMOTIONS] as relational phenomena, embedded in social situations and taking place between people (Heelas, 1986; Lutz, 1988; Russell, 1991). In contrast, speakers of English and Dutch view emotions as individual phenomena that take place within bodies and minds. Additional differences may involve sensations and perceptions that belong to this category, body parts in which emotions are metaphorically located (e.g., heart, liver), causes that emotions are attributed to, and evaluations of particular emotions.

Differences in conceptual category properties may be linked not only to cultural beliefs about the nature of emotions but also to dominant grammatical categories. For instance, the working emotion lexicon of speakers of Hindustani, a language that privileges a relational view of emotions, contains a higher proportion of emotion verbs (relationship markers) than that of speakers of Dutch, a language that encodes emotions as inner states and favors emotion nouns (self-markers) (Semin et al., 2002). Similar differences exist between Russian and English (Pavlenko, 2002a; Wierzbicka, 1992, 1998). In English, [EMOTIONS] are most often expressed by means of adjectives and pseudo-participles, such as *worried*, *sad*, and *disgusted*, oftentimes used with change-of-state (e.g., *to become*) and perception verbs (e.g., *to seem*). These emotion adjectives and participles refer to emotions as inner states. In turn, in Russian, [EMOTIONS] are commonly referred to by intransitive—and oftentimes reflexive—emotion verbs (e.g., *radovat'sia* [= to rejoice, to be actively happy or joyful]; *serdit'sia* [= to be actively cross, angry, mad at someone]; *obizhat'sia* [= to feel hurt, offended or upset by someone and to show this through one's behavior]). These verbs refer to emotions as relational phenomena and processes in which one engages more or less voluntarily.

Notably, English also has emotion verbs (*to love*, *to hate*, *to worry*) that refer to processes, and Russian has emotion adjectives (*grustnaia*/sad, *rasstroennaia*/upset, *radostnaia*/joyful) that refer to states. Nevertheless, the two languages differ in the dominant morphosyntactic patterns of emotion encoding. Empirical

evidence of these differences comes from Pavlenko's (2002a) study of oral recalls of two short films by monolingual speakers of Russian and English. The results showed that, in discussing the experiences of the main character, American narrators favored the adjectival pattern describing emotions as states, whereas Russian narrators favored the verbal pattern describing emotions as processes and linking them to physical actions and body language.

In cases of differences in conceptual category properties, conceptual transfer is evident in speakers' appeal to category properties of one language in their use of another. Thus, in a study conducted with advanced American learners of Russian, Pavlenko and Driagina (2007) found evidence of forward conceptual transfer of the English-based adjectival pattern into Russian. These instances involved the use of the copula verbs *byt'* (= to be) and *stanovit'sia* (= to become) with emotion adjectives in contexts where Russian monolinguals use action verbs. For instance, the learners' references to the main character included utterances such as *ona stala serditoi* (= she became angry) and *ona stala eshche bolee rasstroennaia* (= she became even more upset), in contexts where native speakers of Russian said *ona rasserdilas'* (= she got angry, literally: she angered herself) or *ona eshche bol'she rasstroilas'* (= literally: she even more upset herself). This type of transfer could also be characterized as framing or conceptualization transfer, because it involves linguistic frames and ways of thinking about events and phenomena.

The second area of crosslinguistic differences involves cases where one language makes more linguistic distinctions than another with regard to particular emotions. Thus, emotions referred to with a single term in English may be lexically differentiated in other languages: Samoan, for instance, has two terms that roughly connote *anger* (Gerber, 1985), German and the Yankunytjatjara language of Central Australia use three (Durst, 2001; Goddard, 1991), Mandarin Chinese five (Kornacki, 2001), and Biblical Hebrew seven such terms (Myhill, 1997). These terms refer to somewhat different prototypical scripts, all of which fall within the domain of *anger* in English. As already mentioned in the previous section, learning a language that makes more fine-grained conceptual distinctions will require the learners to develop new conceptual categories and to restructure existing ones.

One of the manifestations of conceptual transfer in this area is when speakers of a language with fewer types of conceptual distinctions use the terms of the target language in an overlapping or undifferentiated manner, failing to make the more fine-grained distinctions required by the target language. An example of such conceptual transfer can be found in the study by Pavlenko and Driagina (2007), where American learners of Russian consistently described the behavior of the main character with the verb *serdit'sia* (= to be cross, angry with someone), while native speakers of Russian used only the verb *zlit'sia* (= to be angry) and not *serdit'sia* in the context of the same task. The analysis of the

learners' lexical preference suggested that they had not yet internalized the differences between the two types of anger, whereby *serdit'sia* is a relational term, requiring a clear referent of the action, while *zlit'sia* is a process that is not necessarily directed toward anyone in particular.

The third locus of conceptual transfer involves differences in the conceptual categories that correspond to presumed translation equivalents across any two particular languages (Panayiotou, 2006; Stepanova Sachs & Coley, 2006; Wierzbicka, 1992, 1994, 1999). Panayiotou's (2006) comparative analysis highlights such differences between two pairs of English/Greek translation equivalents, *guilt/enohi* and *shame/ntropi*. She shows that the two sets of terms are not full conceptual equivalents and that *ntropi* (= shame/embarrassment/shyness/the feeling of being dishonored) may in fact render the meanings of *guilt* more accurately than *enohi*. Stepanova Sachs and Coley (2006) similarly show that the English/Russian translation equivalents *jealousy/revnost'* and *envy/zavist'* are not full conceptual equivalents: the scope of the Russian *revnost'* is limited to intimate relationships and sibling rivalry, while the scope of the English *jealousy* also involves contexts where one experiences envy (e.g., "I am so jealous of your trip to Hawaii"). Once again, the L2 learning task here goes beyond the relinking of unmodified concepts, involving the transformation of existing conceptual categories through the incorporation of new/additional scripts involving particular emotions. Conceptual transfer in this context is manifested in cases where a language-mediated category acquired in one language guides the speaker's use of a translation equivalent in the other language. An example of such transfer would be the use of the word *revnost'* in reference to a classmate's trip to the Caribbean by an American learner of Russian.

Finally, conceptual transfer may also involve language-specific emotion categories, such as the English *frustration*, Japanese *amae*, Ilongot *liget*, or Korean *dapdaphada* and *uulhada* (Edwards, 1997; Lutz, 1988; Panayiotou, 2004b; Rosaldo, 1980; Schmidt-Atzert & Park, 1999; Wierzbicka, 1992, 1994, 1999). Such categories are examined in Panayiotou's (2004b) analysis of the English *frustration* and Greek *stenahoria*. Based on the data from experiments and interviews with Greek-English and English-Greek bilinguals, Panayiotou argues that the two terms invoke distinct and culture-specific emotion scripts. *Frustration* involves individual feelings of irritation and anger on which one may act. In contrast, *stenahoria* is a social emotion, which stems from an internalized feeling of doom, passivity, and hopelessness and is not linked to actions; it is accompanied by a feeling of suffocation, of not being able to breathe, not having enough space, which is not necessarily experienced by those feeling frustrated.

In the context where one language encodes an emotion concept non-existent in the other language, conceptual transfer may be seen in speakers' attempts to borrow this concept as an interpretive category. For example, Panayiotou's (2004b) study documents instances of lexical borrowing of the term "frustration"

from English into Greek. Similarly, in Pavlenko and Driagina's (2007) study, American learners borrowed the term "frustration" into Russian to state that the character was not simply sad but frustrated, e.g. *kak chto-to ee frastriruet/frastrirovalo* (= as if something frustrates/frustrated her). Here it is important to note that not every instance of lexical borrowing is conceptually motivated, nor is evidence of conceptual transfer in this area limited to lexical borrowing, but lexical borrowings do nevertheless often seem to be one of the outcomes of conceptual transfer. Conceptual transfer may also be manifested in the use of a term from one language to refer to a conceptual category lexicalized or grammaticized in another language, such as the use of the term *stenahoria* by an English-speaking L2 user of Greek to refer to someone who has acted upon his feelings of anger, irritation, and frustration.

Together, the studies discussed in this section suggest that adequate mental representations of [EMOTIONS] minimally involve the knowledge of: (a) the internal structure and properties of the conceptual category of [EMOTION] (e.g., emotions as inner states, actions or relational phenomena, emotions/thoughts, etc.), (b) the internal structure of particular emotion categories, such as guilt or jealousy, including causal antecedents, appraisals and consequences of particular emotions, and somatic states associated with them, (c) the typicality of particular emotion scripts, and (d) display rules—i.e., common ways of expressing emotions verbally and nonverbally (Pavlenko, 2005b). Additional language learning, in this view, involves not just the memorization of the L2 emotion vocabulary, but the development of an ability to recognize emotion categories not encoded in one's own language, to determine the prototypicality of particular emotion displays, and to express and interpret emotions in ways similar to those of native speakers of the target language. Conceptual transfer becomes manifest in cases where learners rely on the emotion concepts of one language when using another language.

4.3.3. Personhood

Our next domain of reference involves another notion crucial for all human experience and communication, namely [PERSONHOOD], or categories that construct and group people in particular ways and encode specific relationships between them. These category memberships and relationships are mediated both lexically (e.g., forms of address, kinship terms, personal pronouns) and morphosyntactically (e.g., number and gender marking). Crosslinguistic studies of lexicalized and grammaticized concepts of personhood suggest that [SELVES] and [PERSONS] are somewhat differently encoded, categorized, and conceptualized around the world (Becker, 1995; Foley, 1997; Markus & Kitayama, 1991, 1994; Mühlhäusler & Harré, 1990; Rosaldo, 1980; Shweder & Bourne, 1984; Siewierska, 2004).

At the center of these crosslinguistic differences are ways in which [PERSONS] are divided into categories by various pronominal and kinship systems, caste and identity terms, and forms of address that make it possible for speakers to group individuals around them in distinct ways and to position themselves and others. We will illustrate these differences using pronominal systems as an example. These systems differ widely across languages, with some languages encoding only a few pronouns and others as many as 200 (Mühlhäusler & Harré, 1990). They further differ in their encoding of (a) features of participant roles, (b) social and spatial distance, (c) number, (d) gender, (e) kinship status, and (f) social status. For example, French, Russian, and German encode the relationship between interlocutors and the number of addressees. The second person singular T pronoun (*tu*, *ty*, or *du*) is used in these languages to refer to a single interlocutor in cases where the speaker is very familiar with the interlocutor, in cases where the speaker feels comfortable with and similar in age and status to the interlocutor, and in cases where the speaker feels superior to the interlocutor in social status or age. In turn, the second person singular/plural V pronoun (*vous*, *vy*, or *Sie*) is used when talking to an unfamiliar speaker, an older person, a superior or someone positioned higher on the hierarchical ladder, or when talking to more than one individual (Barron, 2006; Morford, 1997). Japanese and Arabic pronouns additionally encode the gender of the interlocutor, as well as that of the speaker. In contrast, English pronouns do not encode either social status or gender (with the exception of the third person singular *he* and *she*).

L2 learners who aim to adequately categorize [PERSONS] and [SELVES] in a new language will need to go beyond memorizing personal pronouns or forms of address and explicit rules that define their usage. To select an appropriate pronoun, an L2 learner of French, Russian, or German will need to learn to automatically evaluate the age of the interlocutor and the social distance between the speaker and the addressee. The selection of an appropriate pronoun in L2 Japanese involves, additionally, an evaluation of one's own status in relation to the interlocutor so that one can mark the differences linguistically without appearing either rude or exaggeratedly polite. If the learner's first language or languages have not sensitized them to this type of mental evaluation, they are likely to exhibit conceptual transfer. One manifestation of such transfer is the variable use of T/V forms in reference to the same speaker that takes place without fulfilling any interactional functions (for examples from L2 learners of French, see Kinginger & Farrell, 2004; for examples from L2 learners of German, see Barron, 2006 and Belz & Kinginger, 2003). This variability suggests that the English-speaking learners have not yet internalized categorical distinctions between T and V pronouns. The lack of differentiation between T and V forms may also be manifested in the preference for pronouns and terms of address that most closely resemble ones in the source language (and hence can be mapped directly onto L1-mediated concepts). This trend has been identified in studies of the use of

forms of address by English-speaking learners of Japanese and Indonesian reviewed by Churchill and DuFon (2006) and in a study of Irish learners of German by Barron (2006). These studies show that many learners overuse the pronoun that most closely resembles the English *you* (the generic *anata* in Japanese, *Anda* in Indonesian, and *du* in German), while native speakers of these languages do not use these pronouns as frequently in conversations with each other (the authors are careful to acknowledge that the learners' preferences are also encouraged by the "foreigner talk" addressed to them and the lack of negative feedback). Finally, in the presence of the T/V distinction in both languages, conceptual transfer is evident in the use of constraints of the source language when choosing pronouns in the recipient language (for examples from Danish learners of German, see Faerch & Kasper, 1989).

A personal example of conceptual transfer in this area is offered in an autobiographical narrative by Linda Petrucelli, an American woman who spent nine years as a missionary in Taiwan:

my meager linguistic background did not provide even the religious basics necessary for a worship service. Worse yet, however, was my misunderstanding of the two Taiwanese forms of "we." I consistently used "Goan" instead of "Lan." The former suggests a certain exclusivity because the "we" does not include the person being addressed. "Lan," on the other hand, is an inclusive we, connoting me and whoever is hearing me, and suggests the kind of connected relationship and intimacy good preaching requires. (Petrucelli, 2000, p. 163)

The English "we" is a deictic reference that can shift meanings depending on context. These meanings may include everyone present; the speaker and one or more others, but not everyone; or the speaker and distant others but not those present. With the help of contextual cues, English speakers can easily differentiate between these meanings of "we." They cannot do so, however, without contextual cues because English does not grammaticize the distinction between inclusive and exclusive "we." Consequently, Petrucelli's failure to differentiate between *goan* and *lan* may stem from conceptual transfer, where a single undifferentiated concept is linked to two distinct words in the other language. The L2 learning task facing her involves the restructuring of the conceptual representation of [WE] whereby two categorically distinct concepts would be created and linked to the two words.

Empirical studies of L2 learners' use of forms of address show that learning new conceptual distinctions between [PERSONS] and [SELVES] is not an easy task and that explicit knowledge of the rules of pronoun use does not always translate into target-like performance (Barron, 2006; Churchill & DuFon, 2006; Kinginger & Farrell, 2004). Rather, L2 learners exhibit a variety of manifestations of CLI,

including forward negative transfer, overuse and avoidance of particular forms, and unmotivated switching between different forms (Barron, 2006; Churchill & DuFon, 2006; Dewaele, 2004; Faerch & Kasper, 1989; Jeon, 2004). Studies of L2 pronominal usage also show that the restructuring of conceptual representations of [PERSON] and [SELF] is a long and challenging process that benefits from prolonged interaction with speakers of the target language (Barron, 2006; Belz & Kinginger, 2002, 2003; Churchill & DuFon, 2006; Dewaele, 2004; Jeon, 2004; Kinginger & Farrell, 2004).

To sum up, adequate language-mediated conceptual representations of [PERSON] and [SELF] will minimally involve a knowledge of how people are categorized through forms of address, honorifics, pronouns, and/or kinship terms of a particular language, and what dimensions one needs to consider in the selection of a particular form or term. Conceptual transfer in this domain would manifest itself as a failure to pay attention to and to mark distinctions encoded in the target language or as the transfer of distinctions obligatory (or conventional) in the source language but not in the target language.

Traditionally, the domain of personhood has not been linked to conceptual knowledge, and learners' difficulties in the use of L2 honorifics, forms of address, and pronominal systems were seen as a lack of appropriate sociolinguistic or sociopragmatic competence. We argue that the difficulties experienced even by advanced learners in acquiring target-like norms of the use of person markers will be better understood when researchers and teachers alike recognize that the task facing learners is not limited to the acquisition of new linguistic, sociolinguistic, or sociopragmatic knowledge. Rather, the task also involves restructuring already existing conceptual representations of [PERSONS] and [SELVES] in accordance with new linguistic and social norms that at times may diverge in disconcerting ways from the norms one already holds dear. Consequently, in some cases the learners may be aware of the target language norms yet consciously choose not to conform to them. For instance, American learners of Japanese may choose not to use self-deprecating honorifics in a language-appropriate manner, even though this decision may carry the price of being judged an incompetent L2 speaker (Siegal, 1996; for examples of resistance among American learners of French, see Kinginger & Farrell, 2004).

4.3.4. Gender

Grammatical gender is a domain where crosslinguistic differences are well-recognized and acknowledged. Linguists commonly divide languages into two main groups with regard to gender assignment in the noun class systems: natural and grammatical gender (Corbett, 1991; Romaine, 1999; for a comprehensive crosslinguistic treatment see Hellinger & Bussman, 2001, 2002, 2003). In *natural gender languages*, such as English, gender assignment is largely limited to nouns

that refer to humans and animate beings, and is based on the gender of the referent. These languages may include groups of nouns to which gender is assigned arbitrarily (e.g., in English, ships, boats, and nations are treated as feminine). Some languages, such as Turkish, Finnish, and Mandarin, lack the grammatical category of gender altogether—even third person singular pronouns are not differentiated for gender in these languages (Braun, 2001; Engelberg, 2002; Ettner, 2002).

In *grammatical gender languages*, such as Italian, French, Spanish, and Russian, noun gender assignment is obligatory. Research on the mental lexicon shows that gender is an important constituent of lexicalized concepts in grammatical gender languages: the mental lexicon stores all gender forms (De Vincenzi, 1999; Dominguez, Cuetos & Segui, 1999; Schriefers & Jescheniak, 1999) and the presentation of the word activates gender information, regardless of whether it is required (La Heij et al., 1998; Van Berkum, 1997). In a tip-of-the-tongue state (i.e., when unable to retrieve the word form), both healthy and aphasic patients have been shown to retrieve correctly the grammatical gender of gender-marked nouns (Miozzo & Caramazza, 1997; Vigliocco, Antonini, & Garrett, 1997), providing further evidence that gender is part of conceptual representation for speakers of these languages.

Several rules govern gender assignment in grammatical gender languages. In reference to human beings, grammatical gender is commonly based on the (presumed) gender of the referent. In a few cases, however, one may encounter a dissociation between the gender of the noun and that of the referent. For instance, some masculine nouns may be used to refer to women, e.g. *le capitain* (= captain) in French and *doktor* (= doctor) in Russian, and some feminine nouns may be used to refer to men, e.g. *la sentinelle* (= guard) in French and *zhertva* (= victim) in Russian. In nouns referring to things other than human beings, gender assignment is largely arbitrary, based on formal principles such as the phonological or morphosyntactic properties of words. As will be shown below, however, the arbitrary nature of grammatical gender assignment does not imply that grammatical gender is completely dissociated from natural gender.

Research in second language acquisition documents a range of difficulties experienced by speakers of natural gender languages acquiring gender assignment in grammatical gender languages (Holmes & Dejean de la Bâtie, 1999; Prodeau, 2005). Some of these difficulties have to do with the internalization of the structural principles of gender assignment. Others, however, are of a conceptual nature. Psycholinguistic studies show that mastery of a grammatical gender system with masculine and feminine noun classes involves the implicit attribution of masculine or feminine characteristics to inanimate objects. Thus, adult speakers of Arabic, Italian, German, and Spanish have been found to attribute stereotypical gender characteristics to objects lacking natural gender, based on the grammatical gender of the nouns in question or on whether they were

masculine- or feminine-sounding (Boroditsky, Schmidt & Phillips, 2003; Clarke et al., 1981; Ervin, 1962; Flaherty, 2001; Konishi, 1993; Sera, Berge & Del Pintado, 1994). Grammatical gender has also been shown to affect metaphoric extensions and mental imagery associated with particular notions and objects (Rakusan, 2001; Romaine, 1999). For instance, death is more frequently portrayed as male by artists in whose languages the noun is masculine, and as female by artists in whose languages the noun is feminine (Boroditsky, Winawer, & Witthoft, 2006).

To illustrate the interplay between grammatical and natural gender, let us consider three studies of gender attribution conducted by Sera and associates (1994). In the first study, English- and Spanish-speaking adults were asked to classify pictured objects (e.g., apple, arrow, fish, book) as either masculine or feminine. The results showed that Spanish speakers' judgments were influenced mainly by the grammatical class of the objects in question, while English speakers tended to judge naturally occurring objects as feminine and artificial items as masculine. In the second study, the researchers asked monolingual speakers of Spanish and English to decide whether each particular object should have a masculine or a feminine voice if portrayed in a film. Once again, Spanish speakers assigned voices in accordance with the grammatical gender of the objects in question, while English speakers were sensitive to the natural/artificial distinction. In the third study, these results were replicated with Spanish- and English-speaking children, with the only difference being that the grammatical class results appeared in Spanish-speaking second graders but not kindergartners.

More recently, Boroditsky and associates (2003) have extended the study of gender attribution to L2 speakers. The authors tested speakers of Spanish (masculine/feminine system) and German (masculine/feminine/neuter) in their L2 English and found that both groups of speakers transfer gender attributions based on the grammatical gender of inanimate nouns in their native languages into their English performance. In one experiment, both groups performed better at remembering object-name pairs (e.g., apple-Patrick) when the name was consistent with the grammatical gender of the object label in the L1. In another experiment, the two groups generated more masculine adjectives for grammatically masculine items, and more feminine ones for grammatically feminine items. For instance, when describing the word *key* (feminine in Spanish and masculine in German), Spanish speakers produced adjectives such as *intricate*, *little*, *lovely*, *shiny*, and *tiny*, and German speakers generated adjectives such as *hard*, *heavy*, *metal*, *jagged*, and *useful*.

Together, the results of these studies suggest that in the case of feminine and masculine nouns, fully-developed conceptual representations involve a gender dimension that allows learners to attribute natural gender characteristics to objects lacking natural gender and make metaphoric extensions along these lines. To give an example, Russian speakers have a common saying that when a *noz**h* (= knife, masc.) falls on the floor this signifies the imminent arrival of a male

guest, whereas if it is a *vilka* (= fork, fem.) or a *lozhka* (= spoon, fem.) the impending guest will be a female. An advanced mastery of Russian by speakers of other languages involves, consequently, the representation of knives as masculine and forks and spoons as feminine.

In view of crosslinguistic differences in gender assignment and an intrinsic connection between natural gender and masculine/feminine grammatical gender systems, the first locus of conceptual transfer can be identified in the performance of speakers of natural gender languages who are learning a grammatical gender language. Their task is to incorporate the [GENDER] component into multi-modal representations of nouns and pronouns, and in the case of languages such as Russian or French, also accompanying verbs and adjectives. Conceptual transfer will be seen in the lack of such incorporation, commonly manifested in the lack of gender assignment, variable assignment, or the use of a default gender option, such as *el* (Spanish masculine article) or *das* (German neuter) with all nouns. Studies of gender assignment by English-speaking learners of French reveal all of these manifestations of CLI and suggest that these L2 users have not yet systematically integrated the [GENDER] component into mental representations of lexicalized noun concepts (Holmes & Dejean de la Bâtie, 1999; Prodeau, 2005).

The second area where crosslinguistic differences occur involves grammatical gender languages with systems that differ in the number and types of categories encoded. Some languages, such as French, Dutch, and Swedish, have a dichotomous gender system (masculine/feminine or neuter/common), and others, such as Russian and German, a tripartite system (masculine/feminine/neuter). Studies of the L2 French performance of L1 speakers of Dutch and Swedish reveal that the difference between the two systems (Swedish and Dutch neuter/common versus French masculine/feminine) is one of the key sources of difficulties and errors in gender assignment (Baetens Beardsmore, 1971; Dewaele & Veronique, 2001; Granfeldt, 2005). To ensure that the difficulties observed indeed stem from conceptual transfer, one will need to look at gender attributions made by L1 and L2 speakers of these languages.

Finally, even when the two languages have identical grammatical gender systems, nouns that are masculine in one language may be feminine or neuter in the other. These differences are not limited to inanimate objects or abstract concepts, but may also occur with animates in the animal realm. For instance, rats are masculine in French (*le rat*) but feminine in Russian (*krysa*, fem.), while squirrels are feminine in Russian (*belochka*) but are perceived as masculine by speakers of English (and consequently referred to with a masculine pronoun *he*). In these cases, even though morphosyntactic properties may offer the learner important clues about the grammatical gender assigned to a word, gender often has to be acquired individually for every entry in the L2 mental lexicon (Dewaele & Veronique, 2001). Conceptual transfer in the case of such mismatches is seen

in the attribution of the source language grammatical gender to the translation equivalent in the recipient language, e.g., when a Russian learner of French refers to a rat as *la rat* or *elle* (= she) instead of the correct *il* (= he) and an English learner of Russian refers to a squirrel as *on* (= he) instead of the correct *ona* (= she).

To sum up, mastery of grammatical gender involves the internalization of [GENDER] components of particular nouns, which in turn allows learners to make appropriate gender attributions and metaphoric extensions. Conceptual transfer in this domain is evident in cases where L2 learners fail to attribute grammatical gender to all or most entities, in cases where particular mental representations fail to encode [GENDER], and in cases where mental representations transfer the [GENDER] component from one language into the other. Undoubtedly, in some of these instances CLI will be structural rather than conceptual; researchers striving to differentiate between the two will need to examine not only learners' production but also their gender attributions, along the lines of the studies conducted by Boroditsky and associates (2003) and Sera and associates (1994).

Traditionally, the domain of gender has not been linked to CLI, although the internalization of gender in L2 has been examined in a variety of language combinations (for a review, see Dewaele & Veronique, 2001). As noted above, we do not doubt that some of this acquisitional process involves the internalization of gender-marking regularities and of links between nouns and articles. Yet we hope to have also revealed a deeper conceptual problem facing the learners: Speakers of natural gender languages learning a grammatical gender language have to acquire a new way of mapping the reality around them, while speakers of grammatical gender languages learning another such language may need to modify an already established system, or at least individual mental representations.

4.3.5. Number

Based on their treatment of grammatical number, languages are commonly divided into two categories. *Classifier languages*, such as Yucatec, Japanese, and Mandarin, lack a morphosyntactic count/mass distinction. In these languages, nouns typically denote substances, unbounded and non-discrete, and are accompanied by numeral classifiers. To refer to singular versus plural forms in such languages, one says something akin to *one long thin wax* (= candle) (Lucy, 1992b). *Noun class languages*, such as French, Spanish and Russian, differentiate between count and mass nouns. Count nouns commonly refer to entities with discrete boundaries whose conceptual representations give prominence to shape and countability. These nouns constitute a majority of the nouns in noun class languages and are marked for number morphosyntactically (e.g., *candle-candles*).

Mass nouns commonly refer to substances whose conceptual representations give prominence to material (e.g., *coffee*, *water*). They cannot be pluralized but may be preceded by indefinite quantifiers (e.g., *much*, *little*). Notably, the count/mass distinction is not a monolithic one and whether a noun functions as one or the other is often determined by context (e.g., *the waiter is bringing one water and two coffees*). In some cases, linguistic conventions may require the use of a mass noun for a clearly individuated entity, as in “Would you like more toast?” and the use of a count noun for a non-individuated entity, as in “How about some scrambled eggs?” (Wisniewski, Lamb & Middleton, 2003).

These crosslinguistic differences have important implications for the object properties speakers pay attention to. Lucy’s (1992b) work demonstrates that speakers of noun class and classifier languages may differ in how much attention they pay to the number of objects. He found that when talking about a picture shown by the experimenter, speakers of English (noun class language) and Yucatec (classifier language) perform similarly when it comes to the number of animals (indicated frequently) and substances (indicated infrequently). The area where the two groups differ systematically is the treatment of objects, such as tools and containers. This is also the area where the two grammars diverge most, since English marks objects for number obligatorily and Yucatec does not. As a result, all speakers of English refer to number when discussing objects, but only a few speakers of Yucatec do so. This means that although all healthy humans can differentiate between one, two, and many objects, speakers of languages where number marking is obligatory may be more likely to pay attention to this feature across contexts.

Speakers of noun class languages may also be more likely to pay attention to the shapes of various objects, which they construe as individuated—and thus countable—entities. Studies of object categorization show that in both verbal and nonverbal tasks, English-speaking children and adults display preferences for shape-based classification of various objects, whereas Yucatec- and Japanese-speaking children and adults favor material-based classification (Gentner & Boroditsky, 2001; Imai, 2000; Imai & Gentner, 1997; Imai & Mazuka, 2003; Lucy, 1992b; Lucy & Gaskins, 2001, 2003). These preferences may also hold for some L2 users, as demonstrated in a study by Cook et al. (2006). The researchers found that Japanese L2 users of English grouped simple objects and substances based on material, rather than shape, similarly to Japanese monolinguals and differently from monolingual English speakers (as seen in the study by Imai and Gentner [1997], whose design was replicated by Cook et al., 2006). For example, when deciding which two objects out of three go together, English speakers grouped together a C-shape made out of Nivea and a C-shape made out of hair-gel (same shape), while Japanese speakers—and Japanese L2 users of English—grouped together a C-shape made out of Nivea and a pile of Nivea (same material).

These differences do not mean that speakers of particular languages fail to differentiate objects and substances. Rather, these results suggest that languages focus speakers' attention on different properties of the world around them and lead them to construct different conceptual representations of particular entities where some see shape as one of the key features and others favor material. In other words, speakers of a noun class and a classifier language looking at the same object do not see two different things, but they may see the same thing differently, i.e. focus on different properties of the object for communicative or classification purposes. The focus on shape, and thus on the status of the object as an individuated entity, is manifested in speakers whose representations of objects involve countability.

Speakers of classifier languages learning a noun class language commonly experience difficulties in acquiring number marking and a determiner system. Traditionally, such difficulties have been linked to the acquisition of syntax, and we do not doubt that they are indeed partially structural. Yet they also have conceptual bases identified in studies by Hiki (1991) and Yoon (1993), who investigated the perception of noun countability by Japanese-speaking learners of English. Both studies were motivated by the question of "whether Japanese speakers perceive nouns in terms of countability or not. If so, do they perceive noun countability in the same way native English speakers do?" (Yoon, 1993, p. 273). Both Hiki and Yoon found that Japanese-speaking learners of English differ substantially from native speakers of English in terms of whether they perceive individual nouns as being count or noncount, and that this also affects their use of articles (for a similar argument, see also Yule, 1998). Yoon did not investigate the effects of countability perceptions on the use of the plural marker *per se*, but Hiki found that his Japanese-speaking participants' highest countability misjudgment rate concerned nouns occurring in a plural environment (e.g., *Many people hate snake*). The findings of these studies show that speakers of classifier languages have special CLI-related challenges in learning to attend to number and to use number marking appropriately in a noun class language. Conceptual transfer in this context results in a systematic lack of attention to number marking. What would be truly interesting to investigate is the presence of any CLI effects in the transition from a noun class to a classifier language. We can only hypothesize that, while learning a classifier language, speakers of a noun class one may initially pay less attention to the obligatory use of classifiers.

Furthermore, even in situations where both languages encode the singular/plural and count/mass distinctions, what is seen as countable in one language may be treated as noncountable in the other (although even in one language, certain nouns may be treated as countable in one context and noncountable in another). For instance, *news*, *information*, and *knowledge* are commonly treated as noncount nouns in English, but as count nouns in French (*nouvelle(s)*, *connaissance(s)*, *information(s)*). In this context, conceptual transfer may manifest itself

when speakers fail to mark the count/mass distinction (through articles or classifiers), or transfer a conceptual representation of a particular entity, including its perceived status with regard to countability, from one language to another, consequently using a noncount noun as a count one or vice versa.

To sum up, the mastery of number marking in a noun class language requires the internalization of the [COUNTABILITY] component of representations of particular nouns. Conceptual transfer effects in this area emerge most noticeably when speakers of classifier languages using a noun class language fail to differentiate systematically between count and mass nouns, in cases where particular representations fail to encode [COUNTABILITY], and in cases where mental representations transfer the [COUNTABILITY] component from one language into the other. Undoubtedly, in some of these instances CLI will be structural, rather than conceptual. The decision of whether particular instances stem from conceptual transfer, or are affected by other factors, will require a close examination of the L2 users' representations of the entities in question, along the same lines as Hiki (1991), Yoon (1993), and Cook et al. (2006).

4.3.6. Time

Having discussed language-mediated concepts that allow us to categorize objects, substances, people, and their emotions, we will now move to concepts that guide our perception and categorization of events in the world around us, namely [TIME], [SPACE], and [MOTION]. The debates about the relativity of the concept of [TIME] stem from Whorf's (1956) original argument that speakers of English treat cyclic experiences, such as the passage of a day, week or year, as object-like so that time is seen as a substance that fills these objects. In turn, Hopi speakers, according to Whorf, treat cyclic experiences as recurring events and do not conceptualize [TIME] in a way similar to speakers of English and other European languages. Several critics, most notably Gipper (1976) and Malotki (1983), have argued against Whorf, pointing out that Hopi has a rich and extensive temporal system. At the same time, both Gipper (1976) and Malotki (1983) have admitted that while their work rejects the notion of Hopi as a "timeless" language, it supports the idea that the Hopi sense of time, and the role time plays in their lives and culture, do not correspond to Western notions. Lucy (1996) underscores these conclusions, stating that those who look for a concept of time in Hopi completely miss Whorf's crucial point about the distinct structuration of time words in the two languages. In other words, the issue is the difference between conceptualizations of [TIME], rather than the lack or presence of a [TIME] concept.

Consequently, the first crosslinguistic difference in this area involves the conceptualization of [TIME] in relation to grammaticized (tense, or tense and aspect) and lexicalized concepts (temporal adverbs and particles, spatiotemporal

metaphors). For instance, English and Indonesian tend to map temporal duration onto linear distance (e.g., *a long time*), while Greek and Spanish favor the conceptualization of time as a quantity (e.g., *mucho tiempo* [= much time]) (Casasanto et al., 2004). When it comes to the metaphor of time as distance, English speakers may describe time as horizontal and Mandarin speakers as vertical (Boroditsky, 2001). These differences have implications for nonverbal cognition, whereby speakers of different languages differ significantly on time estimation tasks (Casasanto et al., 2004). Conceptual transfer in this area may manifest itself in speakers' systematic reliance on the temporal concepts of the source language when using the recipient language and thus, for instance, talking about *largo tiempo* (= literally: long time), instead of *mucho tiempo*, in L2 Spanish.

The second crosslinguistic difference in this area involves languages such as English and Spanish where temporality is encoded grammatically (through tense or a combination of tense and aspect), and languages such as Mandarin and Indonesian that rely exclusively on lexical and discursive means but have no grammatically marked temporality (Comrie, 1985). Recent empirical studies suggest that speakers of tenseless languages may take longer to think about [TIME]. For instance, Alloway and Corley (2004) asked speakers of Tamil (a tense language) and Mandarin (a language that does not encode tense) to judge the similarity of picture pairs where the base form represented an agent in the process of committing an action (e.g., a woman kicking a ball). The two alternatives represented an action change (e.g., the same action at the point of completion) and a theme change (e.g., a woman kicking a poster tube). The patterns of responses were similar across the two groups, but the response latencies differed: Mandarin speakers spent significantly more time deliberating over combinations that portrayed an action change with the same agent and theme (i.e. a difference in the point in time). Conceptual transfer in this area may thus be evident in difficulties experienced by speakers of tenseless languages in making systematically temporal distinctions obligatory in the target language, and, consequently, in the lack of or in inappropriate tense marking (although tense marking errors may also be affected by other factors).

The third locus of conceptual transfer involves crosslinguistic differences in the tense systems, whereby different languages create different links between time, events, contexts, and speakers' purposes. Russian, for instance, requires its speakers to mark in both past and future tense whether the event in question is described as completed or in-progress. While these distinctions are similar to those encoded in English in the opposition between the simple past and past progressive (made/was making, read/was reading) or present perfect (have done/have been doing), the English tense and aspectual system cannot fully guide the learner of Russian. For instance, in translating the question *Have you read this book?* into Russian one would use imperfective if the question is more or less general (*Vy chitali etu knigu?*) and perfective if the question refers to whether

the interlocutor has finished reading the book in question (*Vy prochitali etu knigu?*). Imperfective here stresses the attempt, while perfective is used to emphasize the completion of the action. Obligatory linguistic differentiation between certain aspects of the action, in the present case completed and incomplete events, affects speakers' awareness of and attention paid to these aspects. For instance, Boroditsky and Trusova (2003) found that Russian-English bilinguals notice differences between completed and incomplete actions much more frequently than speakers of English, regardless of the language of the task.

The presence of such language-specific temporal distinctions creates additional difficulties for L2 learners who, at least initially, may not be able to systematically make particular distinctions. Acquisitional difficulties in this area have been documented by Hinkel (1992), who asked native speakers of English and L1 speakers of Arabic, Chinese, Japanese, Korean, Spanish, and Vietnamese learning English as an L2 to interpret four sentences for each of the English tenses through the use of a multiple-choice questionnaire that offered different options describing the time and type of action. She found that L2 users approximated L1 English speakers only in one area, present progressive. In all other areas, their interpretations of the tenses in question differed significantly from those of native speakers of English, even though some of these languages, such as Spanish, do encode tense morphosyntactically. These results suggest that present progressive maps onto a clearly delineated concept, while the other tenses may not have clear conceptual counterparts in some languages. Once again, some of the difficulties experienced by the learners involve the acquisition of structural properties of the English tense and aspect system; others, however, have conceptual sources. English present perfect, for instance, presents particular conceptual challenges for ESL learners (Celce-Murcia & Larsen-Freeman, 1999, p. 125).

Evidence of conceptual transfer in this area comes from Pavlenko and Driagina's (2006) work with American L2 learners of Russian who often fail to differentiate between completed and incomplete events. These learners frequently use imperfective—instead of perfective—verbs to refer to punctual events and actions (e.g., *on ochen' pugalsia* [= he was repeatedly very scared] instead of *on ochen' ispugalsia* [= he got scared], *on eshche raz pomnil* [= he continued to remember once again] instead of *on eshche raz vspomnil* [= he remembered once again]). Traditionally, these difficulties have been treated as formal, and indeed part of the difficulty stems from the need to acquire multiple morphosyntactic markers. The other difficulty, however, stems from the fact that learners need to transform a single lexicalized concept of undifferentiated action ([TO READ], [TO REMEMBER]) into two related but distinct lexicalized concepts, one of which refers to ongoing or generic actions and one to completed or punctual actions and events, linking word pairs to these differentiated concepts.

To sum up, adequate language-mediated conceptual representations of [TIME] minimally involve knowledge of (a) obligatory and optional temporal

distinctions made in the language in question; (b) language-specific spatiotemporal metaphors that involve [TIME]; and (c) language-specific representations of particular temporal concepts. Conceptual transfer in this area results in L2 users' failure to mark temporality in accordance with the language-specific temporal system of the target language and/or reliance on [TIME] concepts imported from the source language. Notably, these errors could also result from other causes and thus cannot necessarily serve as proof of conceptual transfer; they may, however, be numbered among its many manifestations. Scholars interested in discerning the sources of conceptual transfer will need to additionally examine L2 users' actual [TIME] concepts through a variety of verbal and nonverbal tasks along the lines of studies conducted by Alloway and Corley (2004), Boroditsky (2001), Boroditsky and Trusova (2003), and Casasanto et al. (2004).

4.3.7. Space

Languages also differ in the ways they encode [SPACE] (Levinson, 1997, 2003a, b). Crosslinguistic differences in the conceptualization of [SPACE] underlie instances of conceptual transfer on a variety of levels. The first such difference involves frames of reference. Linguists distinguish between three types of spatial frames of reference: absolute, intrinsic, and deictic (Levinson, 1997; Majid et al., 2004). An *absolute* frame uses information external to both the speech participants and the figure-ground scene, such as *north*, *south*, *east*, and *west*. This type of frame is favored by speakers of Guugu Yimithirr (Australia), Arrernte (Australia), Hai/om (Namibia), Tzeltal (Mexico), Longgu (Solomons), Belhare (Nepal), and Balinese (Indonesia). A *relative* or *deictic* frame is based on the viewpoint of the speaker or listener, such as *in front of me* and *to your left*. This type of frame is commonly favored by speakers of Dutch, Japanese, and Turkish. An *intrinsic* frame uses the features of the object in question as the point of departure, such as *in front of* and *at the center of*, and is favored by speakers of Jaminjung (Australia), Mopan (Belize), and Totonac (Mexico) (Majid et al., 2004).

Recent studies have shown that while many languages use all three types of frames, different speech communities may favor different reference frames and, as a result, differ systematically in their performance on verbal and nonverbal problem-solving, memory, role playing, and description elicitation tasks, with speakers of English, for instance, favoring intrinsic frames in spatial descriptions, and speakers of German opting for deictic ones (Bowerman, 1996a, b; Carroll, 1993, 1997; Levinson, 1996, 1997, 2003a; Pederson et al., 1998). These framing differences, reminiscent of differences in emotion framing in Russian and English, may be seen not simply as conceptual differences, i.e. differences in the contents or structure of particular conceptual categories, but as conceptualization differences, i.e. differences in ways of thinking about and framing particular aspects of the world around us. In the context of such framing differences, conceptual

transfer may be most evident in L2 users' reliance on the frames favored in the source language when producing spatial descriptions in the recipient language. One example of such transfer would be a systematic preference by German L2 users of English for deictic, rather than intrinsic, frames when talking about spatial layouts in English.

The second crosslinguistic difference involves internal category structure, i.e. spatial relations grammaticized through closed-class morphemes, such as prepositions in English and Dutch, postpositions in Korean, and case endings in Finnish and Hungarian. Some of these spatial relationships may be quite different from those encoded in English. For instance, the Californian language Karuk has the spatial prefix *vara-* [IN THROUGH A TUBULAR SPACE], while the Australian language Guugu Yimithirr does not distinguish between [ABOVE] and [ON] (Levinson, 2003b). Korean focuses centrally on the fit between a figure and a ground and requires speakers to differentiate between [TIGHT FIT] described by the verb *kkita* (e.g., videotape in a case) and [LOOSE FIT] described by the verb *nehta* (e.g., apple in a bowl); it does not matter, however, whether the fit is achieved through insertion, encirclement, or surface attachment (Bowerman & Choi, 2003).

Although these differences do not prevent people from seeing the spatial locations of objects and entities not encoded in their language(s), they may guide speakers of different languages to pay attention to different aspects of spatial relations. Work by Bowerman and Choi (Bowerman, 1996a, b; Bowerman & Choi, 2003; Choi et al., 1999; Choi & Bowerman, 1991) shows that, guided by language-specific constraints, by the age of two or two and a half English-speaking children distinguish systematically between actions involving containment ([IN]) and actions involving support ([ON]), regardless of fit (e.g., *apple in a bowl*, *videotape in a case*, versus *ring on a finger*, *cup on a table*). In contrast, Korean-speaking children distinguish between tight fit (e.g., *ring on a finger*, *videotape in a case*) and loose fit (e.g., *apple in a bowl*). In this context, conceptual transfer effects emerge when speakers express spatial relationships in a way that indicates a source-language influence on how they attend to, perceive, and/or categorize these relationships.

Languages that encode the same spatial relations may still differ in the internal structures of conceptual categories linked to partial translation equivalents. For instance, spatial relations covered by the English *on* require three prepositions in Dutch: *op*, *aan*, and *om* (Bowerman, 1996b). Such differences may give rise to both semantic and conceptual transfer. The manifestations of the two may be hard to differentiate, as seen in a study by Ijaz (1986), who examined the representations of the English spatial prepositions *on*, *upon*, *onto*, *on top of*, *over*, and *above* in German and Urdu L2 users of English. The researcher found that many L2 users transferred the internal structure of the meanings of spatial prepositions from their native languages. For instance, in their judgments of the meanings of *on*, German speakers overemphasized [MOVEMENT] and [VERTICALITY] and

underemphasized [CONTACT]. This representation was closely modeled on that of the German *auf*, which, unlike the English *on*, cannot express nonvertical meanings. As a result, in sentences with nonvertical meanings (e.g., *dogs must be kept ____ a leash*) German speakers typically inserted the erroneous response *at*. A more conservative interpretation might characterize these instances merely as semantic transfer, i.e. the transfer of links between particular concepts and prepositions.

Insofar as conceptual transfer effects do exist in this area, we hypothesize that they involve internal category structure, with the L2 learning task requiring the transformation of a conceptual category, rather than simply the relinking of words and concepts. A few studies to date indicate that L2 learners differentiate between core and peripheral members of particular conceptual categories. Ijaz (1986) found that L2 learners' representations of prototypical meanings of spatial prepositions closely resemble those of the native speakers. In contrast, prepositions used in peripheral or figurative meanings (e.g., *the apartment is directly over the variety store*) elicited different responses from L1 speakers of English and L2 users. Similarly, Krzeszowski (1990) found that the prototypical uses of the English *over* were consistently and correctly translated into Polish by advanced Polish learners of English as *nad/ponad* (= over) (e.g., *he jumped over the wall*). There was significantly less agreement when the uses became less prototypical and literal (e.g., *he fell over*), indicating that the learners did not have a full conceptual representation for the preposition in the L2, yet were hesitant to transfer abstract and peripheral meanings and metaphorical extensions associated with the L1 translation equivalents.

The fourth source of conceptual transfer involves language-specific spatial concepts. English, for instance, requires its speakers to make subtle distinctions in terms of interpersonal distances encoded in the concept of [PERSONAL SPACE], while Russian does not encode this notion. Pavlenko's (2003a) study of narratives elicited from monolingual speakers of Russian and American English points to interesting implications of this difference. In recalling a short film that portrayed a public area where a male stranger sat down next to a young woman, several speakers of American English suggested that the man was too close to the woman and, as a result, violated her privacy or personal space. None of the 40 Russian speakers referred to that closeness or to a possible violation, even though they could have simply said that the man sat down *slishkom blizko* (= too close) to the woman. These differences in verbal performance suggest that the concept of [PERSONAL SPACE] may lead English speakers to partition the space around people in different ways than it is partitioned by speakers of Russian and, as a result, to perceive violations where Russian speakers see none. Conceptual transfer in this area involves reliance on the spatial concepts of one language when speaking another, as well as a failure to rely on spatial concepts that are commonly used in a particular context by speakers of the language in question.

To sum up, crosslinguistic studies suggest that learning to refer to space in a new language involves much more than the memorization of language-specific prepositions and spatial adverbs. Mastery of the spatial categories of the target language requires the internalization of (a) spatial relationships obligatorily and optionally marked in the language in question; (b) prototypes of particular language-mediated concepts such as [ON] and [OVER], as well as peripheral members of the conceptual category that allow for abstract meanings and metaphorical extensions; (c) language-specific preferences for spatial layout frames; and (d) language-specific spatial concepts, such as [PERSONAL SPACE]. Conceptual transfer in this area is exhibited as a reliance on language-mediated concepts of the source language to encode spatial relationships in the recipient language. It can also be exhibited as a failure to pay attention to spatial distinctions obligatorily marked in the recipient language, prompted by the lack of such distinctions in the source language.

4.3.8. Motion

The domain of [MOTION] comprises ways in which people talk about processes and action outcomes. The first set of crosslinguistic differences in this area involves the internal structure of the category, more specifically, the salience of the key components of motion: path or direction of movement (e.g., *enter* versus *exit*) and manner of movement (e.g., *walking* versus *running*). Traditionally, linguists have distinguished between two types of languages in this area (Talmy, 1991). *Satellite-framed* languages, such as English, Dutch, German, and Russian, have verbs that typically express the manner of motion (e.g., *walk*, *creep*, *slip*, *sneak*, *barge*) and indicate its path in a satellite of the verb (e.g., *in* or *out*). In turn, *verb-framed* languages, such as Spanish, French, Turkish, Japanese, and Hebrew, focus on the path encoded in the main verb (e.g., *entrar* [= come in]). Expressing manner in these languages requires an optional addition to a clause that is already complete. More recently, Slobin (2004) has modified this typology, incorporating a third category of *equipollently-framed languages*, such as Mandarin and Thai, where path and manner are expressed by equivalent grammatical forms. For the purposes of the present discussion, however, we will not refer to languages in this category, but limit ourselves to languages where differences are most pronounced.

Speakers of satellite-framed languages, in Slobin's (2003, p. 162) view, get manner for free and make widespread communicative and cognitive use of this dimension. Studies conducted by Slobin, Berman, and their associates (Berman & Slobin, 1994; Slobin, 1996, 2000, 2003; Strömquist & Verhoeven, 2004) have demonstrated that narratives elicited by a picture book from speakers of satellite-framed languages contain more details about motor patterns, rate, and quality of movement, than narratives elicited from speakers of verb-framed languages.

They also suggest that speakers of satellite-framed languages use manner verbs much more frequently than speakers of verb-framed languages in conversation and oral and written narratives. To differentiate between optional and obligatory features in this area, future studies may need to differentiate between two types of satellite-framed languages, those that function like English, where manner of motion is an optional category and where several high-frequency verbs encode path but not manner (e.g., *come, go, leave*), and those that function like Russian, where manner of motion is encoded obligatorily (e.g., the English *go* corresponds to two verbs in Russian, *idti* /to walk and *ehat'* /to drive, to ride) (Pavlenko & Driagina, 2006).

Additional evidence of differences in perception, categorization, and reference to path and manner by speakers of English (satellite-framed language) and Spanish (verb-framed language) comes from a study by Gennari et al. (2002). The researchers showed their English- and Spanish-speaking participants short videotapes comprising a set of 108 motion events that portrayed common activities lexicalized in the two languages (e.g., running, jumping). The videos were organized into a set of 36 triads, with the main video showing a motion event (e.g., an agent carrying a board into a room), and the two alternatives portraying variations in either the manner (e.g., dragging the board into the room) or path direction (e.g., carrying the board out of the room). The researchers found that English speakers tended to assign the same verb to actions that shared manner (e.g., *runs in/runs out* versus *walks in*), while Spanish speakers assigned the same verb to actions that shared path (e.g., *entra [corriendo]/entra [caminando]* [= runs in/walks in] versus *sale [corriendo]* [= runs out]). Spanish speakers also used significantly more path verbs than English speakers, while English speakers expressed manner of motion significantly more than speakers of Spanish. Naigles and associates (1998), who asked English and Spanish speakers to describe videotaped motion events, similarly found that English speakers used mostly manner verbs for the main verb of the sentence while Spanish speakers favored path verbs, at times accompanied by manner modifiers.

Similar to the previously discussed studies of emotion and time framing, the studies above show that when languages favor a particular frame, speakers of these languages tend to attend more to features encoded in this frame, be it manner or path. Interesting insights into this process come from Slobin's (2003) analysis of a sample of novels translated from English to Spanish and Spanish to English. In the translations of the English novels, only 62 percent of the original manner verbs appeared in the Spanish version. In contrast, in the translations of the Spanish novels, 95 percent of the original manner verbs were retained. Furthermore, English translators added manner descriptions, translating all Spanish non-manner motion verbs with English manner verbs. These differences do not suggest that conceptual transfer will necessarily take place in this domain; rather they suggest that if it does, it may be most visible in the preference for path

verbs (e.g., *enter*) over manner verbs (e.g., *walk in*) by L1 speakers of verb-framed languages, such as Spanish, using a satellite-framed L2, such as English.

Hohenstein and associates (2006) have investigated this contrast in a study with early and late Spanish-English bilinguals who were asked to narrate what was happening in the videos shown to them. The researchers found that, overall, bilinguals used more manner verbs in both languages, but their propensity for path verbs was higher in Spanish than in English. At the same time, the results revealed an intriguing pattern of bidirectional transfer. In Spanish, both early and late bilinguals exhibited influence from L2 English: They paid increased attention to manner and produced significantly fewer path verbs than Spanish monolinguals did ($p < .001$). In English, the transfer from L1 Spanish was limited to the late bilinguals, who paid less attention to manner and used significantly more path verbs than English monolinguals did ($p < .001$).

The second locus of conceptual transfer in this area involves the internal structure of the [MOTION] category, with the focus on language-specific aspects grammaticized and obligatorily marked in particular languages. Russian, for instance, differentiates between unidirectional and multidirectional motion (Muravyova, 1986). Unidirectional verbs, such as *idti* (= to go, walk) typically describe motion proceeding in a forward direction, usually at a given point in time, as in *idti v shkolu* (= to be going to [toward] the school [at a given point in time]). Multidirectional verbs, such as *khodit'* (= to go, walk [back and forth]), describe aimless, multidirectional motion, round trips, and habitual or repeated motion, as in *khodit' v shkolu* (= to go to school [every day]). English speakers can undoubtedly differentiate between the two types of motion but are not required to do so by their language.

In the context of such differences, conceptual transfer effects become evident when speakers fail to make a distinction obligatory in a particular language. Instances of such conceptual transfer were identified by Pavlenko & Driagina (2006) in a corpus of narratives elicited from American learners of Russian. In several cases, the learners used multidirectional imperfective verbs, such as *begal* (= he was running) and *katal* (= he was rolling [something]) instead of context-appropriate unidirectional perfective verbs, such as *pobezhal* (= he ran) or *podkatil* (= he rolled [something] over). Commonly, such errors are attributed to learners' difficulties in memorizing several Russian lemmas for each English lemma. We point to an additional source of difficulty—the fact that the Russian lemmas correspond to different concepts and that the L2 learning task in this case requires the transformation of undifferentiated conceptual representations of [RUNNING] and [WALKING] into representations that involve a [DIRECTIONALITY] component. Until the learners develop such representations they will rely on their explicit knowledge of the rules while performing classroom tasks, but in spontaneous speech will use the verbs interchangeably as each verb pair will be attached to a single L1-mediated conceptual representation.

The third locus of conceptual transfer involves crosslinguistic differences in discrete motion concepts, such as [GO] and [PUT ON]. For instance, in English *put on* can be used with a variety of clothing items, and all of these actions are subsumed under the representation of [PUT ON]. In contrast, Japanese and Korean differentiate between items put on the head, upper body, lower body, etc., and require the use of different verbs to mark the distinctions. [GO] is a particularly interesting case, as it is often assumed to be a linguistic primitive—a universal concept (e.g., Jackendoff, 1990). Yet, as Goddard (1998) convincingly shows, this is not the case, and many languages do not have a concept of undifferentiated motion. In English, for instance, the conceptual category of [GO] involves several distinct types of motion, such as flying, driving, riding, and walking. In contrast, German and Russian differentiate between going on foot (*gehen*, *idti*) and going by vehicle (*fahren*, *ehat'*).

In the case of such differences, conceptual transfer arises when L2 users fail to make conceptual distinctions obligatory in a particular language, or adopt distinctions made in one language when speaking another. This transfer may also be visible in L2 lexical preferences, as seen in a series of studies conducted by Jarvis (1994, 2000a). The researcher asked L2 users of English from different linguistic backgrounds to recall a five-minute segment of the silent film *Modern Times* in English. He found that the participants differed systematically in references to human versus vehicle collision: speakers of Swedish used different L2 English verbs to refer to human and vehicular collisions (as would be required by Swedish), while speakers of Finnish and several other languages that do not differentiate between human and vehicular collisions, referred to both with the same verbs (e.g., *crash*, *hit*, *run into*, etc.).

To sum up, adequate language-mediated concepts of [MOTION] minimally involve knowledge of (a) obligatory and conventional distinctions made in the language in question with regard to motion, (b) linguistic preferences in the use of particular verbs of motion (e.g., manner versus path verbs), and (c) prototypical and peripheral scripts involving a particular type of motion. Some of the more conspicuous instances of conceptual transfer in this domain may reflect L2 users' lack of attention to obligatory distinctions, categories, and preferences of the language in question, and their reliance on the motion concepts and preferred frames of one language in the use of another.

4.4. CONCLUSIONS

Throughout this chapter we have argued that, in many cases, marked instances of CLI stem not only from structural differences between languages, but also from differences in language-mediated concepts and language-specific patterns of framing and conceptualization. The first locus of conceptual transfer in the

eight domains in question stems from differences in the linguistic encoding and thus linguistic salience of a particular domain (e.g., tense versus tenseless languages). As we have argued earlier, conceptual development does not require the linguistic encoding of a particular concept; rather, the presence of a lexicalized or a grammaticized concept sensitizes the speakers to and induces them to think for speaking in terms of this conceptual category. Thus, noun class languages sensitize speakers to countability and, implicitly, to the shape of objects, while certain grammatical gender languages lead speakers to think of inanimate objects in terms of masculine and feminine characteristics. The second set of differences arises from differences in the internal structure of particular conceptual domains and in preferred patterns of framing and conceptualization, whereby speakers of Russian may favor a verbal pattern of emotion description, while speakers of English favor an adjectival one.

The remaining three sets of differences involve particular concepts within each domain. Thus, languages may differ in the level of abstraction at which categorization is made, whereby a single category of one language may correspond to several categories in another language (e.g., the English *you* versus the French *tu/vous*, the English *go* versus Russian *idti/khodit'* [= to walk] and *chat'/ezdit'* [= to ride, to drive, to travel by means of transportation]). In the context of translation equivalents, conceptual categories corresponding to these equivalents may differ in terms of category prototypes or borderline members (e.g., *chashki/cups* and *stakany/glasses*, *revnost'/jealousy* and *zavist'/envy* in Russian and English). Last but not least, even within the foundational domains of reference, there exist language-specific categories, such as the English *frustration* or *personal space*, the Greek emotion *stenahoria*, and the Karuk notion of *vara-* (= in through a tubular space). Conceptual transfer in the case of such crosslinguistic differences may manifest itself as L2 users' reliance on the lexicalized and grammaticized concepts of the source language when using the recipient language. It may also manifest itself as a failure to pay attention to distinctions obligatorily encoded by the target language.

Clearly, we are not the first or the only ones to recognize that crosslinguistic conceptual differences may underlie manifestations of CLI (see also Graham & Belnap, 1986; Ijaz, 1986; Kellerman, 1978, 1986, 1995; Kecskes & Papp, 2000; Lado, 1957; Odlin, 2005). Yet we may have been the first to pursue the issue systematically for more than a decade (Jarvis, 1997, 1998, 2000b; Pavlenko, 1996, 1997, 1999, 2002b, c; 2003a; Pavlenko & Jarvis, 2001, 2002) and to outline a systematic and theoretically informed account of how conceptual differences in a variety of domains lead to conceptual transfer. While acknowledging that concepts that are not encoded in a particular language may nevertheless be imagined by its speakers, we contend that lexicalized and grammaticized concepts, as well as preferred frames, of the first language or languages sensitize speakers to specific distinctions and facilitate recall, categorization, and comprehension along

the lines of habitual modes of thought. Consequently, learning a new language involves (ideally) learning to conceptualize the world in a different way, from new ways of categorizing objects, events, and phenomena (e.g., categorization of glasses in terms of shape rather than material, categorization of motion in terms of unidirectional and multidirectional) to making new attributions to familiar objects and events (e.g., attributions of natural gender to objects, attribution of multidirectionality to movement). Explicit knowledge about a concept or the ability to imagine it are not sufficient for this learning. In order to restructure already existing conceptual representations or to form new ones, L2 learners need to take part in communicative practices of the target language community where they can learn to attend to new conceptual distinctions. These L2-mediated concepts will allow L2 users to appropriately perform the following activities: (a) mark obligatory and conventional distinctions required by a particular language, (b) categorize and/or name particular objects and events, (c) judge the typicality of particular exemplars, (d) appeal to linguistic means (e.g., pronouns or frame choices) favored by the language in question, and (e) appeal to language-specific concepts, scripts, and means of verbal and non-verbal expression in production and comprehension.

The development of these L2-mediated concepts is influenced by four factors. The first one is the degree of *linguistic transparency* in concept encoding. For instance, the internalization of noun categories in Chinese, where such categories are clearly marked by classifiers, may be easier than in English, where category membership is not obligatorily marked. On the other hand, the English tense-aspect system does clearly mark the present perfect, yet the meaning of this tense eludes many beginning and intermediate L2 learners whose native languages do not encode the speaker's perspective in the temporal system (Celce-Murcia & Larsen-Freeman, 1999; Yule, 1998). Thus, linguistic transparency is a contributing factor but by no means a deciding one because the concepts themselves are not necessarily equally transparent.

A second and related factor is *concept salience* in linguistic input, or the frequency with which a particular lexicalized or grammaticized concept occurs in speech and the degree to which learners are able to map it onto their sensory-perceptual environment. For instance, one of the Russian-English bilingual participants in Pavlenko's (2003a) study mentioned that he internalized the notion of "personal space" because it appeared several times in his encounters with English speakers, in particular in disagreements with his American roommate. Churchill and DuFon (2006) make an interesting observation with regard to salience, pointing out that the occurrence of certain forms in "foreigner talk" (i.e. the speech addressed to nonnative speakers) may in fact differ from that in regular speech.

The necessity of repeated mapping between the language and the sensory-perceptual environment takes us to the third factor, emphasized throughout this

section, namely *participation in communicative practices* where L2 learners are exposed to and gain practical experience with conceptual distinctions made in everyday conversation by speakers of the target language. This participation involves a range of experiences, from learning the uses and functions of new artifacts, to learning how to participate in and interpret new emotion scripts. Most importantly, such experiences involve miscommunications that serve to highlight crosslinguistic differences in the representation of particular concepts. DuFon and Churchill's (2006) collection of studies of second language socialization in study abroad contexts offers several excellent examples of linguistic and conceptual development through participation in target language practices (see also studies by Belz & Kinginger, 2002, 2003, and Kinginger & Farrell, 2004).

Finally, the fourth factor is the learners' *agency*. L2 learners do not act as linguistic dummies who simply process input and produce output. Rather, they act as agents in charge of their own learning. This means that in some cases they may transfer core but not peripheral meanings of particular concepts (Ijaz, 1986; Kellerman, 1978, 1986), and in other cases they may consciously reject particular language- and culture-specific conceptual distinctions and linguistic encodings in favor of L1-based social norms and values (Kingerling & Farrell, 2004; Siegal, 1996).

Despite the mounting evidence of conceptual complexity in L2 learning, many SLA researchers and teacher educators continue to talk unproblematically about language learners *learning the meaning* of a particular lexical item or a grammatical form, and about *mapping the meaning to form*, often failing to draw a necessary distinction between learners' explicit and implicit knowledge of meaning. Language grammars often list *meanings* corresponding to forms in the hope that as soon as these meanings are clearly explained to the learners and practiced in *meaningful* tasks, learners will no longer experience difficulties in using particular forms or items. For instance, to explain the distinction between simple past and present perfect, the teacher may say to students that "the use of the present perfect has more to do with our present perspective on the event rather than on the actual time at which it took place" (Celce-Murcia & Larsen-Freeman, 1999, p. 125) and engage them in noticing activities.

As language learners, language teachers, and teacher educators, we appreciate the importance of such consciousness-raising activities. As researchers, we want to emphasize their limitations. It is one thing to explain to L2 learners of English when present perfect is used, and it is a different matter to get them to understand the subtle differences between contexts where it is and isn't used and to pay spontaneous attention to particular types of speaker perspectives when encoding temporal meaning. Undoubtedly learners can memorize explicit definitions of particular words and grammatical forms, yet they may not be able, at least initially, to make spontaneous distinctions not made in their first language. Rather, *learning the meaning* and *mapping meaning to form* may require a restructuring of

one's conceptual system. This restructuring cannot take place through decontextualized learning activities, although they may offer a good starting point, raising learners' awareness about particular issues. As argued here and as will be shown in the next chapter, it can only take place through extensive interaction in a variety of contexts with members of the target language community.

Conceptual Change

5.1. INTRODUCTION

Previously, we postulated that conceptual development and change are dynamic processes that take place throughout the lifetime of individuals and are shaped through their socialization into new discursive communities. These processes occur naturally during the course of socialization into one's first language(s); they are also affected by second or additional language socialization, and can result in the modification and transformation of already acquired concepts. Four types of events and processes are at the source of these transformations: (a) developmental maturation and schooling (resulting, *inter alia*, in the development of natural and nominal kinds of concepts, cf. Keil, 1989a); (b) socialization into new professional communities (leading to the appropriation of new terminology); (c) life changes, such as immigration or conversion to a different religion (leading to the adoption of new objects, customs, or holidays); and (d) exposure to new language-mediated concepts. The first three types of socialization may take place within the same language community; consequently, it is the fourth source of conceptual change that is of interest in the present investigation.

In the preceding chapter, we examined cases where crosslinguistic differences in language-mediated concepts gave rise to L1-induced conceptual transfer effects. In doing so, we approached CLI from a more traditional, synchronic perspective, with the focus on forward transfer. In the present chapter, we shift our focus to reverse transfer. The structure of this chapter will differ from that of the preceding one. If all we wanted to do was to add examples of reverse transfer in the eight domains in question, we could have done so within the parameters of the previous discussion. Instead, in what follows, our goal is to offer a typology of conceptual change in the bilingual mental lexicon that could productively guide future research in the area. This typology, developed by Pavlenko (1999, 2000, 2002c), captures CLI as a concatenation of ongoing cognitive processes, each of which we describe and exemplify. We conclude with a list of factors that affect conceptual change and with implications for future research. Throughout

the chapter, we approach CLI as a diachronic, dynamic, and multidirectional phenomenon, where L1 influence in the acquisition and use of additional languages may interact with the processes of L2 influence on L1, L2 influence on L3, and even attrition in the languages involved.

5.2. CONCEPTUAL CHANGE IN SECOND LANGUAGE ACQUISITION

As stated in the previous chapter, our approach to language-mediated conceptual change assumes that concepts exhibit a hybrid structure, which contains information about the internal structure of the category, related scripts, and the prototypicality of particular category members. Accordingly, we consider *conceptual change* to be a modification or transformation in at least one of the three domains: (a) properties, scripts, and mental imagery associated with a particular category; (b) prototypicality of particular category members or properties; and (c) knowledge and beliefs about the internal structure of the category, including category membership, and about its external links to other categories.

Our discussion privileges one population of L2 users, namely late or adult bilinguals who have learned their second or additional language post puberty, as adults, and are in the process of becoming culturally competent members of the target-language community. We have two reasons for this choice. First, this is the population targeted by most studies of CLI to date. Second, this is also the population where language-mediated conceptual change would be most visible. In children learning an additional language, such changes coincide with developmental ones and those induced by schooling and are thus difficult to distinguish. In speakers who have learned two or more languages from birth, it may be difficult to differentiate between evidence of individual language-mediated changes and that of language-contact induced changes, that is new forms that have arisen as a result of language contact and may be acquired by the speaker from other speakers in that group. Thus, our attention will focus on adult L2 learners who need to learn to categorize objects, events, and actions along the lines offered by their new linguistic community, although in a few cases we will also consider evidence from simultaneous bilinguals.

Clearly, in each individual case, the languages and cultures involved will share some similarities that will facilitate initial learning and interaction. At the same time, each case of additional language learning and use may entail some conflicts between competing semantic and conceptual representations that require adjustments on the part of L2 users (or result in L1 transfer hindering communication with target language speakers). These adjustments may be seen in differential performance in L1 and L2 in the “same” conceptual categories, or, in some cases, as the influence of L2-mediated concepts on L1 verbal and nonverbal performance.

As acknowledged earlier, all adults experience conceptual development and change as part of their educational and life trajectories. Second language socialization, however, allows us to see a magnified effect whereby the fully fluent use of an additional language requires the development of an additional set of conceptual representations that may co-exist, compete with, and at times even replace the ones already stored in an individual's memory. Throughout our discussion, we differentiate between cases that involve the acquisition of new concepts and the modification of category structure or boundaries (conceptual change) and those that involve the creation of new links between lexical items and already existing concepts (semantic change), focusing on the former.

Table 5.1 outlines the typology of conceptual change in bilingual memory proposed by Pavlenko (1999, 2000, 2002c). This framework differentiates between conceptual processes and verbal manifestations of the particular processes, with the focus on L1 performance where conceptual change brought on by the L2 would be visible as reverse transfer. Conceptual change is viewed here as involving one or more of the following processes: (a) the internalization of L2- (L3-, etc.) based concepts that are fully distinct from L1-based concepts; (b) restructuring, whereby new elements are incorporated into previously existing concepts or conceptual domains; (c) convergence, whereby a unitary concept or conceptual domain is created, distinct from both L1- and L2-based concepts; (d) shift from L1- to L2-based conceptualization within a particular domain; and (e) the attrition of previously learned concepts that are not relevant for one's daily interaction, often accompanied by a substitution of the previous concepts with the new ones.

While these processes appear to represent a continuum, this continuum is logical rather than chronological or developmental. In other words, the processes in question do not necessarily occur in any particular order, and different processes may occur at the same point in time in different conceptual domains. Moreover, none of the changes is in any way final or definitive—the dynamic nature of the conceptual store and the context-based nature of conceptual retrieval require us to see these changes as an ongoing process whereby a concept or domain that has undergone convergence may be once again separated into L1- and L2-mediated concepts in accordance with changes in the interactional circumstances of the speaker.

In what follows, we explicate the meaning of each category in this typology, discuss what could count as evidence of conceptual change in each case, and exemplify our discussion by referring to studies that bear on the topic. Unfortunately, the studies available to date offer exclusively cross-sectional and not longitudinal evidence of conceptual change, most often because their key focus has been on other topics and phenomena, and conceptual change has emerged as a peripheral finding. It is equally unfortunate that little if any work has explored conceptual change at the intersection of more than two languages.

TABLE 5.1
Typology of Conceptual Change Induced by L2 Learning

<i>Processes</i>	<i>Possible Verbal Manifestations in L1</i>
Internalization of new concepts	<ul style="list-style-type: none">• lexical borrowing• code-switching• loan translation
Restructuring under the influence of L2 (or any other additional language)	<ul style="list-style-type: none">• lexical borrowing• semantic extension• framing transfer
Convergence	<ul style="list-style-type: none">• bidirectional transfer (in one conceptual category)• loan blends
Shift from L1 to L2 (or any other additional language)	<ul style="list-style-type: none">• semantic extension and shift• semantic narrowing• framing transfer
Conceptual attrition	<ul style="list-style-type: none">• inappropriate labeling• code-switching• lexical borrowing• semantic shift• framing transfer

Thus our discussion is most often limited to the interaction between the L1 and L2. With regard to domain, to ensure continuity and coherence, we will focus on studies conducted in the eight foundational domains highlighted in the previous chapter but, to be comprehensive, we will also discuss those carried out in other domains.

5.3. INTERNALIZATION OF NEW CONCEPTS

An encounter with a new language and culture is often also an encounter with new realia and new ways of categorizing people, objects, and events, requiring the *internalization* of new concepts not encoded in the immigrants’ L1. Linguists studying immigrant bilingualism have noticed long ago that to discuss the newly acquired concepts in the L1 immigrants often resort to lexical borrowing, loan translation, and code-switching, which function to fill lexical gaps (Epstein, 1915; Haugen, 1953; Mencken, 1937; Romaine, 1995; Weinreich, 1953).

To date, no studies known to us have considered nonverbal evidence in this area (e.g., categorization patterns); consequently, the discussion below focuses on linguistic evidence of conceptual change, in particular lexical borrowing and code-switching taken as evidence of the internalization of new lexicalized concepts. The word “new” is used here in a subjective manner, to reflect the speakers’ perceptions. It may refer to objects and notions specific to the L2 community that the L2 user has indeed never encountered before, or it may highlight perceived differences in referents or connotations of the translation equivalents in question.

Our first example of internalization involves the domain of [SPACE], and within it the concepts of [PRIVACY] and [PERSONAL SPACE], lexicalized in English but not in Russian (for a discussion of *privacy* as a uniquely Anglo concept, see Karasik et al., 2005; Wierzbicka, 1991). Pavlenko’s (2002b, 2003a, b) studies show that, as a result of this difference, monolingual speakers of English (a language that has verbal labels for *privacy* and *personal space*) and Russian (which does not lexicalize these notions) describe the “same” events in different ways. In recalling two short films that portray a situation in which a male stranger in a public place sits down too close to a woman, several monolingual speakers of English framed the encounter in terms of *an invasion of* either *privacy* or *personal space*. Monolingual speakers of Russian talking about this encounter could have simply said that the man was sitting *slishkom blizko* (= too close) to the woman, yet none of them portrayed the situation in this way. As discussed in the previous chapter, these results suggest that the presence or absence of the concepts of [PRIVACY] and [PERSONAL SPACE] may lead speakers of different languages to partition space in different ways.

The films were then shown to Russian L2 users of English who had arrived in the U.S. and learned English post-puberty (Pavlenko, 2003a). Several of these speakers interpreted the films similarly to American monolinguals and appealed to the notions of *privacy* and *personal space* in their English narratives. In the stories told in Russian, these appeals to a new interpretive category resulted in hesitations, pausing, and loan translations, such as *on vtorgaetsia v ee odinochestvo* (= he is invading her solitude), where *privacy* was substituted by the semi-appropriate translation equivalent, *solitude*. This study suggests that the internalization of a new concept led Russian L2 users of English to partition space in the film in a new way and, accordingly, to resort to loan translation. Hence, evidence of internalization, that is the addition of a new concept to the conceptual repertoire, was found both in L1 and L2 production.

Additional evidence that the concepts of [PRIVACY] and [PERSONAL SPACE] are internalized by Russian speakers in the process of L2 socialization comes from the metalinguistic reflections of a participant in a study of language attrition (Pavlenko, 2003b). The participant offered the concept of *privacy* as an example of difficulties she experiences in self-expression in L1 Russian and conveyed her point by means of code-switching:

Или, например, *privacy* . . . какая *privacy*? . . . по-русски этого нету, я не могу сказать по-русски, знаешь, ну я могу сказать “Я хочу побыть одна”, но это звучит слишком драматично, да? . . . когда ты говоришь по-английски “*I need my privacy*” это более как ежедневная вещь и никто, никого это не волнует . . .

[Or take, for instance, *privacy* . . . what *privacy*? . . . in Russian this doesn't exist, I cannot say in Russian, you know, well, I can say “I want to be alone”, but this sounds too dramatic, yes? . . . when you say in English “*I need my privacy*” this is more like an everyday thing and no one, it doesn't bother anyone . . .]
(Pavlenko, 2003b, pp. 54–55)

Evidence of internalization in the domain of [EMOTIONS] is found in a memoir of Elena Koreneva (2003), a well-known Russian actress who had lived for a while in the United States with her American husband. Koreneva discusses the tension she experienced with her family members upon her return to Moscow, when she realized that it is easier for her to discuss certain topics in English than in Russian, in the large part because she now relied on Anglo concepts, such as [IDENTITY] and [FRUSTRATION]. In her defense she argued that “*frustration—чувство неудовлетворения, смешанное с досадой, которое возникает после больших ожиданий*” [*frustration—a feeling of dissatisfaction mixed with vexation/annoyance that appears after great expectations*] (p. 383) is impossible to translate into Russian with one word. Notably, the lack of a single-word translation equivalent does not prevent Russian speakers from experiencing a feeling referred to by the notion of frustration. It does, however, suggest that situations that English speakers categorize as eliciting frustration will be categorized differently by monolingual speakers of Russian. In turn, bilinguals who have internalized the concept of [FRUSTRATION] may categorize these situations differently from monolingual Russian speakers and similarly to speakers of English.

Empirical evidence of such change in bilinguals' verbal reference is offered in Panayiotou's (2004a, b) studies with Greek-English bilinguals, mentioned in the previous chapter. The analysis of participants' narratives and interviews revealed a number of language-specific terms which they perceived as untranslatable, among them the English *frustration*, an individualistic feeling, which stems from a challenge to the pervasive Anglo-American belief that one can be in control of the situation by taking action. When describing a frustrating experience in Greek, Greek-English bilinguals living in Cyprus code-switched to English specifically to use the word “frustrated,” as in “*Imoun polla frustrated me tin katastasi*” (I was very frustrated with the situation) (Panayiotou, 2004a, p. 8).

The most salient examples of the internalization of new concepts are typically encountered in the domains of daily life, employment, and education (cf. Andrews, 1999; Ben-Rafael, 2004). The domain of daily life often entails the

necessity to name new objects, such as dishwasher or *fortochka* (= small window pane on top of a window, that could be opened to let some air in, common in Russian buildings), and new forms of entertainment and engagement, such as appointment or *tusovka* (= a public youth gathering in Russia, which often involves substance abuse). In the area of housing, newcomers are required (a) to recognize and differentiate among new types of living quarters and areas (e.g., townhouses in the U.S. or *arrondissements* in France) and (b) to understand new notions, such as rental agreement, mortgage, or *evroremont* (Russian term that refers to remodeling an apartment according to European/Western standards). Talking about these new objects and relationships often requires speakers to resort to lexical borrowing or code-switching. As a result, the speech of Russian immigrants in the U.S. is sprinkled with references to *dishvoshery* (= dishwashers) and *taunhauzy* (= townhouses) (Andrews, 1993, 1999), while French immigrants in Israel talk of *knesset* (= the Israeli parliament) and *gar'in* (= Israeli settlement core group) (Ben-Rafael, 2004).

The next area, that of employment, also necessitates the understanding and naming of new types of (a) organizations, such as welfare, (b) occupations, such as baby-sitter or real-estate agent, and (c) work-place relationships, such as full-time vs. part-time work or *pochasovka* (= part-time, hourly work in Russia). Interesting examples of conceptually driven code-switching in this area are discussed in Hoffman's (1989) study of Iranian immigrants in the US. For many of her participants, English became the language of the workplace; consequently, they adopted notions typical in American business culture, such as *networking*, *specialization*, or *vision*, and used these English-language terms in presentations made in Farsi.

Education may also require the internalization of concepts that involve new academic realities and relationships, such as academic credits, syllabi, and tutoring. Porte's (2003) study conducted with three EFL teachers, all of them native English speakers and long-time residents in Spain, shows that all three speakers appropriated Spanish lexical items related to their academic realities, saying things like "Most students wouldn't dream of coming to *tutorías* (= tutorial classes)"; "I do my three *prácticas* (= practical classes) in the language lab sometimes"; "I have three or four *actas* (= result sheets) to do in a week in June." In Ben-Rafael's (2004) study French speakers in Israel used academic Hebrew terms, such as *bagrut* (= matriculation at the end of high school), *yo'ets* (= advisor/ counsellor), and *miqtso'ot behira* (= elective subjects), even in the presence of a non-Israeli Francophone.

In short, we can find multiple types of evidence that L2 users recognize and internalize new L2-mediated conceptual categories. Two interesting theoretical issues arise with regard to this process. The first one involves the relationship between the newly internalized concept and other categories in the domain in question and related domains. It is up to future empirical work to examine

whether the incorporation of new concepts leads to concomitant changes in the overall structure of a particular domain.

The second issue involves the time frame for the internalization process. Jiang (2000) suggests that it takes L2 learners a while to understand, let alone use, new notions, such as *privacy*. In contrast, Kecskes and Papp (2000) argue that such notions are easy to acquire because they don't have any competition in the conceptual store and are salient as a result. In our view there exists a continuum where the easiest to acquire are more concrete concepts, such as *taunhauzy* (= townhouses) and *actas* (= result sheets), that have easily perceivable properties. At the other end of the continuum are more abstract concepts, such as *privacy*; these lexicalized concepts may appear in the speech of L2 users early on, but a full mental representation of a range of contexts where privacy may be violated takes a long time to develop. Once again, it is up to future inquiry to examine the internalization process, the role of different factors in it, and the time it may take to develop a language-mediated conceptual category similar to that of native speakers of the target language.

While they may be difficult to establish, the newly internalized concepts and distinctions are easy to detect since they are often manifested in need-driven lexical borrowing from the L2 to the L1, even in speakers with beginning levels of L2 proficiency (Otheguy & Garcia, 1988) and short-term exposure to the L2 environment (Pavlenko & Jarvis, 2002). At the same time, we want to emphasize that there is no one-to-one mapping between linguistic phenomena and their conceptual underpinnings; rather, conceptual internalization and transformation may be evident in a variety of verbal and nonverbal manifestations, while lexical borrowing and single-word code-switching may be driven by conceptual needs and by numerous other factors. The most convincing evidence of the internalization of new concepts will come from studies that triangulate evidence from spontaneous and elicited speech with verbal and nonverbal evidence collected through categorization tasks, typicality judgments, and the elicitation of properties, mental imagery, and scripts, associated with particular concepts.

5.4. RESTRUCTURING

While the process of internalization involves the addition of language-mediated concepts into one's conceptual repertoire, *restructuring* involves a partial modification of already existing language-mediated conceptual categories. Restructuring can also be semantic whereby new links and associations are formed under the influence of L2, without changing the internal structure of the categories involved. One example of such semantic restructuring is seen in a semantic extension produced by one of the Russian-English bilingual participants in our study (Pavlenko & Jarvis, 2002). The participant stated that the main

character in the film wanted *pomeniat' kak by stsenu* (= to change the scene somehow). This reference suggests that the participant linked the Russian word *stsena* (= stage, scene) to the meanings of its polysemous English translation equivalent *scene*. Yet the Russian word does not share all of the meanings of the English one: like *scene*, it can refer to an embarrassing display of anger or bad manners (e.g., *ustroit' stsenu* [= make a scene]), but it does not refer to areas or spheres of activity (e.g., the fashion scene) or places where events or actions have occurred (e.g., the scene of the accident). In the context in question, an appropriate expression would have been *pomeniat' obstanovku* (= to change [one's] surroundings). We see this extension as evidence of semantic but not conceptual restructuring because a new semantic link was made between an existing Russian word *stsena* and a concept linked to another word, *obstanovka* (= surroundings) with no modifications to the corresponding conceptual categories.

Conceptual restructuring, in the view adopted here, involves the internal structure of the concept in question and thus a change in the prototypes, category members, or scripts involved. The few studies available to date suggest that conceptual restructuring may take place in a variety of domains, including personhood, gender, objects, emotions, and daily life. Some of these studies offer evidence exclusively from L2 performance, while others also consider performance in the L1.

An interesting example of such restructuring which involves several concepts in a single domain comes from a study by Otheguy and Garcia (1993). The researchers found that the word *edificio* (= building) is rapidly losing ground in the speech of Spanish-speaking immigrants in New York City, being replaced by the borrowed term *bildin*. At first glance this may appear strange as both Spanish and English differentiate between small dwellings, such as *casa* (= house), and large ones, such as *edificio* (= building). Yet the interviews with informants pointed to a cognitive dissonance experienced by new arrivals who learned that in the U.S. two- and three-story buildings could still be called "houses" (while in Latin America they would be called *edificios* rather than *casas*). In turn, the imposing tall structures that greeted the informants upon arrival in New York City were unlike any *edificio* they had encountered at home. Consequently, the smaller structures became *casas* in their speech, suggesting an expansion of the category of *casas* under the influence of the L2-mediated category of houses. The larger structures were referred to as *los bildin* or *los bildenes*, whereas the word *edificio* was reserved for two- and three-story dwellings back in Latin America. The authors' analysis of immigrants' interviews suggests that the terms may also have different connotations: *Los edificios* are "small, well-kept structures that inspire admiration and respect," and *los bildin* are "large structures that inspire repugnance and fear" (Otheguy & Garcia, 1993, p. 147). Lexical borrowing here serves to signal the perceived differences between L1- and L2-mediated categories.

In another study conducted in Dade County, Florida, Otheguy and Garcia (1988) found that for Cuban immigrants the standard Spanish term for job application, *solicitud*, refers to a much more informal and carefree application process than the type they encounter in the U.S. As a result, they have adopted *aplicación* to refer to the more scripted and bureaucratic U.S. experience. They also felt compelled to borrow the English terms *part-time work*, *real estate salesman*, and *car dealer* because they felt that they were “not saying exactly what they want to say if Spanish words [were] used” (Otheguy & Garcia, 1988, p. 220). Similarly, Russian immigrants in the U.S. have borrowed into L1 Russian the L2 term *appointment* (= appointment) to refer to any scheduled professional meeting (Andrews, 1999; Pavlenko & Jarvis, 2002). In their view the scripted experience designated by the term differs from the referents of the Russian translation equivalents *vstrecha* (= planned or accidental meeting, most often between friends or acquaintances) and *priem* (= scheduled appointment at the doctor’s or government official’s office, literally: reception). While *priem* does refer to a scheduled appointment in specific places, it also implies an imbalance of power where an important party is receiving a person of lower status or lesser importance. In contrast, the English term *appointment* has no such connotation.

Restructuring does not, however, always result in more fine-grained conceptual distinctions. In some cases, L2 socialization may highlight similarity between particular concepts. This outcome is illustrated in a study by Stepanova Sachs and Coley (2006) who examined two sets of translation equivalents of emotion concepts in English and Russian: *jealousy/revnost*’ and *envy/zavist*’. These sets were chosen because of differences in meanings: in Russian, *revnost*’ has a fairly narrow scope, typically referring to either romantic jealousy or jealousy provoked by sibling rivalry. The English *jealousy* refers to a much wider range of contexts, ones interpreted as romantic jealousy (e.g., “Stop flirting with this guy, your boyfriend already looks jealous!”) and ones interpreted as envy (e.g., “Your vacation in the Caribbean sounds great – I am so jealous!”). A categorization study with monolingual speakers showed that English speakers use the word *jealousy* to describe situations involving both jealousy and envy, whereas Russian speakers use the two terms in a mutually exclusive manner, making a categorical distinction between the scripts associated with the two concepts. Late Russian-English bilinguals patterned with monolingual speakers on most tasks; however, their categorical perception of *zavist*’ and *revnost*’ was weaker than that of Russian monolinguals, and on some tasks they grouped the two types of situations together, similarly to English speakers. These findings suggest that their socialization into the speech community of English speakers led to conceptual, rather than simply semantic restructuring. Semantic restructuring affects the links between words and concepts; in this case, however, some bilinguals exhibited an expansion of the category *revnost*’ which now included some situations and contexts that were formerly referred to exclusively

with the term *zavist*'. In everyday speech, this restructuring may be evident in semantic extensions of *revnost*' in reference to contexts where *zavist*' is more appropriate.

These findings raise an interesting theoretical question with regard to the outcomes of conceptual restructuring – are the categories amended forever, or are they flexible, with retrieval dependent on the language of the interaction? Marian and Kaushanskaya's (2004) study of autobiographic narratives elicited from late Russian-English bilinguals offers evidence in favor of context-dependent retrieval. The researchers found a significant difference in pronominal choice between the two sets of narratives: in English the speakers used more first person singular pronouns (*I*, *my*) and in Russian more first person plural or group pronouns (*my* [= *we*], *nash* [= *our*]), pointing to somewhat distinct conceptualizations of [*SELF*] in the two languages and thus different framing of memories from Russian-speaking and English-speaking contexts.

The presence of two different conceptualizations of [*SELF*] is also highlighted in McMahon's (2001) interviews with Japanese women studying English in a class run by a grass-roots feminist organization. Some women stated that while in Japanese they refer to themselves in relation to others or omit subject pronouns, in English they are obligated to use subject pronouns such as *I* or *you*. In their view, "having to specify personal pronouns in English constantly drew their attention to the distinctions between their own opinions and those of their interlocutors" (McMahon, 2001, p. 333) and allowed them to construct more honest, independent, direct, and assertive selves than the ones they construct when speaking Japanese. Evidence of the co-existence of different conceptualizations also comes from the domain of [*GENDER*], where Costa and associates (2003b) show that in highly proficient Croatian-Italian, Spanish-Catalan, Catalan-Spanish, and Italian-French bilinguals the L1 and the L2 gender systems are functionally autonomous in the context of experimental tasks. Together, these studies suggest that the process of restructuring may result in two overlapping categories whose retrieval is context-, that is language-dependent. At the same time, the findings of Stepanova Sachs and Coley (2006) indicate that in some cases the restructuring may change the structure of the L1-mediated category.

Another theoretical question arises with regard to the time frame required for restructuring. The studies by Otheguy and Garcia (1988, 1993) suggest that restructuring may be evident early on in the L2 learning process. Other studies, however, suggest that the restructuring of certain complex conceptual categories may take a long time. For instance, Malt and Sloman (2003) compared the categorization and typicality judgments of native speakers of English and several groups of L2 users of English in the domain of [*CONTAINERS*]. Their findings show that even when familiarity with the objects in question is held constant across groups, L2 users who have been in the U.S. for eight or more years still differ from native English speakers in their performance with such complex

categories as [DISHES], which includes among others a butter dish, soap dish, casserole dish, baking dish, serving dish, and petrie dish.

In the domain of personhood, several studies reveal partial acquisition of the conceptual distinctions *tu/vous* (= you) and *nous/on* (= we) encoded in French, by English-speaking immersion students of French in Canada (Rehner, Mougeon, & Nadasdi, 2003; Swain & Lapkin, 1990) and by French learners from a variety of different backgrounds in Europe (Dewaele, 2004; Kinginger & Farrell, 2004). The learners' performance suggests that some changes have taken place in the domain in question, yet neither early nor late immersion students fully approximate the native-speaker norms for the use of these subject pronouns. The fact that these L2 users of French are guided by new conceptual distinctions only in certain contexts, while in others they rely on L1 transfer, suggests that the restructuring is underway but not yet completed. Evidence of restructuring can also be found in the use of lexical borrowings, such as *'olim hadashim* (= new immigrants) in the speech of French immigrants in Israel (Ben-Rafael, 2004) and *boifrend* (= boyfriend), in the speech of Russian immigrants in the U.S. (Andrews, 1993, 1999; Pavlenko & Jarvis, 2002). In the former example, the category of immigrants is amended to differentiate between new and old arrivals, and in the latter example, the borrowing refers to a more formalized and scripted relationship than is conventionally found in Russian-speaking contexts (hence, the recent appropriation of this term in post-Soviet Russian-language media and literature [Ryazanova-Clarke & Wade, 1999]).

To sum up, evidence of conceptual restructuring can be found in both verbal and nonverbal performance. It is particularly evident when L1-mediated concepts change their internal structure under the influence of the L2 in a way that induces bi- and multilingual speakers to resort to lexical borrowing, semantic extension, and framing transfer in the L1. Additional evidence of conceptual restructuring may come from labeling, recall, and nonverbal categorization patterns that incorporate new, L2-based features and characteristics but do not fully resemble L2-based patterns. Clearly, evidence from several sources will need to be triangulated before one can reach a conclusion as to whether a particular change is an instance of restructuring or convergence, and whether it qualifies as semantic or conceptual.

5.5. CONVERGENCE

The next process in our typology is a particular kind of restructuring, namely *convergence* between two systems, whereby a unitary conceptual category is created that incorporates both L1 and L2 features. In fact, this process may be better described as *divergence*, since the new category does not fully resemble either the L1- or the L2-mediated category, but is rather a hybrid or amalgam of the two.

To date, very few studies furnish evidence of either semantic or conceptual convergence. Evidence of semantic convergence typically comes from word association studies. For instance, Yoshida (1990) compared the word associations of Japanese and English monolinguals to those of 35 Japanese college students who at one time or another had lived in the United States and attended American schools. Four categories of words were selected for the test: (a) nature (e.g., *haru* [= spring]), daily life (e.g., *sensei* [= teacher]), society and ideas (e.g., *seifu* [= government]), and culture (e.g., *shougatsu* [= New Year's Day]). Participants were asked to provide word associations in Japanese to the Japanese stimuli and in English to the English stimuli. On some items in the four categories, bilinguals patterned with the monolingual Japanese informants; on others, in particular, in the culture category, bilinguals' responses did not fully resemble either monolingual group. This performance reflects unique trajectories of bilingual speakers, many of whom attempt to blend together two cultures and thus may have somewhat different semantic associations from their monolingual peers. The word association methodology, however, does not allow us to probe beyond the semantic level and to examine whether the changes have also taken place in multi-modal mental representations (e.g., scripts, typicality, etc.).

A few studies furnish evidence of conceptual convergence. In the domain of [COLOR], Ervin-Tripp (1961) found that color categories used by Navajo-English bilinguals differed systematically from the monolingual norms in the respective languages. These findings were replicated by Caskey-Sirmons and Hickerson (1977), who compared the color categories used by monolingual speakers of Korean, Japanese, Hindi, Cantonese, and Mandarin with those used by speakers of these languages who learned English as their L2 in adulthood. The researchers found that late bilinguals mapped larger total color areas, had less stable color category boundaries and more variable category foci than monolingual speakers.

In the domain of [MOTION], Brown and Gullberg (2005) found indirect evidence of possible conceptual convergence. The researchers investigated the description of motion events by Japanese L2 learners of English in L1 Japanese. They found that these speakers differed from both monolingual English and Japanese speakers in the number of path expressions per verbal clause, in the lexical encoding of path, and in the viewpoint taken in gestures. Monolingual Japanese speakers favored the character viewpoint, while monolingual English speakers favored the observer viewpoint. In turn, L2 learners combined characteristics of both gestures. Similarly, Hohenstein and associates (2006) found that Spanish-English bilinguals use more path verbs than English-speaking monolinguals and more manner verbs than Spanish-speaking monolinguals, suggesting that their bilingualism has resulted in increased sensitivity to both dimensions of motion (bidirectional transfer).

The most convincing evidence of conceptual convergence to date comes from a study by Ameel and associates (2005) in the domain of [CONTAINERS]. The

researchers used stimuli similar to those used by Malt and associates (1999) (bottles) and Malt and Sloman (2003) (cups and dishes). The participants, monolingual speakers of French and Dutch and simultaneous French-Dutch bilinguals, were asked to name the objects and to judge their similarity. The analysis of monolinguals' responses revealed that, while there were several similarities in the naming patterns of the two languages, they also differed in several ways. For instance, the Dutch category *bus* (= can) did not have a counterpart in French and objects categorized as *bus* by Dutch speakers were divided into six categories in French, including *bouteille* (= bottle) and *flacon* (= small bottle). The 25 objects called *fles* (= bottle) in Dutch were divided into two different categories in French, *bouteille* (= bottle) and *flacon* (= small bottle).

Bilinguals, on the other hand, displayed a converging naming pattern. Some instances showed the influence of the categories encoded in Dutch. For instance, the objects named *fles* (= bottle) in Dutch were mostly called *bouteille* (i.e. the French term) by bilingual speakers, with the alternative category *flacon* (= small bottle) shrinking in favor of the more general category. Other instances showed the influence of French on the Dutch naming pattern. Thus, bilinguals used the name *bus* (= can) exclusively for objects called *spray* in French, while for monolingual speakers *bus* is a much larger category of containers. This study is exemplary in its use of the naming task; on the other hand, the focus on more or less simultaneous bilinguals does not allow us to decide how and at what point the convergence took place in the mental lexicons of individual speakers. Questions about factors that affect conceptual convergence can be answered only through diachronic research that pays attention to participants' learning histories, acquisitional and interactional contexts, and changes that take place in their conceptual category boundaries and prototypes.

Meanwhile, the studies above suggest that evidence of conceptual convergence may be found in verbal and nonverbal performance. Linguistic evidence includes verbal manifestations of bidirectional transfer within the same conceptual category and loan blends. Nonlinguistic evidence includes categorization patterns distinct from those exhibited by monolingual speakers of the L1 and L2 and combining features common to both.

5.6. SHIFT

The interaction between competing conceptual representations may also lead to a *shift* from L1- to L2- (L3-, etc.) based concepts in various conceptual domains. Most often, this happens with immigrants or expatriates who have spent a significant amount of time in the target language community and are undergoing the process of L1 attrition. To date, conceptual shift has been best documented in the domains of [EMOTIONS], [DAILY LIFE], and [COLOR].

To differentiate between convergence and shift, let us examine what the shift would look like in the domain of [COLOR]. An excellent example is furnished by Andrews (1994), who exploited the differences between English, which has a single basic term for blue, and Russian, which has two basic terms, *sinii* (= dark blue) and *goluboi* (= light blue). He found that monolingual speakers of Russian and recent adult immigrants consistently differentiated between the two kinds of blue. In contrast, there was an apparent overlap in the way that younger Russian immigrants used the two words; their performance resembled that of monolingual speakers of English who perceive [BLUE] as a unified conceptual category and do not obligatorily differentiate between light and dark blue. We see this L1 performance that coincides with that of L2 speakers as evidence of conceptual shift, as opposed to conceptual convergence, where performance is distinct from that of L1 and L2 speakers, regardless of the language of the task (Caskey-Sirmons & Hickerson, 1977; Ervin-Tripp, 1961).

Pavlenko's (2002b) study offers evidence of conceptual shift in the domain of [EMOTIONS]. As mentioned in the previous chapter, in English, emotions are commonly expressed by means of adjectives and pseudo-participles (e.g., *she is upset*) that refer to passive states caused by external and/or past causes. In contrast, in Russian, states comparable to *angry*, *happy*, *upset*, and *concerned* are often expressed through intransitive verbs (e.g., *ona rasstroilas'* = she upset [herself]) that refer to processes in which one engages more or less voluntarily. In speaking about emotions, Russian speakers use more verbs than adjectives and favor imperfective, reflexive, and intransitive verbs that emphasize the processual aspect of the emotional experience (Pavlenko, 2002a).

In a study of oral narratives elicited from Russian L2 users of English who learned English in their late teenage years or in adulthood, Pavlenko (2002b) found evidence of conceptual shift from emotions as actions and processes to emotions as states. This reverse transfer, similar to the forward transfer found in American learners of Russian by Pavlenko and Driagina (2007), was visible in the change in linguistic framing, whereby the adjectival pattern appeared not only in English but also in Russian narratives. Thus, in stories told in Russian some narrators substituted verbs for adjectives and incorporated perception copulas (e.g., *chuvstvovat'* [= to feel]) and change-of-state verbs (e.g., *stanovit'sia* [= to become]), producing instances of morphosyntactic and conceptual L2 transfer. For instance, one participant remarked that the woman in the film *stala eshche bolee rasstroennaiia* (= became even more upset), whereas monolingual Russian participants described the same woman using action verbs, as in *ona rasstroilas'* (= she upset [herself]). Another bilingual narrator said *ona byla, stala serdit'sia* (= she was, became [started getting] angry), attempting to combine change-of-state verbs with an emotion verb in a context where Russian monolinguals simply stated *ona rasserdilas'* (= she [got] angry). These changes point to an ongoing shift in the conceptualization of [EMOTIONS], which affects the

lexicalization of emotions in L1 narratives. On the other hand, the fact that the speakers paid more attention than English monolinguals to body language and nonverbal actions that accompany emotions as processes, suggests that the shift is still in progress and not completed.

Until now, we have seen examples of conceptual processes that have involved the internal structure of conceptual categories and links between them. A pioneering study by Shimron and Chernitsky (1995) offers evidence of conceptual shift in typicality ratings in the domain of daily life. The authors compared typicality ratings for items in several categories (sports, fruit, food, science, vegetables, vehicles, beverages, diseases) provided by native speakers of Spanish in Argentina, native speakers of Hebrew in Israel, and Jewish immigrants from Argentina currently residing in Israel. The researchers found that in some areas a typicality shift took place among Spanish-Hebrew bilinguals, reflecting the change and adaptation processes that result from cultural transition. In particular, certain sports (basketball and weight lifting), fields of science (chemistry and geology), fruit (avocado) and diseases (malaria) were perceived as much more typical than they were by Spanish speakers living in Argentina. This shift did not take place across the board, however, and some items, such as steak in the food category, were rated similarly to the way they were by Spanish speakers in Argentina.

Evidence of shift in the domain of [NUMBER] is offered by Athanasopoulos (2006) and Cook and associates (2006) who examined the influence of learning English, a noun class language that marks number grammatically, on the non-verbal performance of speakers of Japanese, a classifier language. Athanasopoulos (2006) asked monolingual English and Japanese speakers and two groups of Japanese L2 users of English to judge similarities and differences between a set of pictures that was originally used by Lucy (1992b). The key differences between the pictures were in the number of animals, implements, and substances. The results showed that Japanese monolinguals and intermediate L2 users were sensitive only to the change in the number of animals, treating changes in the number of implements and the number or amount of substances as less significant. In contrast, English monolinguals and advanced Japanese L2 users of English regarded changes in the number of animals and implements as more significant than changes in the number or amount of substances. Importantly, implements, or more generally objects, represent an area where the two grammars diverge most, since English marks objects for number obligatorily and Japanese does not. The increased attention to the number of implements displayed by advanced Japanese L2 users of English (as opposed to Japanese monolinguals and intermediate L2 English learners) was attributed by the researcher to their internalization of grammatical number marking. In turn, Cook and associates (2006) found that Japanese L2 users of English who had lived in English-speaking countries for three years or longer made more similarity judgments based on shape, rather

than material, than those who had lived in English-speaking countries for a short time, from six months to up to three years. In doing so, the long-term L2 users of English differed less from native speakers of English than the short-term group.

The discussion above highlights evidence of conceptual shift without mentioning semantic shift, and that is because we have not yet encountered any cases where semantic shift has occurred without an underlying conceptual shift. Linguistic evidence of conceptual shift may come from semantic extension, narrowing, and framing transfer. Nonverbal evidence may be found in typicality shifts and shifts in category prototypes or boundaries. Future studies should also examine whether changes have occurred in mental imagery and patterns of labeling, categorization, and recall. Crucial confirming evidence will come from studies that document L2 user performance distinct from that of monolingual L1 speakers and similar to that of speakers of the target language.

5.7. CONCEPTUAL ATTRITION

The final process involved in the interaction between competing conceptual representations is the *attrition* of certain concepts, at times accompanied by *substitution*. While formal aspects of attrition have been well documented in the literature (e.g., Schmid, 2002), conceptual attrition has yet to be looked at closely. However, some studies of nonpathological language loss, in particular with regard to lexicalized concepts, allow us to hypothesize that possible linguistic manifestations of conceptual attrition may include inappropriate labeling, code-switching, lexical borrowing, semantic shift, and framing transfer, and in some contexts possibly a narrowing of lexical ranges (Ben-Rafael, 2004; Hutz, 2004; Jaspaert & Kroon, 1992; Olshtain & Barzilay, 1991; Pavlenko, 2002a, b; Waas, 1996).

Let us take a look at a few examples that may indicate possible conceptual attrition, starting with the domain of [EMOTION]. Pavlenko (2002a, b) examined the uses of the verb *perezhivat* (= to experience things keenly, to worry; literally: to suffer things through), which refers to one of the central Russian emotion concepts in the narratives of monolingual Russian speakers and Russian-English bilinguals. She found that while monolingual speakers invoked the concept frequently, in bilinguals' narratives that were elicited by the same visual stimuli, the verb appeared only once and in passing. This decrease in frequency suggests that new verbalizations of emotions internalized in the process of L2 socialization may result in at least partial attrition of concepts that no longer fit within the restructured network (Pavlenko, 2002b). Ben-Rafael (2004) reports a similar finding: the affective lexicon of French immigrants in Israel interviewed in her study displayed a very limited lexical range of emotion vocabulary: *triste* (= sad), *heureux* (= happy), and *content* (= glad, content). Undoubtedly, these late

French-Hebrew bilinguals still understand other French emotion terms, but it appears that they no longer actively use them, displaying at least lexical if not conceptual attrition.

An illuminating example of what conceptual attrition looks like in the domain of [PERSONHOOD] is offered in an autobiographical narrative by Kyoko Mori, a Japanese woman who, after spending 20 years in the U.S., has lost, at least partially and temporarily, the ability to categorize the interlocutor as a native Japanese speaker should:

I can only fall silent because thirty seconds into the conversation, I have already failed at an important task: while I was bowing and saying hello, I was supposed to have been calculating the other person's age, rank, and position in order to determine how polite I should be for the rest of the conversation. (Mori, 1997, p.11)

Another example, this time in the domain of [TIME], comes from an autobiographical essay by Linda Petrucelli, an American missionary, who experienced temporary attrition of her mastery of the English tense system while living in Taiwan:

Even my notions of time became less rigid and less linear. There are no tenses per se in Taiwanese. Verbs are not declined but are used to denote degrees of completed or incompleted action. Time words (*yesterday, now, later*) are used if more precision is required. As I let the winds of Taiwanese grammar and syntax whisk me in new directions, I began to notice a curious deterioration in my ability to pen a cogent letter home. (Petrucelli, 2000, p. 161)

These testimonies of speakers who find that L1-mediated concepts no longer guide their verbal performance suggest that the phenomenon of conceptual attrition is worthy of further consideration and empirical investigation. The questions to be resolved in this inquiry involve the scope and the extent of conceptual attrition, namely whether this is a phenomenon limited to production or whether it also extends to perception, where certain conceptual information is no longer easily retrieved. In production, future research needs to examine the relationship between lexical, framing, and conceptual attrition, as it is not clear when the narrowing of the lexical range can function reliably as an indicator of conceptual attrition and when it stems from inhibition of the L1. It is also not clear whether an increase in semantic transfer noted in longitudinal studies of immigrant bilinguals (cf. Hutz, 2004) reflects conceptual attrition, conceptual restructuring or simply semantic restructuring. It is possible that it is a reflection of all three processes working simultaneously. We hope that future work will consider the possibility of conceptual and not only linguistic attrition and thus

examine not only bilinguals' verbal behaviors, but also nonverbal behaviors, such as categorization and inferencing, documenting difficulties in bilinguals' immediate access to particular L1-mediated concepts, the absence or poverty of mental imagery for these concepts, and simply the lack of reliance on particular concepts (where such reliance would be prominent in the target-language-speaking community).

5.8. CONCLUSIONS

In sum, the studies of bilinguals' performance on verbal and nonverbal tasks and in natural contexts suggest that conceptual representations are subject to change in adulthood in the process of second language socialization and the appropriation of L2-mediated concepts. Clearly, it is not surprising that we find evidence of conceptual development and change in L2 users, in particular in immigrant communities. Our first language is acquired by engaging in natural meaningful communication through which conceptual knowledge is acquired, stored, activated, and expanded upon. In like manner, language learners who acquire and use their second or additional language in a country where it is spoken are engaged in a variety of meaningful interactions and social practices. If these interactions are to be successful, a certain amount of shared meaning must exist, which can be ensured only by invoking the appropriate concepts. As a result of interactional practice, learner-participants in the second culture may begin internalizing L2-mediated conceptual representations, often without being consciously aware of this change.

The proposed typology of conceptual change in bilingual memory allows us to capture and examine the process of conceptual change through its linguistic and nonlinguistic manifestations. The studies to date mainly provide indirect evidence of conceptual change, as manifested in L2 influence on L1 verbal performance. Future studies will need to provide direct evidence whereby the concepts in question are examined through a series of carefully coordinated verbal and nonverbal tasks to ensure that linguistic manifestations are not overinterpreted. Furthermore, examinations of linguistic performance will need to include both empirical verbal tasks (such as naming, inferencing, elicited narratives, or role play) and analysis of contextualized language use, ranging from tape-recorded conversations to patterns of language use in a variety of texts. Similarly, examinations of nonlinguistic performance will have to entail a variety of tasks, from object categorization, to nonverbal role-play, to tasks involving perception and memory. The role of comprehension will also need to be carefully considered in these studies, as it is possible that some language-mediated concepts may be at least partially understood by certain bilinguals but not actively used in their everyday lives and activities.

Most importantly, to fully capture the process of conceptual change it is extremely important to conduct longitudinal case studies of individuals in the process of second language acquisition, inside and outside of the classroom. Only such studies will allow us to demonstrate convincingly that individuals do indeed shift their patterns of inferencing, categorization, or recall in accordance with L2-mediated concepts and to document this change in progress. They will also allow us to determine whether conceptual change may occur in the process of foreign language learning in the classroom, where socialization is minimal.

Finally, we cannot and should not lose sight of individual variation in the study of—sometimes overgeneralized—crosslinguistic and cross-cultural differences. Our own investigations of CLI in the language use of Russian, Swedish, and Finnish L2 users of English demonstrate that even within a group that is quite homogeneous with regard to socioeconomic characteristics, age of arrival, and length of exposure, different bilinguals may exhibit different patterns of conceptual change. Our analysis suggests that as a dynamic and context-sensitive process, conceptual change is influenced by nine key factors, subdivided into three clusters: individual, interactional, and linguistic and psycholinguistic (see also Pavlenko, 1999, 2000). Individual factors include:

1. *Learning context*: the studies discussed above indicate that the context of language learning and use is the key factor in the formation of conceptual representations: FL learning or subordinate bilingualism can lead to conceptual transfer from L1 to L2, while participation in communicative practices with speakers of the target language may lead to the internalization of new concepts and restructuring, convergence, shift, and the attrition of previously acquired concepts;
2. *Length and amount of language exposure*: conceptual change may be most visible in speakers with a high amount of past and present interaction in L2 and low amount of interaction in the L1;
3. *Language dominance and proficiency*: while language dominance and proficiency remain important factors, studies of lexical borrowing in language contact situations suggest that the relationship between language proficiency and conceptual development is not necessarily a straightforward one: Some concepts salient in the new culture may be internalized by beginning learners and users with low degrees of proficiency;
4. *Expertise in the domain in question*: expertise in a particular domain allows us to examine individual differences and to understand why speakers with similar language histories may experience conceptual change in distinct ways; the highest degree of differentiation between particular concepts will be seen in speakers with the most expertise in a particular domain;
5. *Degree of biculturalism and/or acculturation to the target language community*: acculturation to the norms of the target-language community may lead

to restructuring, shift, convergence and/or substitution and attrition, while membership in bilingual communities/subcultures may lead to the development and use of concepts divergent from the ones used in the monolingual and monocultural environments.

Interactional factors include:

6. *Context of language interaction*: this variable is important from a methodological point of view: It is possible that when speaking different languages, bicultural bilinguals may rely on alternative conceptual representations; moreover, it has been demonstrated that depending on the topic and context of interaction (or language mode) some bilinguals shift their conceptualizations—through code-switching and use of loanwords—even when speaking the same language (Otheguy & Garcia, 1993);
7. *Linguistic and social status of the interlocutor*, in particular familiarity with the speaker's multiple languages.

Linguistic and psycholinguistic factors include:

8. *Concept comparability*, or degree of relatedness between the language-mediated concepts in question: as demonstrated in Dewaele's (2004) study of the acquisition of the *tu/vous* distinction by L2 learners of French, conceptual change is facilitated by the similarity between L1-mediated and L2-mediated concepts;
9. *Type of encoding*: in the case of lexicalized concepts, language- and culture-specific concepts may be easiest to internalize; in the case of grammaticalized concepts, language- and culture-specific concepts, such as gender or count/mass status, may turn out to be the most difficult to acquire; yet Malt and Sloman (2003) remind us that even in the domain of the most common household objects, nonnative speakers of English in their study did not perform the same as the native speakers.

In the following chapter we will expand this discussion by turning to factors that affect CLI in general. Meanwhile we would like to express our deep belief that when patterns of conceptual change are documented and examined across a variety of individuals, languages, cultures, and contexts, the field of CLI research may present fascinating evidence of ways in which language-mediated concepts not only shape the ways in which we think about reality but also reshape them.

Transferability and Factors that Interact with Transfer

6.1. INTRODUCTION

One of the most important developments in the history of transfer research was the shift of attention from transfer to transferability. This was a shift from the documentation of cases of transfer to the more fundamental investigation of what makes something likely to be transferred in the first place. Studies by Jordens (1977), Kellerman (1977, 1978), Ringbom (1978a, 1978b) and others were instrumental in leading the field to this new perspective, and the insights of these studies were later synthesized by Kellerman (1983) into two general constraints that govern the occurrence of language transfer: psychotypology and transferability. The essence of the psychotypology constraint is that transfer is more likely to occur when the L2 user perceives the L1 and L2 as being similar, whereas the essence of the transferability constraint is that structures perceived by the L2 user as marked (or language-specific) are less likely to transfer.

Related work by Andersen (1977, 1979, 1980), Schumann (1978), and Zobl (1980) led Andersen (1983) to propose the *transfer to somewhere* principle, which states essentially that a language structure will be susceptible to transfer only if it is compatible with natural acquisitional principles or is perceived to have a similar counterpart (a *somewhere* to transfer to) in the recipient language. The *transfer to somewhere* principle is similar to Kellerman's two constraints in that it acknowledges the importance of and relationship between crosslinguistic similarities and universals of language acquisition and use. There are also some notable differences (Kellerman, 1995, p. 134), but the main point for present purposes is that even though the psychotypology and transferability constraints and the *transfer to somewhere* principle were introduced many years ago, most (but not all) of the empirical evidence of transfer that has accumulated over the years seems to support both Kellerman's constraints and Andersen's principle (see Kellerman, 1995).

There are, nevertheless, numerous additional factors that have been found to affect transfer and transferability. Odlin (1989) described seven additional,

nonstructural factors that affect transfer (personality, aptitude, proficiency, literacy, age, linguistic awareness, social context), and these have been further refined and expanded by R. Ellis (1994), Jarvis (2000a), Odlin and Jarvis (2004), and Pavlenko (2000). In this chapter, we present a new classification of these factors, which we feel best reflects the findings of empirical research in this area to date. Our purpose is not to give an exhaustive list of all of the variables that could be imagined to moderate the effects of CLI, but instead to present in a structured manner the variables that have been empirically established as indicators of the occurrence or nonoccurrence of transfer-related phenomena. While presenting these variables, we will maintain a distinction between two fundamental types of effects on transfer. The first can be referred to as *learning-related effects*. This is the influence that a factor has on whether a person will form a mental association (or interlingual identification) between features of two or more languages. The second type of effect can be referred to as *performance-related effects*. These are the context-related factors that influence the amount and types of transfer that will emerge during actual language use.

Because there are a large number of factors that can exert both learning- and performance-related effects on transfer, we will not attempt to categorize factors according to whether they are learning- or performance-related. Nevertheless, because we view the distinction between the two types of effects as fundamental to an understanding of the nature of CLI and of its relationship with other processes and conditions, we will discuss each factor in relation to both types of effects. Our discussion of factors that affect CLI will be divided into the following five categories:

1. Linguistic and psycholinguistic factors
2. Cognitive, attentional, and developmental factors
3. Factors related to cumulative language experience and knowledge
4. Factors related to the learning environment
5. Factors related to language use

Although any categorization of such factors will inescapably be subjective, our use of these particular categories does follow a clear rationale. Our first category relates to characteristics of language, our second category concerns a person's cognitive capacities and use of cognitive resources at the time of learning or language use, and the third category involves the effects that prior language knowledge and experience have on current language learning and use. The fourth and fifth categories are related more to external context. The fourth category concerns the learning context, and the fifth pertains to the language-use context. The following sections of this chapter discuss the factors that fall into each of these five categories.

6.2. LINGUISTIC AND PSYCHOLINGUISTIC FACTORS

The linguistic and psycholinguistic factors we consider in this section involve the ways that transfer can be affected by characteristics of both the source and recipient languages. The factors we address are crosslinguistic similarity (section 6.2.1), area of language use (section 6.2.2), frequency, recency, and salience (section 6.2.3), markedness and prototypicality (section 6.2.4), and linguistic context (section 6.2.5). Most of the relevant research relates to forward transfer, but there are also a few studies related to lateral and reverse transfer.

6.2.1. Crosslinguistic Similarity

One of the earliest and most widely recognized constraints on transfer is the relationship or degree of congruence between the source language and recipient language. This factor has variously been called language distance, typological proximity, psychotypology, and crosslinguistic similarity, and its importance has been recognized since the 1970s (e.g., Kellerman, 1977; Ringbom, 1978b; Wode, 1976). It has also been investigated in a number of recent studies (e.g., Cenoz, 2001; Eckman, 2004; Jarvis, 2000a; Kellerman, 1995; Ringbom, 2001), the most thorough treatment to date being Ringbom (2007). The general finding is that, even though transfer does occur between languages that are quite different—from the researcher's perspective—the extent of transfer is highest in most areas of language use when the source and recipient languages are perceived to be very similar by the L2 user. We will return to this distinction shortly.

The effects of crosslinguistic similarity can be seen in a variety of domains, and can be found to affect the processes of comprehension, learning, and production. Regarding comprehension, several studies have shown that speakers of languages that are closely related to the target language are able to comprehend the target language much better than are those who speak languages that are more distant, who have comparable levels of exposure to or instruction in the target language (e.g., Gibson & Hufeisen, 2003; Singleton & Little, 1984). Comprehension of a similar language is facilitated by the recognizability of its structures and the familiarity of its patterns of mapping meaning to form (Ard & Homburg, 1992; Paribakht, 2005).

Concerning learning, although comprehension can occur without resulting in new learning, the consequence of greater levels of comprehension is often an enhanced rate of learning, especially as it pertains to the rate at which newly encountered forms are mentally matched and associated with already learned forms. In other words, one of the consequences of learning a language that is similar to one's L1 is that many of the forms and structures encountered in the L2 will bear an obvious similarity to corresponding L1 items, and these will be learned with facility in the sense that they will be readily associated with

already-learned L1 forms and structures, and will quickly be integrated into one's expanding interlanguage system (cf. Ard & Homburg, 1992; R. Ellis, 1994). This sometimes comes at a price, however, given that the L1–L2 associations that learners form are often not true equivalents, and this can impede the acquisition of the target structure (Eckman, 2004, pp. 517, 533–534).

Regarding language production, an increased rate of learning generally leads to gains in production, of course, but there are two additional interesting consequences of crosslinguistic similarity for transfer in language production. The first is that learners of a recipient language that is similar to the source language show far more instances of overt transfer in their production of the recipient language than do learners whose source language is very different from the recipient language (see, e.g., Kellerman, 1983; Ringbom, 1987). The second consequence is that, at least in foreign-language learning situations where learners have little contact with the foreign language outside of the classroom, there is a greater gap between comprehension and production in learners acquiring a similar language (e.g., Dutch, French, German, Spanish, or Swedish learners of English) than there is in learners acquiring a very different language (e.g., Arabic, Basque, Chinese, or Finnish learners of English) (see Ringbom, 2007). This is because learners of a similar language can comprehend a great deal more than they have yet had the chance to learn (or even to be exposed to) in the L2, whereas their L2 production is more limited to just those things that they have so far learned through experience and/or instruction in the L2. For foreign-language learners of a distant language, on the other hand, neither comprehension nor production in the classroom tends to go much beyond what they have so far learned or experienced in the L2. (Regardless of whether the target language is similar or distant, in more naturalistic contexts and even meaning-oriented classrooms that provide elevated levels of redundancy, elaboration, and nonlinguistic cues to the meaning of the input, learners' comprehension of the target language can, of course, far surpass their ability to produce the language.)

Earlier, we indicated that the term "crosslinguistic similarity" refers to the relationship between the source and recipient languages. The same can be said of the term "crosslinguistic difference" in the sense that both terms relate to the overall degree of congruence between languages, and both terms imply the existence of both similarities and differences between the languages in question. Overall similarity (and difference) and specific similarities (and differences) both exert important effects on CLI, but in somewhat different ways. In order to understand how they differ, it is crucial to recognize the distinction between what is objective and subjective in relation to overall similarity and difference, as well as in relation to specific similarities and differences. *Objective similarity* (and difference) is the actual degree of congruence between languages, whereas *subjective similarity* (and difference) is the degree of congruence the L2 user believes or perceives to exist. L2 users often incorrectly perceive the actual degree

of congruence between languages, and as Odlin (1989) has pointed out, “an *objective* estimation of language distance can sometimes be misleading about the likelihood of transfer: in some cases, the *subjective* estimation of distance by learners can override an objective measure” (p. 142, emphasis in the original). As we will discuss later in this section, subjective similarity affects the degree to which the learner relies on the source language when learning and/or using the recipient language, and objective similarity can affect the likelihood that the transfer (i.e., whatever transfer may have occurred) is positive or negative.

Concerning the individual, specific features of the source and recipient languages, *objective similarities* (and differences) refer to actual similarities (and differences), whereas *subjective similarities* (and differences) are the similarities (and differences) that the L2 user believes or perceives to exist between the languages. Subjective similarities are often not the same as objective similarities, and this results from three general conditions: (a) the L2 user’s failure to recognize some of the objective similarities that actually exist, (b) the L2 user’s misperception of the nature of some of the similarities that exist across languages, and (c) the L2 user’s assumption that there exist some similarities between the two languages that really do not exist. Because subjective similarities are often distortions of the objective similarities existing across languages, one might be tempted to discard subjective similarities in favor of objective similarities as predictors of transfer. However, as Kellerman (1978) has shown, learners are sensitive to only certain types of objective similarities between languages and not to others, and it is their subjective judgments that determine the degree to which they consider certain properties of the L1 (word meanings, in this case) to be transferable to the L2. Additionally, Ringbom (2007) has pointed out that, whereas objective similarities are symmetrical (applying equally from Language A to Language B and vice versa), subjective similarities are largely asymmetrical, often tending more toward one direction than toward another, just as transfer does (see also Eckman, 2004, pp. 530–531). Furthermore, objective similarities are constant, whereas subjective similarities change over time and with advances in language proficiency (R. Ellis, 1994), so this is another area where subjective similarities coincide more with the nature of transfer than objective similarities do.

This is not to say that objective similarities and differences are unimportant to CLI, but rather that they are to be viewed at a different level from subjective similarities and differences. Objective similarities and differences are determined through the tools of linguistics, and it is this perspective that best contextualizes the observation that CLI can arise out of crosslinguistic differences (Chapter 4, this book; Kellerman, 1995, p. 142; Odlin, 1989, p. 27). That is, it is researchers’ linguistic analyses that allow them to classify instances of CLI as occurring at points where the source and recipient languages are objectively different. CLI can thus arise in the context of objective differences. It can, of course, also arise in the context of objective similarities, but it is neither the objective similarities nor

the objective differences that actually cause the transfer to occur. Crucially, it is also not subjective differences but rather subjective similarities that generally lead to CLI. This is because learners are normally oriented toward looking for similarities—not differences—between what they already know and what they are currently learning. The subjective crosslinguistic similarities they find (or assume to exist) are the basis on which they form interlingual identifications, which serve as the genesis of most types of CLI. Subjective differences, by contrast, typically lead learners to try to avoid transfer because these are differences that learners already recognize, though not necessarily completely or accurately. Of course, subjective differences can also lead learners to avoid L2 structures they perceive as being difficult because of how different they seem to be from L1 structures, and this would indeed be a CLI effect (e.g., Schachter, 1974). Objective similarities and objective differences, on the other hand, do not result in CLI, but they often do determine whether an instance of CLI that has occurred is positive or negative (i.e., acceptable or erroneous). (Note: Transfer is often both positive and negative given that the objective correspondences between two languages are rarely either exactly the same or completely different.)

Subjective similarities are therefore of primary importance to transfer, and there are two general types of subjective similarities that are differentiated in the literature: perceived and assumed (Jarvis, 1998; Ringbom, 2007). A *perceived similarity* is a conscious or unconscious judgment that a form, structure, meaning, function, or pattern that an L2 user has encountered in the input of the recipient language is similar to a corresponding feature of the source language. An *assumed similarity*, on the other hand, is a conscious or unconscious hypothesis that a form, structure, meaning, function, or pattern that exists in the source language has a counterpart in the recipient language, regardless of whether the L2 user has yet encountered anything like it in the input of the recipient language, and regardless of whether it actually does exist in the recipient language. Now, to be clear, perceived and assumed similarities are not always mutually exclusive. In fact, they represent a set-subset relationship in that all perceived similarities are also assumed similarities, but not all assumed similarities are actually perceived. Both perceived and assumed similarities diverge from objective similarities to the extent that L2 users' judgments concerning the similarities between languages are incomplete or erroneous.

Some types of transfer seem to occur quite freely on the basis of an assumed similarity alone, whereas others seem to require the stricter criterion of a perceived similarity. For example, a great many cases of semantic and pragmatic transfer seem to occur merely on the basis of assumed similarities (cf. Biskup, 1992; Eisenstein & Bodman, 1993; Jarvis, 1998; Ringbom, 1987, 2001), but most cases involving the transfer of formal properties seem to reflect perceived similarities (cf. Kellerman, 1995; Ringbom, 1987, 2001). In some cases, assumed similarities and perceived similarities work in tandem, such as when Finns show

an inclination to use English words that are formally similar to Swedish words (i.e., due to *perceived* similarities between Swedish and English) but use them in a way that reflects patterns found in Finnish but not in English or Swedish (i.e., due to *assumed* similarities between Finnish and English) (see Odlin & Jarvis, 2004). Judging from these findings, it seems that L2 users are prone to *assuming* certain types of crosslinguistic similarities (e.g., semantic and pragmatic) even between very different languages, whereas other types of similarities (especially those involving lexical form) are not assumed unless they are first *perceived* in the input, and this happens mainly between related languages.

One fascinating characteristic of perceived similarities is that, once they cross a certain threshold, they tend to lead the learner to assume additional similarities—even ones that do not actually exist between languages—and this can occur even in the areas that we just described as normally being linked to perceived similarities, such as lexical form. This is where the relationship between specific similarities and overall similarity again becomes relevant. When perceived similarities are numerous enough, they lead the learner to assume a strong similarity between the languages as a whole, which in turn leads them to assume additional specific similarities beyond the ones they have already encountered. This overall-similarity threshold is usually crossed in Finnish- and Swedish-speaking learners' perception of the similarities between Swedish and English, but it is usually not crossed in their perception of the similarities between Finnish and English. The reason in both cases seems to be related to the overall number and types of similarities they encounter between Swedish and English, on the one hand, and Finnish and English, on the other. Concerning the similarities between Swedish and English, there exist a great number of high-frequency words of various grammatical classes that are formally and semantically very similar across the two languages, many of which are true cognates (e.g., Sw *arm* = "arm," Sw *finger* = "finger," Sw *föt* = "foot," Sw *hus* = "house," Sw *katt* = "cat," Sw *vinter* = "winter"; Sw *sommar* = "summer," Sw *tänka* = "think," Sw *äta* = "eat," Sw *falla* = "fall," Sw *röd* = "red," Sw *blå* = "blue"). Even where superficial similarities are lacking between the languages, there exist a number of similarities in how functions and meanings are grammaticized and lexicalized (see, e.g., Jarvis, 2002; Jarvis & Odlin, 2000; cf. Paribakht, 2005). Concerning the similarities between Finnish and English, this pair of languages also shares a number of formal and semantic similarities, but most of the similarities entail only medium- to low-frequency loanwords, mainly nouns, that represent entities and notions adopted from abroad, such as inventions, technology, and concepts related to government and social order (e.g., Fi *auto* = "automobile," Fi *radio* = "radio," Fi *televisio* = "television," Fi *filmi* = "film," Fi *presidentti* = "president"). In contrast to Swedish, Finnish shares relatively few grammaticization and lexicalization patterns with English.

Thus, although both Swedish and Finnish bear resemblances to English, the similarities between Swedish and English are more systematic, more numerous,

and more perceptible (e.g., because of the high-frequency structures they involve) than are the similarities between Finnish and English. Moreover, the perceived similarities between Swedish and English are so great that learners of English who know Swedish tend to assume that other words that they have not yet encountered in English, or have encountered only superficially, will also be formally and semantically similar to Swedish. This leads them to produce errors such as the following (from Ringbom, 1987, pp. 147–162): *A teacher is a forebild for pupils* (Sw *förebild* = “model,” “good example”); *He is good at mathematics but he success in the other ämnys, too* (Sw *ämne* = “subject”); and *As a barn I was told stories every evening* (Sw *barn* = “child”). Finns and Swedes very rarely produce errors like this that reflect the influence of Finnish on English, in spite of the many objective similarities that do exist between these languages, such as the loanwords mentioned earlier and a number of accidental false friends (e.g., *Fi he* = “they,” *Fi home* = “mold,” *Fi into* = “enthusiasm,” *Fi me* = “we”). Again, Finns and Swedes often over-assume the similarities between English and Swedish while simultaneously overlooking or disregarding the similarities between English and Finnish. These findings suggest that Swedish and English meet a certain overall-similarity criterion in the minds of the learners (cf. Eckman, 2004; Wode, 1976), whereas Finnish and English do not. The findings also suggest that learners’ perception of the overall degree of similarity between languages may have an even more profound effect on certain types of transfer than does their perception of the specific, discrete similarities across languages. (See Ringbom, 2007, for a related discussion of the effects of item-level and system-level similarities on overall transfer.) This is especially true in relation to negative transfer involving forms, structures, and patterns, which appears to occur most frequently in cases where assumed specific similarities are motivated by a perception of overall similarity between languages. Negative transfer involving meaning and pragmatics, on the other hand, frequently arises from assumed specific similarities that have not been licensed by a perception of overall similarity. Negative transfer in both cases involves assumed specific similarities that are at odds with objective specific differences.

Much of the attention given to the effects of crosslinguistic similarity on transfer has occurred in the context of L3 acquisition (or multilingualism) (e.g., Cenoz, 2001; Ringbom, 1987), and this is due to the fact that it is easiest to see the effects of crosslinguistic similarity in cases where participants have at their disposal at least two potential source languages, one of which is similar to the recipient language and one of which is not. However, it is also possible to examine the effects of crosslinguistic similarity in cases where a single recipient language is being learned or used by two groups of participants who speak different source languages, one of which is similar to the recipient language and one of which is not (e.g., Biskup, 1992). Most studies dealing with the effects of crosslinguistic similarity on transfer in the forward and lateral directions are of the former type,

but studies looking at the effects of crosslinguistic similarity on reverse transfer tend to be of the latter type. Studies by Boyd (Boyd, 1993; Boyd and Andersson, 1991), for example, have shown that L2 Swedish can affect the L1 morphosyntax of both English speakers and Finnish speakers, but in different ways. Under the influence of L2 Swedish, the L1 English of American informants was found to become more flexible in terms of word order, whereas the L1 Finnish of Finnish informants was found to show some degree of reduction (or loss) of its morphological richness.

Concerning the distinction between learning-related and performance-related effects, it is clear that the effects of crosslinguistic similarity on transfer can be either learning-related or performance-related. In the case of production errors, it is sometimes difficult to distinguish between the two because production errors can result either from learned crosslinguistic associations (e.g., Eckman, 2004; Ringbom, 1987) or from intrusive online interference from a language that is similar to the target language (e.g., Williams & Hammarberg, 1998). Nevertheless, clear learning-related effects can be seen in the fact that people can generally learn similar languages at a much more rapid rate than distant languages (e.g., Ard & Homburg, 1992; Odlin, 1989; Ringbom, 1987). Likewise, clear performance-related effects can be seen in the fact that people can often comprehend a good deal of a language that is similar to one they already know—even on their first encounter with the language, without any prior learning—but comprehension becomes increasingly unlikely the more distant the language is from any that they know.

In summary, although language transfer does occur in areas of language use where the source and recipient languages are objectively different, it is the similarities that L2 users perceive or even just assume to exist between languages that serve as the main driving force behind the mental associations that lead to instances of CLI. When the perceived similarities are great enough, this leads L2 users to assume a general similarity between the languages, and therefore also to assume additional similarities beyond what they have yet encountered (and which may not even exist). Positive transfer occurs when assumed similarities are compatible with objective similarities, whereas negative transfer occurs when assumed similarities conflict with objective differences. Transfer is rarely so neatly dichotomous, however, given that objective similarities and objective differences are often meshed together, and this leads to cases where transfer ends up being both positive and negative at the same time (e.g., where an L2 user produces the word *clothers* instead of *clothes*, partially on the model of Swedish *kläder* = “clothes”—an instance of transfer that is neither fully positive nor fully negative).

6.2.2. Area of Language Acquisition and Use

The traditional areas of language acquisition and use include phonology, orthography, lexis, semantics, morphology, syntax, discourse, and pragmatics—the areas that we dealt with in Chapter 3. Although these areas of language do not exert direct influence on transfer per se, it has been found that transfer is more likely to occur in some of these language subsystems than in others. Thus, area of language acquisition and use can be thought of as one of the many factors that can be used to predict the likelihood of transfer. This factor is often referred to as *language level* in the literature (e.g., R. Ellis, 1994).

We have already dealt extensively with CLI effects in different language subsystems in Chapter 3, so a few observations about the effects of language level on transfer should suffice here. First, the literature shows that forward transfer is very common in phonology, lexis, semantics, discourse, and pragmatics. Its documented occurrence seems somewhat more moderate in the areas of orthography and morphology, and it seems to occur least of all in the area of syntax. Nevertheless, forward transfer does occur in all of these subsystems, though its occurrence is complicated by the effects of other factors, such as the degree of crosslinguistic similarity between languages and the L2 proficiency of the L2 users in question (e.g., R. Ellis, 1994, pp. 316–317; Jarvis, 2000a, pp. 246–247; Odlin, 1989, p. 23). Transfer in the lateral direction has been investigated mainly in relation to lexis, and here it has been found to be frequent and widespread, especially in cases where the L2 and L3 are similar (e.g., Cenoz, 2001; Dewaele, 1998; Ringbom, 2001; Williams & Hammarberg, 1998). Whether the general lack of studies documenting lateral transfer in other language subsystems reflects a lack of lateral transfer in those subsystems is not yet clear; this is still largely unexplored territory. Finally, concerning reverse transfer, we showed in Chapter 3 that reverse transfer can be found in essentially all areas of language use, though its effects seem strongest in phonology, lexis, and semantics (see also Cook, 2003; Schmid et al., 2004). (In all directions of transfer and in all subsystems of language, CLI effects can be either learning- or performance-related, as we describe in other sections of this chapter.)

6.2.3. Frequency, Recency, and Salience

Selinker (1969) and Andersen (1983) were among the first researchers to make an overt connection between transfer and the *frequency* with which forms occur in either the source or recipient language. The emphasis of Selinker's work was on showing that learners tend to transfer frequency tendencies from the L1 to the L2. That is, even though Hebrew allows multiple word orders with respect to adverbial placement, Hebrew speakers usually show a statistical preference (i.e., in terms of frequency of use) for one word-order configuration over others,

depending on the adverbial in question and the specific context. Selinker showed that Hebrew-speaking learners of English tend to transfer these frequency preferences from Hebrew to English. Andersen acknowledged Selinker's finding concerning the importance of frequencies in the L1, but also stressed the importance of frequencies in the L2, emphasizing that structures that occur with high frequency in the L2 are more likely to become incorporated into the learner's interlanguage. Accordingly, he hypothesized that frequency in both languages is interrelated, and that structures are especially likely to show up in a learner's interlanguage production when such structures "occur frequently in the L1 and/or the L2" (p. 182, emphasis in the original).

The effects of frequency on transfer have not received much attention since 1983, but one recent study that has given attention to this variable is Poulisse (1999). In her study of Dutch speakers' slips of the tongue while speaking English, Poulisse found that almost 30 percent of the slips reflected L1 influence, and that the vast majority of these were accidental insertions of highly frequent Dutch words. Most of the slips were function words, such as *ook* ("too"; *I have ook, I have uh, a brother too*) and *nog* ("another"; *and then nog one*), but there were also a fair number of content-word substitutions, such as *heeft* ("has"; *yes she heeft, uh she has uh, big ears*) (p. 148). Poulisse's explanation for the fact that most of the L1-based slips involved highly frequent words is that the mental procedures underlying the selection of frequently used L1 words are so highly automatized that they are difficult to suppress while the person is using the L2.

Besides frequency, Poulisse also acknowledged the potential effects of *recency*, by which she meant that the languages that a person has used recently tend to bear a high level of activation in the person's mind. Now, Poulisse's study involved just an L1 and an L2, but the effects of recency are much clearer in cases where multiple languages are involved. Two studies that are particularly instructive concerning the effects of recency on transfer are Williams and Hammarberg (1998) and Dewaele (1998). In an examination of longitudinal oral data collected from an English-speaking learner of Swedish who had also studied other languages including German (in which she had near-native proficiency), Williams and Hammarberg found that the vast majority of the participant's accidental, unintentional switches from Swedish into another language involved switches into German. This happened despite the fact that she had been using English more frequently than German while in Sweden. It was therefore the language she had acquired most recently (German) rather than the language she used most frequently (English) that affected her use of Swedish the most. Some researchers (e.g., the authors of several chapters in Cenoz, Hufeisen, & Jessner, 2001) attribute this type of effect not to recency per se, but to a factor referred to as L2 status, "talk foreign," or foreign language mode. According to this account, learners often show interference from one nonnative language when using another due to a learning constraint that makes it difficult to fully compartmentalize

post-L1 languages. As the Cenoz et al. anthology shows, there appears to be ample evidence for the effects of L2 status, but recency still seems to be a plausible explanation for why the participant in the Williams and Hammarberg study showed a great deal of influence from German but almost none from the other non-L1 languages she knew. (Note: The participant's high level of proficiency in German and the fact that German and Swedish are closely related no doubt also played a role).

Recency also seems to be a more powerful explanation than L2 status in the results of Dewaele's (1998) study. Dewaele investigated how transfer operated in the lexical inventions of Dutch-speaking learners of French who had also learned English. Some of the learners had learned English before French, and the others had learned French before English. Dewaele found that the learners who had learned French before English tended to rely more on Dutch than on English in their French word coinages, whereas the learners who had learned English before French tended to rely more on English than on Dutch. These results therefore seem to suggest that the language that was learned just prior to the target language is the most likely candidate for transfer. This finding is compatible with the findings of Williams and Hammarberg, but it also points to a caveat in how the recency factor is understood: It appears not to be the language that has been acquired most recently—from the perspective of the present moment—that matters as much as which language was acquired just before the target language. In other words, the effects of recency in the Williams and Hammarberg and Dewaele studies need to be understood in relation to the order in which the languages were acquired.

Whereas the thrust of the Williams and Hammarberg and the Dewaele studies was on the level of activation of the source language as a whole (or at least its lexicon), Selinker, Andersen, and Poullisse were more concerned with how the frequency or recency of a specific structure favored that structure's candidacy for transfer. Inasmuch as the mechanism through which this occurs is driven by the strength of the structure's representation in either working memory or long-term memory, we can expect the same effect to arise from the perceptual *salience* of a structure (i.e., the degree to which it is noticeable). Indeed, Jarvis (2002) provides an example of how salience and CLI seem to interact in the acquisition of the English definite article by Finnish speakers. The example, which we referred to briefly in Chapter 3, concerns two groups of Finnish ninth-graders: those with six years of English instruction and two years of Swedish, and those with two years of English instruction and six years of Swedish. It was found that the latter group—the ones with only a third as much English instruction as the former group—was more accurate than the former group in their use of the English definite article. The most likely causes for this result are that (a) the Swedish definite article has a very similar set of functions to the English definite article, and (b) the Swedish definite article is far more perceptually salient than is

the English definite article. Thus, the group with more years of Swedish instruction received more optimal input regarding the function of the definite article, and was able to transfer what they learned about the definite article in Swedish to their use of English.

The effects of frequency, recency, and salience that we have described are both learning-related and performance-related. Concerning learning, the frequency, recency, and salience of a structure tend to increase the likelihood that the structure will be integrated into the person's language knowledge (Doughty, 1991; Long & Sato, 1983). The relationship between these factors and transfer is often indirect, as it is in Jarvis' study, but is perhaps clearest when structures that occur frequently, recently, and saliently in both the L1 and L2 become crosslinguistically associated in the mind of the learner (cf. Andersen, 1983). Performance-related effects of frequency, recency, and salience are perhaps easier to document, and are seen especially in cases where the mental activation levels of frequent, recent, and salient items in the source language result in their intrusion into the person's use of the recipient language (cf. Poulisse, 1999).

6.2.4. Markedness and Prototypicality

Although markedness and prototypicality are treated as separate factors in R. Ellis (1994), here we are treating them together for reasons of parsimony and because markedness and prototypicality share many of the same characteristics, such as the fact that both relate to values associated with specific forms, features, and structures of a language, and in both cases these values are determined in accordance with universal principles. Both markedness and prototypicality also relate to the degree to which a form, feature, or structure is marked, special, atypical, or language-specific versus being unmarked, basic, prototypical, or universal (e.g., Kellerman, 1983). Markedness has been defined differently within different research frameworks and in relation to different linguistic subsystems. In phonology, *markedness* is usually defined in relation to how common a sound or sound pattern is across the languages of the world. The most common sounds and sound patterns are regarded as being more basic or unmarked, whereas those that are less common are considered to be marked. A number of studies have shown that marked structures (e.g., voice contrasts in syllable codas, complex consonant clusters) in a target language are more difficult to acquire than unmarked structures (final devoicing in syllable codas), and this condition often interacts with transfer. That is, the difficulty and rate of acquisition of an L2 structure that is different from the L1 can be affected by whether the L2 structure is more or less marked than the corresponding L1 structure. Generally speaking, structures that are more unmarked have been found to be easier and faster to acquire (Anderson, 1987; Eckman, 1977, 2004; Stockman & Pluut, 1992).

Some studies have taken a similar approach to the investigation of markedness effects on transfer in the area of morphosyntax (Hyltenstam, 1984; Zobl, 1984). These studies have shown that L1 structures that are marked, or relatively rare across the languages of the world (e.g., preposition stranding, as in *Who did John give the book to?*), have a tendency not to transfer to the L2, especially when the corresponding structure in the L2 is unmarked, or very common across the languages of the world (e.g., pied piping, or the equivalent of *To whom did John give the book?*). But, interestingly, L1 structures sometimes do not transfer to the L2 even when the L1 structures are unmarked and the corresponding L2 structures are marked. For example, Bardovi-Harlig (1987) found that learners of English from various L1s that do not allow preposition stranding nevertheless acquired preposition stranding (marked) before pied piping (unmarked), even though a hypothesis based on either transfer or markedness would predict the opposite. Bardovi-Harlig's interpretation of these results is that the frequency and salience of preposition stranding in English, which is much more common than pied piping (in English), can override the potential effects of markedness, and evidently also transfer. Although it is not completely clear how or when markedness interacts with transfer and other factors, there is nevertheless ample evidence to show that the transfer of both marked and unmarked syntactic structures is quite common (e.g., Liceras, 1985; White, 1987), and that transfer can be promoted by the frequency and salience of structures in the source language (e.g., Poulisse, 1999) and inhibited by the frequency and salience of structures in the recipient language that are incompatible with transfer (e.g., Bardovi-Harlig, 1987).

As for the effects of prototypicality on transfer, most of what we know about this phenomenon comes from a series of studies by Kellerman (e.g., 1978, 1983, 1986, 1989). *Prototypicality* in this case relates to L2 users' perceptions concerning the degree to which a structure or meaning is prototypical (central, typical, universal) versus aprototypical (noncentral, atypical, language-specific). The best known of Kellerman's studies is the 1978 *breken* study, where the researcher determined which meanings and usages of the Dutch verb *breken* ("break") are considered by native Dutch speakers to be closest to the central, or core, meaning of the verb. He then asked a number of Dutch-speaking learners of English to indicate which of these meanings and usages they thought could be translated from Dutch into English using the English verb *break*. The result was a strong and significant correlation between the coreness of the meanings of *breken* and the learners' intuitions about how translatable they are into English. The profundity of this finding is underscored by the fact that nearly all of the meanings of *breken* presented to the participants—even the non-core meanings (e.g., *Sommige arbeiders hebben de staking gebroken* = "Some workers have broken the strike")—actually are directly translatable into English with the verb *break*. In later work, Kellerman (1983) acknowledged the relationship between coreness and markedness, and eventually referred to coreness as prototypicality (Kellerman, 1986). In

an even later study, Kellerman (1989) showed that prototypicality can affect learners' intuitions about the translatability not only of word meanings, but also of grammatical structures, such as conditionals (e.g., *If it would rain . . .* versus *If it rained . . .*).

Only a few studies have followed up on Kellerman's findings concerning the effects of prototypicality on transfer. One such study was conducted by Ijaz (1986), who found that learners tend to associate L1 and L2 prepositions in accordance with their central (i.e., prototypical) meanings, and that transfer-related errors in the use of L2 prepositions therefore tend to involve noncentral meanings. That is, transfer is evident in relation to both central and noncentral meanings, but the transfer is usually only negative with the noncentral meanings that do not match up well between languages. Another study that considered prototypicality effects was conducted by Jarvis (1998). Jarvis found that learners' L2 word choices generally reflect a reliance on prototypical, nonfigurative, and literal meanings from the L1. Interestingly, this often results in differences between L1 and L2 word-choice behavior because L1 word choices are often more figurative and idiomatic (e.g., in L1 Swedish, *Hon krockade med honom* = "She crashed with him"), whereas L2 word choices tend to be more prototypical, literal, and conservative (e.g., *She ran on him*, literally meaning that she collided with him while she was running, which is how this notion is prototypically expressed in Swedish).

It should be clear that markedness and prototypicality are related in the sense that both are concerned with people's intuitions about which structures and meanings are likely to be universal (i.e., unmarked or prototypical) and therefore transferable to the use of another language, as opposed to which structures and meanings are likely to be special or language-specific (i.e., marked or atypical) and therefore not likely to be applicable to another language. Not only do these notions help account for why some structures and meanings may be more likely to transfer than others, but they also help to account for the tendency of transfer to work asymmetrically, more from Language A to Language B than the other way around, which we mentioned in section 6.2.1 (see also Eckman, 2004; R. Ellis, 1994). Inasmuch as markedness and prototypicality affect learners' intuitions about which structures and meanings in their L1s they can rely on while constructing their interlanguage knowledge, we would regard the effects of these factors on transfer as being primarily learning-related. Nevertheless, the use of translation and judgment tasks in studies such as Ijaz (1986) and Kellerman (1978) could also have performance-related effects that might not reflect the true nature of the L2 learners' interlanguage knowledge. We are not aware of any research that has yet addressed the potential effects of either markedness or prototypicality on transfer in either the lateral or reverse directions.

6.2.5. Linguistic Context

Few studies have overtly addressed the ways in which linguistic context can affect transfer. However, a number of studies demonstrate the effects of linguistic context on systematic variation in learners' language production, and it is clear that some of these studies have implications for transfer. Two of these studies were conducted by Dickerson (1975), who found that the pronunciation of /r/ by Japanese-speaking learners of English is affected by the type of vowel that follows /r/. They are most successful at producing the target voiced retroflex semi-consonant when it is followed by a low vowel, but they tend to choose other allophonic alternatives (e.g., lateral, lateral flap) when it is followed by a high or mid vowel. Given that Japanese speakers' problems with /r/, including the allophonic variations they choose in different phonetic environments, are L1-related, it is clear that, in Dickerson's work, linguistic context affects not just language variation in an abstract sense, but in a way that determines the manner in which transfer will manifest itself, or whether it will manifest itself at all. Similar conclusions can be drawn in other areas of language use, such as grammatical morphology, where Young (1996) found that the use of the definite article by Czech- and Slovak-speaking learners of English is associated with an NP's clause position. Even though Czech and Slovak do not have articles, definiteness in these languages is indicated largely by an NP's position within a clause. Definite NPs (e.g., themes or old information) tend to occur clause-initially, whereas indefinite NPs (e.g., rhemes or new information) tend to occur clause-finally (p. 168). Crucially, Young found that Czech- and Slovak-speaking learners of English have a tendency to omit the English definite article with NPs that would already be marked for definiteness by their clause position in the L1. Thus, this seems to be another clear example of how transfer and linguistic context can interact.

As far as we are aware, the effects of linguistic context have not been directly investigated in relation to either lateral transfer or reverse transfer. However, some studies on lateral transfer (e.g., Cenoz, 2001) and reverse transfer (e.g., Jarvis, 2003) have provided glimpses of such effects, and we have also seen enough anecdotal evidence to believe that this will prove to be a very fruitful area of research in the future. In the meantime, we will conclude this section by acknowledging that the interaction between linguistic context and transfer is affected by L2 users' levels of proficiency in the languages involved (cf. Young, 1991), and may also be moderated by additional factors. Concerning whether the effects of linguistic context on transfer are learning-related or performance-related, although the linguistic contexts in which L2 users encounter forms, structures, meanings, and so forth in the recipient language can certainly affect the types of mental associations they make between the source and recipient languages, the effects of linguistic context that we have described in this section are primarily performance-related. In the case of Dickerson's and Young's studies, for

example, the learners had already formed the relevant mental associations between the L1 and L2 prior to their participation in the study, and the effect that linguistic context had on their task performance was to determine how and where the different types of crosslinguistic associations they had already formed would be drawn upon. To some degree, it seems that the performance-related rules that govern linguistic context-induced variation in the L1 were transferred to the L2.

6.3. COGNITIVE, ATTENTIONAL, AND DEVELOPMENTAL FACTORS

The second category of factors that we discuss concerns cognitive and developmental constraints on transfer. By cognitive and developmental constraints, we are referring to a person's level of cognitive and conceptual maturity at the time of language acquisition and use, the natural and universal principles of cognitive and linguistic development that govern how a person processes and stores new knowledge about language, and the special cognitive abilities that individuals possess to acquire a language. Accordingly, there are four factors that we discuss in this section: level of cognitive maturity (section 6.3.1), developmental and universal processes of language acquisition (section 6.3.2), cognitive language learning abilities (section 6.3.3), and attention to and awareness of language (section 6.3.4). These factors, which have received a great deal of attention in general, have been investigated in relation to their effects on CLI in only very few studies, mainly ones dealing with forward transfer, particularly in the areas of phonology and lexis. As we discuss below, however, there is at least some empirical evidence of the relationship between these factors and transfer in other areas of language, and not only in the forward but also in the lateral and reverse directions (see sections 6.3.1 and 6.3.4). As we describe, the effects of these particular factors on transfer tend to be learning-related, but we also point to some performance-related effects that they have (see sections 6.3.3 and 6.3.4). An additional crucial finding we emphasize is that the effects of these factors on transfer often do not occur in isolation; that is, they tend to be moderated by other, outside factors, such as language distance (see sections 6.3.2 and 6.3.4) and language proficiency (see sections 6.3.1 and 6.3.2).

6.3.1. Level of Cognitive Maturity

Although there exists a clear correspondence between cognitive maturity and age, some explanations of transfer-related phenomena rely more on the former than on the latter. For example, in a study of L1 influence in learners' L2 word choices, younger learners (e.g., fifth-graders) and older learners (e.g.,

ninth-graders) were found to differ in their word choices in both the L1 and L2 for cognitive reasons (Jarvis, 1998). In particular, the younger learners were semantically less precise than the older learners (saying, e.g., *hit* versus *collide*, *take* versus *pick*), even when they knew the relevant vocabulary (see also Weinert, 2004). A study by Cenoz (2002) likewise found that younger Basque- and Spanish-speaking beginning learners of English have more difficulty telling a story in English than do older learners who have had the same amount of English instruction. Cenoz attributed the differences not only to age, but also to cognitive maturity and instructional style. The effects of cognitive maturity on transfer in both of these studies could be described as relating to the constraints that conceptualization has on language production (see, e.g., Levelt, 1989); those constraints result in certain similarities in a person's expressiveness in both the L1 and L2, and in different patterns of transfer in individuals who are at different levels of cognitive development. People who are at different levels of cognitive maturity simply do not produce the same patterns of words or structures, and thus any transfer patterns they show will naturally differ qualitatively.

The effects of cognitive maturity on transfer are not limited to language production, nor are they limited to forward transfer. In language comprehension, L2 users' level of cognitive maturity affects their ability to comprehend the concepts expressed through language (Weist, 2002), and to abstract important conceptual, lexicosemantic, and morphosyntactic information from the new words they encounter (e.g., Weinert, 2004). Additionally, as Upton and Lee-Thompson (2001) have found, learners reading in an L2 often rely heavily on L1-related cognitive resources. However, the degree to which they do this depends on their level of L2 proficiency. It seems, then, that cognitive maturity and transfer interact not only with each other but also with L2 proficiency.

Regarding the distinction between learning- and performance-related effects, it is somewhat difficult to tease the two apart as they pertain to the interaction between cognitive maturity and transfer. Of course, certain types of effects are clearly more related to learning than they are to performance, as can be seen in the fact that a person's level of cognitive development (or his level of acquired knowledge) is a strong determinant of further learning (Weinert, 2004). Some of the problems that learners have with English articles, for example, are due to their lack of having fully internalized the notions of definiteness and countability (e.g., Hiki, 1991; Yoon, 1993). Pure performance-related effects of cognitive maturity on transfer are more difficult to identify; even though L2 users' choice of words and other structures (e.g., *hit* versus *collide*), the concepts they refer to (e.g., definiteness and countability), their level of expressiveness, and so forth, are certainly performance-level phenomena, these types of linguistic behaviors nevertheless seem to be governed heavily by the notions and concepts that the L2 users either have or have not yet learned. There are other areas that we will discuss where performance-related effects are more or less independent of

learning-related effects, but the interaction between cognitive maturity and transfer does not appear to be one of those areas.

6.3.2. Developmental and Universal Processes of Language Acquisition

A number of researchers have argued that transfer and natural acquisitional processes interact with each other in a way that favors the occurrence of transfer at a stage of language development where the structure in question is naturally ready to be acquired (e.g., Andersen, 1983; Wode, 1978; Zobl, 1980). An even clearer way in which transfer can interact with developmental processes is by affecting the rate at which learners progress, sometimes even allowing learners to skip over a stage of development when the source and target languages are similar enough (cf., Ard & Homburg, 1992; R. Ellis, 1994, pp. 332–334; Master, 1987, 1997). The effects of acquisitional universals on transfer have also been examined from the perspective of the types of errors that L2 learners from all L1 backgrounds make. First, it has been found that learners from vastly different L1 backgrounds (though not necessarily all learners from those backgrounds) have the tendency to omit structures that are obligatory in the target language, such as inflectional affixes, articles, and prepositions (e.g., Jarvis, 2002; Jarvis & Odlin, 2000; Schumann, 1986). This universal tendency is often referred to as simplification, or more specifically as restrictive simplification (Meisel, 1980). A second type of universal tendency involves the overuse or overapplication of a structure to contexts where it is ungrammatical or unconventional in the target language, such as when a learner uses the definite article with nearly all noun phrases (e.g., Master, 1997). This acquisitional universal is often referred to as overgeneralization (e.g., R. Ellis, 1994), or alternatively as elaborative simplification (Meisel, 1980).

Because both types of acquisitional universals—simplification and overgeneralization—can be found in the language production of learners from all L1 backgrounds, one would be tempted to claim that their occurrence is independent of transfer. Presumably, it often or usually is, yet numerous cases documented in the literature show that they can also interact with transfer in such a way that the frequency with which learners omit or overgeneralize a particular structure, and/or the manner in which they do so, can be directly linked to the L1. Schumann (1986), for example, found that English prepositions are omitted by learners from all of the following L1 backgrounds: Chinese, Japanese, and Spanish. However, the Spanish speakers, whose L1 has prepositions that are functionally more similar to those of English, omit prepositions far less frequently than do Chinese and Japanese speakers. Jarvis and Odlin (2000) arrived at a similar finding through a comparison of the use of English prepositions by Finnish and Swedish speakers. They further found that Finns and Swedes differ

considerably in the manner in which they overgeneralize prepositions. Finns and Swedes were both found to overgeneralize the use of *in*, for example, but the Finns' overgeneralization of this preposition reflects the Finnish internal locative cases, whereas the Swedes' overgeneralization reflects how the corresponding prepositions (*i* and *in*) are used in Swedish.

Finally, concerning whether the effects of developmental and universal processes on transfer are learning-related or performance-related, it seems clear that they are fundamentally learning-related in the sense that they govern learners' orientation toward the learning task and the internal mental conditions under which learners associate structures of the target language with things they have learned previously—including L1 structures and rules. The effects of universal acquisitional processes on transfer can, of course, also be observed during learners' performance on language tasks, but, again, we believe that this is a consequence primarily of what learners have learned prior to the beginning of their performance on the task, and not as a direct consequence of performing that particular task.

6.3.3. Cognitive Language Learning Abilities

Concerning the effects of cognitive language learning abilities on transfer, some important groundwork has been laid by researchers investigating individual differences in language aptitude from the perspective of learners' phonetic mimicry abilities, sensitivity to grammatical relationships, inductive and analytical abilities, working memory capacities (e.g., Carroll, 1962; Harley & Hart, 1997; Skehan, 1989), and attention control (e.g., Segalowitz & Freed, 2004). The last of these, attention control, is included in this section instead of the following section on attention and awareness because attention control (or attention-shifting ability) is treated in the literature as a cognitive skill, whereas the following section deals not with skills per se, but with the selective use of cognitive resources. Although few researchers have directly addressed the question of how and to what degree a person's cognitive language learning abilities interact with transfer, there is little doubt that there is an interaction, and the few studies that have addressed the question have found some evidence for it. The evidence accumulated so far pertains primarily to phonetic mimicry abilities, and the relevant research has confirmed what one would naturally expect: that people who are especially good at phonetic mimicry are more likely to acquire (or maintain) a native-like accent in a given language, and are therefore less likely to exhibit an accent representative of one of the other languages they know (e.g., Major, 1992, 1993).

As a general synthesis of the relationship between transfer and cognitive language learning abilities, it seems safe to say on the basis of the existing literature that those people who are especially skilled at discerning and acquiring the

paradigmatic and syntagmatic forms, structures, patterns, and distinctions of a target language can be expected to rely less on their knowledge of other languages while learning, comprehending, and producing the target language. There are numerous other factors that affect how and how well a person will be able to make use of those abilities, such as the person's level of proficiency in the target language, the relationship between the source and recipient languages, and so forth. Concerning the distinction between learning- and performance-related effects, it seems that cognitive language learning abilities can produce both types of effects on transfer. Learning-related effects occur when the language learner's phonetic/phonemic coding abilities and/or memory abilities are applied to the perception, coding, and storage of target-language forms and functions. Performance-related effects pertaining to cognitive language learning abilities occur primarily as the result of memory constraints that determine how much information can be processed in working memory, how efficiently it will be processed, and how information from long-term memory will be activated and retrieved.

6.3.4. Attention to and Awareness of Language

The attentional factors that appear to interact with transfer include attention to and awareness of language, conscious control of language use, and metacognitive and metalinguistic analysis of language. So far, few studies have investigated the effects of any of these factors on transfer, so we will discuss them together without dividing them into separate subsections. Whereas linguists tend to be concerned primarily with implicit knowledge and unconscious processing of language, the core issue in this section is whether explicit knowledge of, attention to, awareness of, and conscious control over language have an effect on the patterns of transfer that emerge in a person's language use. In a relatively lengthy discussion of this issue, Odlin (1989) suggests that they do, concluding that "whatever the exact nature of the role that linguistic awareness plays, such awareness is a nonstructural factor that interacts with cross-linguistic influences" (p. 140).

Odlin equates the term "language awareness" with metalinguistic awareness, and he defines it as "knowing about" a language. He also adds that language awareness can be either conscious or unconscious (p. 140), but the example he gives of unconscious language awareness (i.e., knowing that *nothin'* is less prestigious than *nothing* without having any metalinguistic knowledge about what the difference in pronunciation entails) does involve conscious knowledge at a certain level (i.e., explicit knowledge that there are two pronunciations of this word, and that one is more prestigious than another). Therefore, for present purposes, we will define *language awareness* as explicit knowledge of language, regardless of whether that explicit knowledge qualifies as metalinguistic or merely as a vague notion that the person is conscious of and therefore able to

verbalize. Our real concern in this section, however, is not with a person's explicit knowledge per se, but rather with the manner and frequency with which the person makes use of that knowledge, and how this affects transfer.

The most obvious effect of the use of explicit knowledge on transfer is seen in the fact that L2 users often exhibit different patterns of transfer depending on whether they are trying to exert conscious control over their language production—that is, whether they are relying on explicit knowledge to help them monitor and regulate their language production and interaction. This can be seen, first, in relation to the notion of intentionality. In the study by Williams and Hammarberg (1998), for example, the researchers found that the English-speaking informant's *intentional* language switches while speaking Swedish were from L1 English, whereas her *unintentional* switches were mainly from L2 German. The researchers also noted that the intentional and unintentional switches played different roles in the person's language use: The intentional switches were used to ask for clarification or feedback, or to repair something that she had said in Swedish, whereas the unintentional switches seemed to be accidental substitutions of Swedish words for German ones. Thus, it seems that intentionality—a notion related to conscious control or monitoring—has an effect both on which language is chosen as the source language for transfer and also on what precisely is transferred or for what purpose.

Some have claimed that learning environments and contexts that promote a greater degree of language awareness and conscious monitoring of language use lead to increased levels of transfer, especially in cases where the L1 and L2 are considerably different (e.g., Dulay, Burt, & Krashen, 1982, pp. 109–111; Tarone, 1982). Although this may sometimes be the case, Odlin (1989) points to research that shows that explicit knowledge and conscious monitoring often decrease the occurrence of transfer. Additionally, more recently, Kasper (1997) has indicated that explicit knowledge of the pragmatic norms of the target language helps learners avoid negative transfer, and a study by Jarvis (2002) gives an example of a learner who correctly used the English definite article while consciously monitoring his language use but incorrectly omitted the definite article in an L1-like manner when not monitoring. In other words, in this particular case, the learner exhibited transfer when relying on his implicit knowledge but not when relying on his explicit knowledge of English (see also Chapter 4 of this book and Leather, 1999, p. 32). Similarly, in the reverse direction, Jarvis (2003) shows that negative transfer from L2 English to L1 Finnish occurs less in tasks that promote reliance on explicit knowledge and conscious reflection (i.e., test-like elicitation tasks) than it does in natural-use settings, where the person's language use appears to reflect mainly implicit knowledge. These findings suggest that negative transfer is less likely in situations where L2 users have access to accurate explicit knowledge and where they are induced to rely on that knowledge while using the recipient language (Odlin, 1989, p. 152).

The most extensive treatment of the relationship between language awareness and transfer is Jessner's (2006) monograph dealing with issues related to metalinguistic awareness in language learning and multilingualism. In addition to reviewing the prominent literature on this topic, Jessner also refers to less available studies, such as dissertations and conference papers that provide valuable insights into the interaction between language awareness and CLI. On the whole, the evidence she discusses suggests that the learning of additional languages beyond the L1 leads to increased levels of metalinguistic awareness, and that this in turn leads to accelerated rates of acquisition for subsequent languages. The reason for the accelerated acquisition appears to be the way that metalinguistic awareness facilitates learners' ability to make use of prior knowledge, including their existing knowledge of other languages. Some of the empirical findings that Jessner discusses include the finding that metalinguistic awareness increases learners' conscious searches for crosslinguistic similarities, enhances their receptive strategies for inferring word meanings, increases the frequency with which they rely on their knowledge of other languages, and increases the likelihood that their reliance on other languages will result in positive transfer (this last finding was also reported by Odlin, 1989, p. 152).

Although the relationship between the use of explicit knowledge and transfer has only just begun to receive serious empirical attention, the findings that have emerged so far clearly demonstrate that these factors do affect the occurrence of transfer. The effects of conscious monitoring on transfer are largely performance-related in the sense that they often do not affect whether or how something will be learned as much as they affect how a person will perform linguistically depending on whether that person is attending to, aware of, and/or exerting conscious control over his or her language use. These performance effects stem largely from the person's reliance on and access to explicit versus implicit knowledge of the language. The evidence that Jessner (2006) discusses, in turn, indicates that a person's reliance on and access to explicit knowledge can also have consequences for learning, such as the acceleration and enhancement of the language learning process. Explicit knowledge and conscious processes are therefore used not only for regulating language performance, but also for learning, and thus they exhibit not only performance-related but also learning-related effects. In both cases, the degree to which explicit knowledge can affect transfer depends on how much and what type of explicit knowledge the person has previously learned, and this includes explicit knowledge of the similarities and differences between the source and recipient languages.

6.4. FACTORS RELATED TO CUMULATIVE LANGUAGE EXPERIENCE AND KNOWLEDGE

In this section we deal with factors related to the language knowledge and experience that an L2 user has acquired over time, and with how these factors affect the occurrence of transfer. Chief among these factors is the person's language proficiency in both the source and recipient languages, and all five of the factors we deal with in this section are directly or indirectly related to language proficiency. The five factors we address in the following subsections are age (section 6.4.1), length, frequency, and intensity of language exposure (section 6.4.2), length of residence (section 6.4.3), general level of proficiency (section 6.4.4), and number and order of acquired languages (section 6.4.5).

6.4.1. Age

The age factor is somewhat ambiguous in that it can refer to the effects of *aging* (e.g., Odlin, 2003), *age of acquisition*, also referred to as *age of arrival* in studies dealing with immigrants (i.e., the age at which the person began acquiring the target language), or *age at task* (i.e., the age at which the occurrence of transfer was observed) (e.g., Guion et al., 2000). The effects of age of acquisition have received by far the most attention in the transfer research since the early 1990s, but before then these three facets of the age factor were rarely differentiated in studies exploring differences between younger and older learners. What the field has learned so far about the differences between younger and older learners with respect to transfer is that, in the forward direction (L1 to L2), older learners appear to exhibit more transfer than younger learners in the area of phonology (e.g., Flege, 1981; Flege, Schirru, & MacKay, 2003; Singleton & Ryan, 2004, pp. 122–125), though perhaps not in the areas of lexis or morphology (e.g., Harley, 1986; Jarvis, 1998, 2000a; but see Hohenstein et al., 2006). In the lateral direction (L2 to L3 and L3 to L2), older learners tend to exhibit more transfer than younger learners in the area of lexis (Cenoz, 2001), but this seems to depend on how similar the L2 and L3 are (cf. Slavoff & Johnson, 1995). Finally, in the reverse direction (L2 to L1), older L2 users often exhibit less transfer than younger L2 users (e.g., Laufer, 2003; but see Hohenstein et al., 2006), and this tendency is especially evident in the area of phonology (e.g., Williams, 1980; Yeni-Komshian, Flege, & Liu, 2000).

An attempt to account for the finding that, in the area of phonology, older learners exhibit more forward transfer but less reverse transfer than younger learners, can be found in the Speech Learning Model proposed by Flege and his colleagues, which assumes “that the L1 and L2 phonetic systems reside in the same phonological space and can exert a mutual influence on each other” (Guion et al., 2000, p. 206). The model predicts “that the more established the L1 is at the

time of L2 acquisition, the greater influence it will have on the L2" (p. 207). The model also predicts the inverse, which is that the less established the L1 is at the time of L2 acquisition, the less influence it will have on the L2, and the more influence the L2 will have on the L1. Note that in this model what matters most is not aging or age at task, but rather age of acquisition, as this is an indication of how well established the L1 is when the L1 and L2 begin interacting.

The relationship between transfer and age of acquisition can be quite profound in cases where it predicts accuracy in the production and perception of speech sounds (Flege, 1995, 1997; Yeni-Komshian et al., 2000). However, the relationship can also be much more subtle, such as in cases where CLI effects do not affect a person's accent as much as they slow the person's processing and production of a language. This type of effect has been documented in studies by Guion et al. (2000) and MacKay and Flege (2004), in which the age of arrival of Korean and Italian immigrants to the U.S. and Canada was found to predict their speech rate in L2 English. More specifically, participants who arrived at an earlier age in North America were found to have shorter sentence durations in English than later arrivals. Although factors other than age of arrival—such as the participants' actual age at the time of testing (i.e., age at task), their length of residence in North America, and the frequency with which they had been using their L1—were also found to affect the participants' sentence durations, both studies showed that the effects of age of arrival are stronger than the effects of these other variables, and, furthermore, that the effects of age of arrival remain significant even when these other factors are partialled out. It is important, nevertheless, to point out that age of arrival is most directly an index of when the participants' regular exposure to English is likely to have begun; their actual acquisition of English may have begun earlier than this if they received English instruction before moving to North America, and it may even have begun later, depending on whether they actually did receive regular exposure to English immediately upon their arrival in North America.

Besides looking at the effects of age of arrival on L2 speech rate, the MacKay and Flege study also investigated its effects on L1 speech rate. In multiple experiments, it was found that early bilinguals (those who arrived in North America between the ages of 2 and 13) had shorter sentence durations in the L2 than in the L1, whereas late bilinguals (those who arrived at the age of 15 or older) showed the opposite pattern. Insofar as the L2 (English) had become the dominant language for the early bilinguals whereas the L1 (Italian) remained the dominant language for the late bilinguals (p. 394), the researchers interpreted the results as providing support for the hypothesis that the phonetic systems of the L1 and L2 interact in the mind of a bilingual, and that the more dominant a language is for a bilingual, the more processing resources will be required to suppress that language while the person is using the other language. In other words, the expected result is that interference from the dominant language will

slow a person's processing and production of the weaker language, and this is indeed what the researchers found. Of course, one must recognize that speech rate is affected by numerous other variables, and that average speech rates vary from language to language and from one speaker to another (e.g., Towell & Dewaele, 2005).

Hypotheses concerning the interaction between the L1 and L2 knowledge systems and the effects of suppressing one language while using another have been explored in other areas of language use and within other frameworks, such as those of Cook (1991, 2003) and Green (1998). However, the work that has been done within these other frameworks has not investigated the potential relationship between age and transfer, as far as we know. Most of the relevant research has been in the area of phonology, as we have indicated, and it has revealed both learning-related effects and performance-related effects. Learning-related effects can be seen in the findings of studies that show that it is generally only truly young learners (e.g., 3 years old and younger) who are able to acquire the sounds of the L1 and L2 without any crosslinguistic convergence (i.e. a learning effect) between the two sound systems (see Singleton & Ryan, 2004, pp. 123–124). Performance-related effects can be seen in the findings of studies that show that dominance in one language—which tends to correlate significantly with age of acquisition—can slow the processing and production (i.e. performance effects) of a weaker language (Guion et al., 2000; MacKay & Flege, 2004). Future research within other frameworks and in other areas of language use may reveal similar age-related effects, but we acknowledge Odlin's (2003) surmise that age effects may "differ from one linguistic subsystem to the next" because of the moderating influence of educational and social variables, which interact with age effects but have varying levels of impact on different areas of language use (p. 471).

6.4.2. Length, Frequency, and Intensity of Language Exposure

In studies dealing with L2 users living in the L1 environment, participants' level of language knowledge is often characterized in terms of the length, frequency, and/or intensity of language instruction or other types of exposure that participants have had with the L2. Length of language exposure is normally measured in relation to the number of years of instruction a person has received in the L2 (e.g., Jarvis, 2000a, 2002; Sjöholm, 1995), and frequency and intensity of exposure are usually measured in terms of the number of hours per day or per week of L2 instruction (e.g., Kecskes & Papp, 2000), or in terms of the cumulative hours of contact they have had with the L2 (e.g., Cenoz, 2001). The findings of these studies are somewhat mixed, but there are also some important consistencies.

Regarding forward and lateral transfer in learners' word choices, Cenoz (2001) found that Spanish- and Basque-speaking learners of English show more transfer

as the amount of their L2 instruction increases, whereas Sjöholm (1995) found that transfer effects in the verb choices of Finnish- and Swedish-speaking learners of English decrease the longer they study the language. These two findings contrast, but may nevertheless be compatible given that Cenoz looked at relatively low-level learners and Sjöholm looked at high-level learners. In other words, it may be that the relationship between amount of L2 instruction and forward transfer (in lexis, at least) is curvilinear, initially increasing to a certain point and then decreasing (cf. R. Ellis, 1994; Jarvis, 2000a). In the reverse direction, Kecskes and Papp (2000) found that (positive) L2 influence on L1 writing increases with the intensity of instruction in the L2, such that the L1 writing of Hungarian students improves most when they study English or French in an immersion program rather than as a regular school subject. Finally, there may be a certain performance-related component of these results, but we regard them as deriving mainly from changes to L2 users' knowledge structures—that is, learning.

6.4.3. Length of Residence

In studies dealing with L2 users living in an L2 (or L3, etc.) environment, length of residence is a common index of participants' level of language knowledge. This is true of studies dealing with forward, lateral, and reverse transfer in an L2 environment. In the forward direction, studies by Flege and colleagues have examined length of residence in relation to its potential effects on CLI. Guion et al. (2000) found that length of residence was a significant predictor of the effects of L1 interference on the English sentence durations of Italian and Korean immigrants to North America: The longer their residence in North America, the shorter and more native-like their English sentence durations were. However, this study and a later one by MacKay and Flege (2004) found that length of residence was highly confounded with age of arrival and amount of use of the L1 in the L2 environment. These latter factors were also found to be stronger indicators of CLI than length of residence, but this of course does not mean that the effects of length of residence on CLI are unimportant. In the lateral direction, a study by Hammarberg (2001) reports on the basis of longitudinal data that an L1 English speaker with L2 German and L3 Swedish began showing a gradual decrease in her unintentional switches from Swedish into German after about four months of residence in Sweden, and completely stopped switching into German after about a year and a half.

Whereas the studies that have investigated the effects of length of residence on both forward and lateral transfer have shown that transfer tends to decrease as length of residence in the L2 environment becomes longer, the studies that have looked at the relationship between length of residence and reverse transfer have shown the opposite pattern. For example, Laufer (2003) found that “the

longer people lived in an L2 environment, the worse their judgement of L1 collocations became” (p. 25). Similar findings come from a longitudinal study by Hutz (2004), who examined a database of L1 German letters written by a German-English bilingual over a period of 55 years and found a dramatic increase in reverse semantic transfer in the first three decades. Even when exposure to L1 speech remains high in an L2 environment, sufficient L2 exposure over a sufficiently long period of residence can result in a great deal of reverse transfer in lexical semantics and morphosyntax (e.g., Jarvis, 2003; Pavlenko, 2003b; Pavlenko & Jarvis, 2002; Schmid et al., 2004).

What constitutes a sufficiently long period of residence appears to depend on the amount of interaction with target-language speakers. In speakers who work in the L2 environment and/or are married to L2 speakers and are raising children in the L2, reverse transfer may emerge relatively early. Its appearance in the form of lexical borrowing has been documented in L2 users with lengths of residence in the L2 environment as short as three years (Pavlenko, 2000; Pavlenko & Jarvis, 2002). These effects of length of residence on reverse transfer seem largely to involve changes to L2 users’ L1 knowledge structures (see Chapter 5), and are therefore learning-related. The effects of length of residence on the cases of forward and lateral transfer that we described in the preceding paragraph, on the other hand, seem more related to language processing, which would suggest that they are more performance-related.

6.4.4. General Level of Proficiency

There is no question that a person’s level of language proficiency in both the source and recipient languages affects the nature and extent of CLI that will occur in the person’s use of the recipient language (Odlin & Jarvis, 2004). As far as source-language proficiency is concerned, Guion et al. (2000) showed that performance-related forward transfer grows as a person’s L1 knowledge becomes stronger. Most studies of forward transfer have investigated participants who are fully proficient in the L1, and in such cases, source-language proficiency has a number of clear learning-related effects, as well (see Chapter 3). In the lateral direction, Dewaele (1998), Hammarberg (2001), Odlin and Jarvis (2004), and Ringbom (2001) have shown that a high level of proficiency in an L2 can have performance-related effects on the use of an L3, and Ringbom also pointed out that the L2 can even affect the acquisition of an L3 if the learner’s level of L2 proficiency is high enough. In the reverse direction, Major (1992, 1993), Tao and Thompson (1991), Van Hell (1998) and others have shown that source-language proficiency (in the L2) has both learning- and performance-related effects on the use of the L1. Studies of reverse transfer, reviewed in Chapters 3 and 5, similarly suggest that L2 effects are most visible in L2 users with high levels of L2 fluency and proficiency.

The effects of recipient-language proficiency are not as clear-cut, and the findings of transfer studies vary widely in relation to whether transfer increases, decreases, stays the same, or fluctuates as recipient-language proficiency increases (see Jarvis, 2000a). Of course, this does not mean that there is no relationship between transfer and target-language proficiency, as we know that this relationship can be confounded by other variables, such as crosslinguistic similarity (e.g., Brauer, 1998; Hammarberg, 2001; Ringbom, 2007). There are also six additional reasons for the existing confusion about the relationship between transfer and recipient-language proficiency. One of the reasons is that different studies measure proficiency differently. For example, some studies use years of instruction, others use length of residence, and others use various types of proficiency tests, but there is little consistency across studies as to how this is done. Another reason is that different studies look at different ranges of proficiency levels. As we pointed out in section 6.4.2, for example, the findings of Cenoz (2001) and Sjöholm (1995) may differ simply because Cenoz investigated lower ranges of proficiency, whereas Sjöholm investigated upper levels of proficiency. A third reason is that the effects of proficiency can work differently in different areas of language acquisition and use. The effects of proficiency on lexical and morphological transfer often seem to be curvilinear, whereas they seem to follow more of a steady trend in areas such as word order and pronunciation (see, e.g., R. Ellis, 1994; Jarvis, 1998; Odlin, 1989).

A fourth reason for the confusion about the relationship between transfer and proficiency is that different studies have looked at different types of effects—some examining learning-related effects (e.g. Ard & Homburg, 1992), others examining performance-related effects (e.g., Guion et al., 2000; Hammarberg, 2001), and yet others examining what appear to be both learning- and performance-related effects (e.g., Cenoz, 2001; Jarvis, 2000a). A fifth reason is that the negative effects of transfer have sometimes been measured in the aggregate (in terms of overall occurrence; e.g., Poullisse, 1999), whereas in other cases they have been measured proportionally in relation to the negative effects of other factors (see R. Ellis, 1986, p. 29). This can lead to opposite conclusions because, whereas the overall quantity and/or relative frequency of transfer errors does seem to diminish relatively steadily up to the point of stabilization, the proportion of errors that transfer accounts for grows. In cases described in terms of fossilization, most or all of a person's lingering errors tend to be at least partially attributable to transfer (e.g., Jarvis & Pavlenko, 2000; Selinker, 1992). Finally, a sixth reason for the confusion about the relationship between transfer and target-language proficiency is that some studies have examined only the negative effects of transfer (e.g., Hammarberg, 2001; Poullisse, 1999; Riney, Takada, & Ota, 2000), whereas others have taken into consideration both negative and positive transfer (e.g., Jarvis, 2000a; Jarvis & Odlin, 2000; Odlin & Jarvis, 2004). Although negative transfer seems ultimately to decrease with proficiency (though often nonlinearly and only

to the point of stabilization), positive transfer may increase with gains in target-language proficiency as learners become more aware of the similarities between the source and target language and as they acquire the language abilities (e.g., vocabulary knowledge, grammatical competence, fluency, control) necessary for taking advantage of those similarities.

Again, based on the existing empirical evidence, we are convinced that language proficiency does have an important and powerful influence on the nature and occurrence of transfer, and this is especially clear in the case of source-language proficiency. Recipient-language proficiency also affects transfer, but its effects differ depending on how proficiency is defined and depending on which other variables are present. In many areas of language acquisition and use, forward and reverse transfer are especially prevalent during the early stages of recipient-language acquisition, but there are other areas where transfer occurs only after learners have reached a level of proficiency in the recipient language where they can effectively make use of their source-language knowledge (e.g., R. Ellis, 1994; Jarvis, 1998; Odlin, 1989; Ringbom, 2007). In the reverse direction, the effects of recipient-language proficiency are somewhat less clear because in most of the relevant studies, the recipient language is an L1 in which the participants have acquired full proficiency. L1 proficiency can decline, of course, but it is often not clear whether L2 effects on the L1 are the cause or consequence of eroding L1 proficiency. This is a matter to be explored in future research. In the meantime, we offer two cautions about the relationship between proficiency and transfer. The first is that, because of the complex interaction between proficiency and other variables and because of inconsistencies in the ways that proficiency is measured, any generalization about the effects of proficiency on transfer will unavoidably be an oversimplification. The second caution is that the field needs to avoid circularity in its assessment of the relationship between proficiency and transfer; that is, learners' target-language proficiency should not be judged to be lower simply because they produce more instances of overt transfer, nor should their target-language proficiency be judged to be higher simply because they exhibit less overt transfer.

Finally, we conclude this section with the observation that the effects of proficiency on transfer are both learning- and performance-related. Learning-related effects arise particularly from recipient-language proficiency, and often pertain to sound-system representations and the mental associations that learners form between recipient-language forms and source-language meanings or functions (cf., R. Ellis, 1994; Leather, 1999; Odlin, 1989). Performance-related effects, on the other hand, tend to arise particularly from source-language proficiency, as they affect the degree to which the source language is activated during recipient-language performance and result in source-language intrusions or interference in recipient-language processing (e.g., Guion et al., 2000; Hammarberg, 2001).

6.4.5. Number and Order of Acquired Languages

The number of studies that have examined the potential relationship between transfer and the order in which languages are acquired is quite limited. However, there are a few relevant studies, and they all do seem to indicate some effect for this factor. Williams and Hammarberg (1998) and later Hammarberg (2001) described how a person with L1 English, L2 French, L3 Italian, and L4 German who was learning L5 Swedish showed influence mainly from her L4 German in the use of her L5 Swedish. On the other hand, there were also some additional factors that favored German (e.g., higher proficiency in German than in French or Italian, German was learned mainly as a second language in Germany whereas French and Italian were learned as foreign languages in the classroom, the crosslinguistic similarity between Swedish and German is much greater than between Swedish and either French or Italian), so this study does not settle the question of whether the order of acquisition had an effect. Dewaele's (1998) study seems more compelling in this respect. Dewaele investigated two groups of Dutch-speaking learners of French: those who had learned French as L2 and English as L3, and those who had learned English as L2 and French as L3. The French-L2 group showed more transfer from L1 Dutch than from L3 English, whereas the French-L3 group showed more transfer from L2 English than from L1 Dutch. Thus, in this study, as in the Williams and Hammarberg study, the language learned just prior to the recipient language was favored as the source language. This finding is also supported by Jarvis (2002), who found that L1 Finnish speakers with L2 Swedish and L3 English were more accurate in their English article use (due to positive transfer from Swedish) than were L1 Finnish speakers with L2 English and L3 Swedish. We acknowledge that there are a number of studies that do not support this finding, but in such cases it may be that the effects of order of acquisition are overridden by other, stronger factors, such as proficiency and crosslinguistic similarity (see, e.g., Ringbom, 1987).

A study by Håkansson, Pienemann, and Sayehli (2002) discounts the possible influence of L2 English word order on the acquisition of the verb-second (V2) construction in L3 German (e.g., *Gestern fuhr er nach Stockholm* = lit. *‘Yesterday went he to Stockholm’) by L1 Swedish speakers. Like German, Swedish has a V2 construction, whereas English does not. The researchers hypothesized that if any word-order transfer did occur, it would originate from Swedish. However, none of their first-year students of German and very few of their second-year students produced V2 constructions in their oral interviews, relying instead on XSVO word order (i.e., adverbial + subject + verb + object, such as **Gestern er fuhr nach Stockholm* = ‘Yesterday he went to Stockholm’), which is ungrammatical in both German and Swedish, but is grammatical in English. The researchers concluded that no word-order transfer at all—neither from L1 Swedish nor from L2 English—could be found in the first-year students’ interview data. However, the

data themselves cast doubt on this conclusion, as they clearly show other types of influence from English (e.g., *Und dann he waschen eh die Schlangen* = “And then he washes the snake” where the learner used English *he* instead of German *er*; see Sayehli, 2001, p. 39). Bohnacker (2005) also rejects the researchers’ conclusion and provides additional evidence that shows “that Swedish post-puberty learners of German who do *not* know English (or any other languages), do *not* violate V2 . . . whereas those who know English do violate V2” (p. 75, emphases in the original). This evidence again seems to confirm that the order in which the recipient language is learned (e.g., as an L2 or and L3) can have important consequences for the types of transfer that will be found.

Concerning the potential effects of the number of languages that a person knows, it is clear that people who know more than two languages often exhibit transfer from multiple languages, even simultaneously (e.g., Dewaele, 1998; Odlin & Jarvis, 2004). Another effect investigated by Zobl (1992) is that people who know more than two languages “express less conservative judgments” of the grammaticality of target-language sentences than do people for whom the target language is their L2. Zobl relates this finding to the fact that people who know more than two languages have a larger and more varied pool of linguistic knowledge to draw from. Insofar as multilinguals are disposed to entertaining a wider variety of hypotheses about the target language and are thus less conservative in the types of hypotheses they make, this may mean that they are more open to making interlingual identifications between the target language and previously learned languages. In other words, the implication seems to be that the more languages people know, the more likely they are to exhibit transfer from one or more of those languages. Whether this is an accurate statement about the relationship between transfer and the number of languages a person knows has not been resolved in the literature (but see Jessner, 2006, who provides additional support).

The effects of both order of acquisition and the number of languages a person knows have been explored primarily in relation to forward and lateral transfer in people who have learned more than two languages, and the empirical evidence suggests that they are both learning- and performance-related. Learning-related effects are seen in the form–function associations that are made between the recipient language and the language learned just prior to it (Jarvis, 2002), in learners’ openness to making interlingual identifications between the target language and a previously learned language, and in the hypotheses that learners have about the grammaticality of sentences in the target language, depending on how many languages they have learned before the target language (Zobl, 1992). Performance-related effects are seen in the degree to which the most recently learned language interferes with the processing and production of the target language (Dewaele, 1998; Williams & Hammarberg, 1998).

6.5. FACTORS RELATED TO THE LEARNING ENVIRONMENT

Factors related to the learning environment that have been noted to affect crosslinguistic influence include the distinction between formal learning and naturalistic exposure, as well as the degree to which the learner is focused on the formal properties of the language versus meaning and communication. We have already touched on these factors to some degree in the preceding sections of this chapter, so a few additional observations here should suffice. First, as we mentioned earlier, transfer can and does occur in both formal and naturalistic learning environments. There was an early belief that transfer is more likely in classroom contexts than it is in naturalistic environments (e.g., Dulay, Burt, & Krashen, 1982), but more recent work has suggested just the opposite because classroom learners experience and use the target language in a setting that increases their awareness of the differences between their native and target languages, and encourages them to adhere to the norms of the latter (Odlin, 1989, pp. 144–147; see also Jessner, 2006). The differences between naturalistic learning and classroom learning relate largely to the issue of explicit versus implicit memory, with language classrooms generally allowing more time for and devoting more concentrated effort at engaging learners' explicit memory and conscious monitoring, and thus decreasing the likelihood of negative transfer resulting from incomplete implicit knowledge and/or mismatches between the learners' assumed similarities and the actual similarities and differences that exist between the target language and the language(s) they already know.

However, the question about which environment is most conducive to transfer is misleading, and the more recent work appears to pertain more to performance-related effects than to learning-related effects on transfer. It is clear that learning-related transfer occurs in both environments, and the crucial point for our purposes is that transfer can affect learning differently in different environments. In the classroom context, learners are more likely to make conscious comparisons between the source and recipient languages, engage their explicit memory, and make use of conscious monitoring. These strategies and processes may help them avoid certain types of negative transfer, such as transfer-related word-order and pragmatic errors (e.g., Kasper, 1997; Odlin, 1990), while simultaneously promoting other types of interlingual identifications, such as between L1 and L2 content words and functional morphology. In a naturalistic environment, where the recipient language is being acquired in an environment where it is spoken natively and the focus is predominantly on meaning and communication, the new words, structures, conceptual distinctions, and ways of expressing events and relationships that they experience will predominantly engage their implicit memory. As far as learning effects are concerned, learners in a naturalistic environment are less likely to have explicit knowledge of the

objective differences between the target language and the language(s) they already know, and this may lead them to make interlingual identifications that result in negative transfer. On the other hand, their meaningful, contextualized, and rich experiences with new conceptual distinctions, ways of expressing events and relationships, and ways of structuring discourse, may allow them to acquire accurate implicit knowledge in areas of language use in which classroom learners may have little implicit or explicit knowledge, or in which classroom learners have accurate explicit knowledge but make transfer-related errors in situations where they rely only on their implicit knowledge. Learning-related effects thus clearly occur in both classroom and naturalistic contexts, but the effects can be very different due to how they differentially engage implicit versus explicit memory. The effects of naturalistic learning environments on implicit memory have especially important implications for reverse transfer (Pavlenko, 2000).

As we have discussed the effects of the learning environment on transfer, we have attempted to focus on just those effects that seem to be truly learning-related rather than performance-related. However, although the effects of learning context on reverse transfer seem to be clearly learning-related when they can be shown to result in the restructuring of a person's L1 knowledge, the effects of classroom versus naturalistic learning, as well as the effects of focused versus unfocused contexts, cannot be said to be exclusively learning-related. Due to differences in their concern for accuracy in different contexts, for example, language learners often exhibit more transfer outside of the classroom than inside the classroom (e.g., R. Ellis, 1994, p. 318). In such cases of variability, which again appear to be related to the degree to which they rely on explicit (e.g., conscious monitoring) versus implicit memory, the effects of context appear to be more performance-related than learning-related. We address this and related matters further in the following section.

6.6. FACTORS RELATED TO LANGUAGE USE

The final set of factors that have been observed to interact with transfer includes social, situational, contextual, and performance-related variables. For present purposes, we will characterize these variables as idiolect, level of formality, interlocutor, and task type. The research on the relationship between these variables and transfer remains somewhat limited, so we will discuss them without dividing them into separate subsections.

Concerning idiolect, the research on authorship attribution has made it very clear that different individuals have their own unique styles of speech and writing. Most of this research has focused on lexical patterns, but some has also shown that different individuals also have unique patterns of language use with respect to grammar and discourse (see, e.g., Foster, 2001; Holmes, 1998). Inasmuch as

transfer is an individual-level phenomenon, it follows that a person's idiosyncratic use of the source language will be mirrored by a certain level of idiosyncrasy in the use of the recipient language, as well (see Odlin, 1989; Jarvis, 2000a). For present purposes, we regard this as a performance-related phenomenon because any two speakers whose knowledge of their L1 is equivalent will still show different patterns of language performance because of differing objectives, differing situation-specific as well as idiolectal preferences, and so forth. To the extent that this particular type of idiosyncrasy transfers to the use of the recipient language, we would regard it as a performance-related effect. Its predicted effect on transfer is that different individuals will show different patterns of transfer that can in some way be traced to their source-language idiolect.

Concerning level of formality, Tarone (1982) argued that forward transfer is more likely to occur in formal contexts where learners are using a careful style, paying more attention to how they are speaking, and drawing more from all of their potential resources than they do when speaking in a more vernacular style (see also R. Ellis, 1994, p. 318). This seems to contradict Odlin's (1989) observation regarding forward transfer and Jarvis' (2003) observation regarding reverse transfer that interference from the source language occurs less in formal contexts where the learner is more concerned about conforming to language norms. However, the relationship between formality and transfer is probably more complex than can be characterized by simply saying that transfer occurs more in formal than in informal contexts, or vice versa. In fact, Tarone's, Odlin's, and Jarvis' findings may all be quite compatible when viewed through the lens of two goals that L2 users seem to strive for while communicating in formal contexts: (a) avoid violating the norms of the recipient language and (b) use forms and structures that reflect the formality of the context. When using a careful style, L2 users do seem to put more conscious effort into trying to avoid violations of the recipient-language rules and conventions that they know about. However, even while they are purposefully trying to avoid violating the rules and conventions of the recipient language, there are often markers of formality, politeness, and/or prestige in the source language that affect their performance in the recipient language. For example, Schmidt (1977) found that Cairene Arabic speakers' pronunciation of /θ/ in English was affected by the formality of the context, just as it would be in Cairene Arabic. Thus, again, the formality of the context does affect transfer, but it includes forces that both foster and constrain the occurrence of transfer.

Irrespective of the formality of the context, the interlocutor with whom the L2 user is conversing can also affect patterns of transfer. Some of the clearest examples of this can be found in the work of Beebe and Zuengler (1983), where transfer in Chinese-Thai bilinguals' use of Thai vowels varied according to whether they were speaking Thai with an ethnic Chinese or with an ethnic Thai

interlocutor. Specifically, the Chinese-Thai bilinguals adjusted their use of Thai vowels to sound more Thai-like or more Chinese-like in accordance with the ethnicity of their interlocutors. Like the other effects that we have so far examined in this section, the effects of interlocutor on transfer are primarily performance- instead of learning-related; they do not so much concern how or whether people will learn new associations between the source and recipient languages, but instead affect how L2 users will make use of the language knowledge that they have already learned.

Task type is the final factor that we discuss in this section and in this chapter. The effects of task type on L2 performance have received a good deal of attention in the literature (see, e.g., R. Ellis, 1994; Gass & Selinker, 2001), and many studies have reported that patterns of CLI do indeed differ across task types. We have already discussed how transfer can be affected by the formality of a language-use task and/or by the degree to which the task fosters conscious attention to and awareness of the formal properties of language. But the effects of task type go beyond these distinctions. For example, different patterns of transfer can be found when L2 users are speaking about different topics or performing in different discourse domains (Selinker & Douglas, 1985). Also, tasks that seem to be comparable in terms of formality and awareness-inducement—such as acceptability judgment tasks and elicited language production tasks—can yield different results. Studies by Gass (1980) and Hyltenstam (1984), for instance, show that the results of acceptability judgment tasks and elicited production tasks lead to different conclusions concerning the nature and extent of L1 influence in the acquisition of L2 relative clauses. Additionally, in a study of L1 influence on L2 word-choice behavior, Jarvis (2000a) found that Finnish- and Swedish-speaking learners of English differ more in their performance on an acceptability judgment task than in their performance on a corresponding lexical listing task. Similarly, in the reverse direction, Jarvis (2003) found that the influence of L2 English on a Finnish speaker's use of her L1 was more evident in her acceptability judgments than in her corresponding elicited language production. (Her natural-use data showed the highest levels of L2 influence, however.) The results of these studies strongly suggest that task type has important effects on the occurrence of transfer in all directions. Finally, the effects of task type, as well as the effects of all of the factors we have discussed in this section, are primarily performance-related in the sense that they do not seem to affect whether the L2 user will learn a new structure, but rather affect the emergence of the crosslinguistic associations that the person has already made and/or the occurrence of real-time interference from an activated source language.

6.7. CONCLUSIONS

In this chapter we have discussed the types of effects that various factors can have on the nature and occurrence of transfer. There are indeed a great number of factors whose effects on transfer have been documented in past research, and we anticipate that this number will grow in the future as the field learns more about how transfer operates, what conditions make it more likely, what conditions are most conducive to which specific patterns of CLI, and what factors make transfer less likely to occur. The categories of factors that we have dealt with include linguistic and psycholinguistic factors, cognitive and developmental factors, factors related to cumulative language experience and knowledge, factors related to the learning environment, and factors related to language use. As we have discussed, these factors interact not only with CLI but also with one another in various complex ways. Many of these factors additionally exert both learning-related and performance-related effects on CLI. However, these two types of effects work in very different ways, and researchers should be careful to distinguish between the two in order to avoid erroneous interpretations concerning the mechanisms through which transfer operates and about its ultimate impact on knowledge representations. Finally, as we have pointed out, the five types of factors that we have discussed in this chapter have been investigated mainly in relation to forward transfer. Nonetheless, the existing—though scant—findings related to the effects of these factors on lateral and reverse transfer are also quite compelling, and we strongly encourage additional research in these directions.

Conclusions

7.1. INTRODUCTION

In the first chapter of this book, we argued that transfer research is currently in the process of moving to a theory-driven phase that gives rise to competing theoretical models and hypotheses concerning the processes and constraints involved in the occurrence of CLI. Throughout the rest of the book, we have aimed to contribute to this transition in two ways: by offering an overview of previous research and of existing theoretical models, and by elaborating on conceptual transfer, a theoretical construct we have put forth and explored in our previous work (Jarvis, 1997, 1998, 2000b; Pavlenko, 1997, 1999, 2002b, c; 2003a; Pavlenko & Jarvis, 2001, 2002).

In doing so, we have aimed to accomplish three interrelated goals. Our first goal was to characterize the new developments that have taken place in research on CLI in adult L2 learning since the publication of Odlin's (1989) foundational monograph. Our second goal was to illustrate the advantages of a neo-Whorfian approach to the study of CLI, which has allowed us to link crosslinguistic differences in language-mediated conceptual categories to differences in verbal and nonverbal performance and to illuminate mental processes underlying CLI, in particular forward and reverse conceptual transfer. Our third goal was to offer a comprehensive and systematic overview of internal and external factors that trigger and constrain CLI processes.

All of these issues have been addressed in the preceding chapters. In what follows we will first summarize the key findings and arguments outlined in this book and then discuss their implications for fields where linguistic research finds practical applications, for models of bi- and multilingual representation, processing, and acquisition, and for future CLI research. We will pay particular attention to CLI in the lexicon, because this is an area of importance both for L2 vocabulary learning and for models of the bilingual lexicon.

7.2. RECENT CLI RESEARCH: KEY FINDINGS AND ARGUMENTS

Three types of new developments in the study of CLI have been discussed on the pages of this book: (a) new findings and refinements in already established areas of research, such as lexis and phonology; (b) new areas and directions of transfer research, such as reverse transfer, sociolinguistic transfer, and the study of the multilingual lexicon; and (c) new theoretical accounts of CLI, such as conceptual transfer. These developments have led to a deeper understanding of transfer processes and to the recognition of more types of transfer and more constraints on transfer. Let us now review the key arguments made in the previous chapters about post-1989 developments in CLI research.

The first major development we have reviewed in-depth is the expansion of the scope of CLI research, both in terms of already established areas and in terms of emerging research directions. By 1989 transfer research had flourished in the study of word order, relativization, negation, vocabulary, segmental phonology, and speech acts. Since that point, the research has substantially expanded in terms of areas of language use, directionality, languages considered, and processes where it has been explored. Researchers have established that CLI can affect all areas of linguistic and communicative competence, including phonology, orthography, lexis, semantics, morphology, syntax, discourse, pragmatics, and sociolinguistics. It was also demonstrated that the prevalence of CLI in these areas may differ in accordance with the cognitive level(s) and the type(s) of knowledge involved, directionality of transfer, the intentions of the speaker/writer, and the mode and channel of the language used.

These advances are particularly important for the areas of morphology and syntax, which were earlier considered to be immune to CLI effects. The studies discussed here have documented morphological and syntactic transfer in both comprehension and production, in various types of data, and in a variety of domains (e.g., adverbial placement, gender assignment, phrasal verbs, production of cleft and causative constructions, well-formedness constraints). CLI research has also expanded into the areas of orthography, discourse, pragmatics, and sociolinguistics where there was a scarcity of prior knowledge. And in the previously examined areas of phonology, lexis, and semantics researchers have identified new types, directions, and constraints on CLI. For instance, in the area of the lexicon it has been established that formal, semantic, and conceptual transfer may occur in different ways: formal transfer tends to occur from a source language that the language user perceives as closely related to the recipient language, whereas semantic and conceptual transfer tend to originate from a source language in which the language user has established semantic and conceptual representations.

In terms of manifestations of CLI, recent findings have firmly moved us away from the positive/negative transfer dichotomy toward a more complex view that

incorporates preference and avoidance. Although these notions were also recognized in the early transfer research (e.g., Schachter, 1974; Selinker, 1969), they have been commonly overlooked due to an overemphasis on negative transfer, mainly because preference and avoidance do not involve explicit errors. Yet some of the most robust effects identified in the past decade involve L2 users' preferences for certain types of words or syntactic structures over others. Post-1989 research has also firmly established that CLI is not limited to production or acquisition and can be identified in a variety of psycholinguistic processes, including perception, lexical and syntactic processing, listening and reading comprehension, and tip-of-the-tongue states.

Key developments in CLI research have also taken place in the area of directionality. While earlier research concentrated on forward or L1 transfer, recent studies have demonstrated that CLI can occur in both the forward and reverse directions, as well as bidirectionally, which means that two or more languages may influence each other at the same time in the mind of a single individual. Another important development is a growing interest in the interaction between three or more languages and the identification of lateral transfer, that is transfer between languages learned later than the first.

Advances have also been made in the study of factors that affect transferability, both in terms of the factors themselves and in terms of their effects on acquisition, representation, processing, and production. We have considered two types of these effects, learning-related, that is factors that influence the formation of interlingual identification links, and performance- or task-related, that is factors that influence the amount and type of transfer that will emerge during actual language use.

Five categories of factors are now seen as key in understanding transferability: (1) linguistic and psycholinguistic factors (crosslinguistic similarity; area of language use; frequency, recency, and salience; markedness and prototypicality; linguistic context), (2) cognitive, attentional, and developmental factors (level of cognitive maturity; developmental and universal acquisition processes; cognitive language learning abilities; attention to and awareness of language), (3) language experience and knowledge factors (age; length, frequency, and intensity of language exposure; length of residence in a particular linguistic environment; general level of proficiency; number and order of acquired languages), (4) learning environment factors (type of language exposure; degree of attention to formal language properties), and (5) factors related to language use (idiolect; level of formality; interlocutor; task type). These factors are somewhat different from the borrowability criteria assumed in language contact research, and that is because the CLI research discussed here focuses on individual, rather than group, transfer. We also recognize that the different goals, personalities, language knowledge, language-related experiences, attitudes, and mental predispositions of particular individuals may result in different patterns of CLI across individuals.

Not all of these patterns will emerge as language contact transfer, and the degree of compatibility between the two frameworks is an issue for future inquiry.

Finally, in terms of acquisition, we have confirmed the earlier finding that CLI affects not only the rate and the outcome of acquisition but also the acquisition route, or the stages and sequences learners pass through, and have demonstrated that different types of CLI may occur at different stages of the learning process. For instance, in the area of phonology, the accumulated evidence suggests that forward transfer affects not only the level of production but also the level of perception, leading to difficulties in the discrimination of certain L2 contrasts or to the perception of non-existent segments (e.g., Matthews & Brown, 2004). This finding suggests in turn that learners' initial representations of L2 forms may be distinct from those of target-language speakers and thus create additional difficulties in the production of these forms, previously explained predominantly through transfer on the level of phonotactics.

The second major development reviewed in this book involves theoretical advances in the understanding of CLI. Two of these developments in particular have important implications for further evolution of the field. The first is the multicompetence framework advanced by Cook (1991, 1992), who posits that people who know more than one language have a distinct compound state of mind which is not equivalent to two monolingual states. Albeit not novel for scholars of bilingualism (for similar arguments see e.g. Grosjean, 1989, 1992, 1998), this approach has succeeded in attracting the attention of SLA scholars to the instability of first language competence and to the ongoing interaction between the respective linguistic systems whereby neither the L1 nor the L2 performance of bilingual individuals may pattern with that of monolingual speakers of the respective languages. It has also succeeded in inspiring new empirical research on reverse transfer (Cook, 2003) and bidirectional transfer (Hohenstein et al., 2006; Pavlenko & Jarvis, 2002).

Hall, Cheng, and Carlson (2006) have criticized the multicompetence view for approaching the respective languages as "autonomous systems with identifiable borders" (p. 231) and for upholding the native speaker standard. As an alternative, they have offered a usage-based approach where language knowledge is seen as "dynamic constellations of linguistic resources, the shapes and meanings of which emerge from continual interaction between internal domain-general cognitive constraints on the one hand and one's pragmatic pursuits in his or her everyday worlds on the other, that is through language use" (p. 226). As a corollary to this view, they have proposed doing away with such terms as "language transfer", "crosslinguistic influence", and "shift".

Considering that the fields of SLA, bilingualism, and linguistics proper are predicated on the existence of languages that can be reliably identified as French, Indonesian, or Mandarin, we could have simply dismissed these arguments as misguided. Yet we chose to engage with them because they reflect larger

ideological processes in the field of applied linguistics, where it has become fashionable to call for “disinventing” and “reinventing” language. While a periodic reconsideration of the key terms is undoubtedly healthy for any field, we are apprehensive about the use of ambiguous terms, such as “internal domain-general cognitive constraints,” and about the “one-size-fits-all” approach where trendy sociolinguistic notions are imposed onto psycholinguistic explorations. We are equally concerned about Hall et al.’s (2006) use of research conducted with monolingual speakers as a model for future SLA and bilingualism research, because such an approach reveals an implicit assumption that studies conducted with bi- and multilingual speakers are inferior to those conducted with monolingual speakers. We, on the other hand, believe that viable and ecologically valid models and theories of bi- and multilingualism should primarily rely on empirical studies with bi- and multilingual speakers, which, *inter alia*, have firmly established the existence of interconnected systems that are subject to mutual influence and yet can also be selectively retrieved (cf. Kroll & De Groot, 2005). The approach proposed by Hall et al. (2006) also ignores the interests and needs of real language learners and users who come to our classrooms to learn particular languages and who may be dismayed to hear that we have “disinvented” them.

The limited applicability of research conducted with monolingual speakers has been made particularly visible in our discussion of the second theoretical development in the field of CLI, namely the notion of conceptual transfer, advanced in our own research (Jarvis, 1997, 1998, 2000b; Pavlenko, 1997, 1999, 2002b, c, 2003a) and considered at some length in Odlin (2003, 2005). We have made visible the dissociations between semantic and conceptual knowledge in bi- and multilingual speakers and demonstrated that in certain cases semantic and conceptual transfer have different sources and manifestations, and, possibly, also different implications for learnability and thus language pedagogy. Reverse conceptual transfer has been approached here as conceptual change that involves one or more of the following processes: (a) internalization of L2- (L3-, etc.) mediated concepts that are fully distinct from L1-mediated concepts; (b) restructuring, whereby new elements are incorporated into previously existing concepts or conceptual domains; (c) convergence, whereby a unitary concept or conceptual domain is created, distinct from both L1- and L2-mediated concepts; (d) shift in conceptual category structure toward that consistent with the structure of a language-mediated concept of the source language; and (e) attrition of previously learned concepts.

As we have explained earlier, conceptual transfer is not meant to supplant linguistic or semantic transfer but to be examined alongside the more traditional kinds of CLI. This framework offers five advantages in the analysis of CLI: (a) it provides a clear guide to possible pathways in conceptual change allowing us to examine the processes and outcomes of second language socialization in concrete

and novel ways (e.g., as convergence or restructuring); (b) it permits us to find and theorize similarities between instances of semantic, pragmatic, morphosyntactic, and discursive transfer, previously viewed as unrelated; (c) it allows us to see diverse phenomena, such as lexical borrowing, code-switching, loan translation and semantic extension, as external manifestations of the same general processes—that is, the internalization, restructuring, or attrition of new conceptual categories; (d) it encourages researchers to consider the influence of language-mediated concepts on nonverbal performance that may have otherwise gone unnoticed or been mislabeled (e.g., Athanasopoulos, 2006; Brown & Gullberg, 2005; Cook et al., 2006); (e) it lends itself to the formulation of hypotheses and predictions that can be confirmed or disconfirmed in future studies of the relationship between language and cognition (e.g., differences between semantic and conceptual transfer in terms of learnability).

7.3. IMPLICATIONS FOR APPLIED LINGUISTICS

The advances in CLI research discussed in this book have implications for several areas of applied linguistics, in particular for forensic linguistics and for the teaching of foreign and second languages. In forensic linguistics, the understanding of how to deal with nonnative speakers in legal contexts is limited but the demand for it is high, in view of dramatic increases in global migration. One area where CLI occurrences have been used by forensic linguists is author identification. The best-known instance of such use of transfer is the 1935 trial of Bruno Hauptmann, a German immigrant to the U.S. accused of kidnapping the Lindbergh baby. Experts working on the case noticed that many of the misspellings in the ransom notes exhibited the confusion between voiced and voiceless word-final stops: “gut” (good), “boad” (boat), “tit” (did), “affrait” (afraid). They argued that this confusion is common for German learners of English, because German, unlike English, requires word-final devoicing and thus exhibits a lack of sound-spelling correspondence in this area (i.e. a word-final “d” or “g” will be pronounced as /t/ or /k/). They took this confusion as yet another indication that Bruno Hauptmann wrote the letters (for a detailed discussion of the case see Solan & Tiersma, 2004, 2005).

From today’s perspective the use of CLI in proving Hauptmann’s authorship is clearly problematic, because it relies on a limited amount of evidence and because the evidence in question points to linguistic background but not to a particular idiolect and thus a particular author. And yet one sees similar decisions made on the basis of a few, and sometimes, single instances of CLI, both in the cases of authorship identification and in decisions made about the national origins of asylum seekers (Eades, 2005). In our view, a far more promising and reliable approach to identifying the author’s linguistic background based on L2

writing is offered by Jarvis, Castañeda-Jiménez and Nielsen (2004) who link systematic L2 word choice patterns, rather than individual instances of CLI, to L1 background.

The advances in the understanding of the nature of multicompetence, of the pervasiveness of forward transfer, in particular semantic and conceptual transfer, and of the constraints on transferability also have implications for teaching foreign and second languages. In what follows we will discuss four such implications, some of which extend not only to classroom instruction but also to teacher education and textbook writing: (a) awareness-raising; (b) language use in the classroom; (c) crosslinguistic comparisons; (d) distributed learning.

To begin with awareness raising, pre-service and in-service teachers need to gain a better understanding of CLI phenomena and of the respective contributions of explicit and implicit memory to performance. In other words, teacher educators need to explain to future and current teachers why students who do well on fill-in-the-blank tasks (which allow them to draw on definitions stored in explicit memory) cannot necessarily use the concepts in question appropriately in spontaneous production (which requires retrieval from implicit memory). Teachers also need to learn that just because the English articles or the contrast between *ser* and *estar* in Spanish or *tu* and *vous* in French are explained in the very beginning of the first-year textbook, this does not mean that by the end of the first year successful learners will have internalized these concepts and will be able to apply them across contexts.

To facilitate the internalization of new semantic and conceptual representations, several changes need to take place in the classroom. The first has to do with language use. In the past few years, several researchers, most notably Cook (2001), have challenged the common assumption that FL classrooms should disallow the use of the L1 so that students can learn to think and speak in the L2. This assumption is incompatible with the findings of CLI research that show very clearly that a dominant L1 cannot be simply “turned off” for 50 minutes a day, rather it continues to mediate linguistic and cognitive activities in the classroom (see also De Guerrero, 2005). Consequently, argues Cook (2001), instead of seeing the L1 as “the enemy” of the L2, teachers should elicit its assistance. We fully agree with this argument and suggest that one of the primary purposes of L1 use in the FL classroom is to facilitate positive transfer and the internalization of new concepts and to raise awareness of negative transfer through crosslinguistic comparisons.

More specifically, we recommend that in the case of partial translation equivalents, such as the English *to be* versus the Spanish *ser* and *estar*, *to go* versus the Russian *idti* and *chat'*, *to know* versus the French *savoir* and *connaître*, or *cups* and *glasses* versus Russian *chashki* and *stakany*, teachers do not limit their presentation to translations but actually engage students in examining the differences in L1- and L2-mediated conceptual categories across contexts. These discussions will

not only facilitate concept internalization but also raise students' intercultural competence.

The activities do not have to be limited to discussions either. Students could be offered a variety of sorting and categorization exercises where pictures or objects have to be grouped together according to which partial translation equivalents will be used to name the objects or actions in question. To facilitate the acquisition of polysemous words shown to be challenging by Kellerman (1978, 1983), Verspoor and Lowie (2003) recommend giving learners the core meanings and then engaging them in exercises where they have to figure out peripheral or figurative meanings of these words. To examine patterns of word choice by native speakers, learners could be asked to examine the uses of particular words and expressions in texts, including web-texts, and in available language corpora. They could also be engaged in exercises where they perform a particular task (e.g. tell a story based on a visual stimulus) and then compare their own performance to that of native speakers of the target language. (For an example of FL teaching materials that include comparative discussions of concepts challenging for American learners of Russian and narrative-level exercises created specifically to advance concept internalization and promote Russian narrative skills, see Pavlenko & Driagina, 2006.)

Last but not least, we want to point to the importance of continuous recycling and distributed learning. Existing research shows that concept internalization is a long and arduous process that may never be completed in the classroom. To facilitate this process students need multiple opportunities to return to conceptually difficult issues and areas, in different formats, throughout the years of instruction. Consequently, textbook authors and teachers should be concerned with finding ways to present the same topics several times, in different formats and on different levels, in order to aid distributed learning and to offer students multiple opportunities to master conceptually complex issues. Thus, instead of loading the texts with numerous and sometimes quite obscure grammatical issues, textbooks informed by up-to-date research on CLI in the language in question should incorporate multiple units addressing lexical and grammatical areas found to be particularly challenging for acquisition. This means that first-, second-, and third-year texts should contain not one or two but numerous units presenting different facets of the use of *ser* and *estar* in Spanish, *tu* and *vous* in French, verbs of motion in Russian, and so forth. In terms of practice, these texts should offer students numerous opportunities to go beyond the sentence level and to examine and incorporate the new words and structures in narratives and other forms of discourse.

7.4. IMPLICATIONS FOR MODELING OF BI- AND MULTILINGUAL REPRESENTATION, PROCESSING, AND ACQUISITION

Models of bi- and multilingualism are another area where CLI findings and effects need to be better incorporated. Notably, some of the studies discussed in this book have already given rise to various models and theoretical accounts. Other work too has important implications for models of bi- and multilingual representation, processing, and acquisition. In particular, new theoretical and empirical developments in the study of CLI have implications for assumptions made about: (a) the nature of language competence, (b) the nature of language storage and access, (c) the nature of interaction between languages, and (d) the relationship between semantic and conceptual representations.

7.4.1. Language Competence

Recent evidence from CLI and L1 attrition research convincingly shows that no language, not even the L1, is static and that the bi- and multilingual lexicon is a site of ongoing transformation and change, be it L2 influence on L1, L3 influence on L4, linguistic and conceptual development, fossilization, or attrition. Most current models, however, characterize language competence as static and do not allow for transformation in the linguistic and conceptual store nor for multidirectional influence between the languages in question. The focus on a single point in time is prompted by the understandable desire to examine a particular state of affairs, yet by default it presents the state of affairs as permanent rather than subject to ongoing change.

Nevertheless, several researchers have already moved toward the creation of dynamic models, including Kroll and associates (Dufour & Kroll, 1995; Jared & Kroll, 2001; Kroll & Stewart, 1994; Talamas, Kroll, & Dufour, 1999), MacWhinney (1997, 2005), Herdina and Jessner (2002), and Li and Farkas (2002). The best known model of bilingual syntactic processing is the Competition Model advanced by MacWhinney and associates (Dong, Gui, & MacWhinney, 2005; MacWhinney, 1987, 1997, 2005). This developmental and dynamic model is also one of the few that attempt to explain CLI effects. At the core of the model is a processing system that selects between various cues, or mappings between form and meaning, based on the relative cue weight or strength. The model predicts that in cases where L1 and L2 cues differ, forward transfer may take place, at least in the initial and intermediate learning stages, while growth in L2 proficiency will result in a gradual growth of strength of L2 cues. Thus, reverse transfer may take place when L2 cues become stronger than the L1 cues.

The best known developmental model of the bilingual lexicon is the Revised Hierarchical Model (RHM) put forth by Kroll and associates (Dufour & Kroll,

1995; Jared & Kroll, 2001; Kroll & Stewart, 1994; Talamas et al., 1999). The RHM is an explicitly developmental model that aims to capture changes in the links between the L1 and L2 over the course of L2 acquisition. Studies conducted to test the model compare the times it takes to translate words from L1 to L2 and from L2 to L1 for speakers at different levels of proficiency, and they also consider L1 word-naming times in contexts with activated and inhibited L2. These studies suggest that L2 words may be initially linked to their L1 translation equivalents (Kroll & Stewart, 1994), but, as L2 proficiency increases, direct links are formed between L2 words and concepts (Dufour & Kroll, 1995) and in proficient L2 users, words in an activated L2 may affect word naming in the L1 (Jared & Kroll, 2001).

CLI research has several refinements to offer to the RHM, all of which stem from the fact that the initial conceptual store contains concepts acquired through L1 mediation. Thus, link formation will be facilitated in cases where L1- and L2-mediated concepts are identical or at least overlap. In cases where the L1- and L2-mediated concepts differ, links between L2 words and L1-mediated concepts will also form but will lead to conspicuous instances of semantic and conceptual transfer. The final stage of L2 learning will involve not simply direct links between L2 words and concepts, but also the formation of L2-mediated conceptual categories linked to L2 words. In addition, the finding that L2 learners are reluctant to transfer metaphoric and peripheral meanings of L1 words (Ijaz, 1986; Kellerman, 1978, 1983) suggests that even in the case of conceptual equivalence initial links may be formed exclusively between the L2 words and the core meanings or prototypes of the L1-mediated categories.

Overall, we consider the appearance of these and similar models to be a very positive development of the past two decades and argue that, in view of what we now know about the dynamic nature of linguistic competence and about the multidirectionality of CLI, the future belongs to emergent, dynamic, developmental and self-organizing models of acquisition, representation, and processing that reflect the ongoing interaction between the languages and the resulting change in linguistic and conceptual representations (for similar arguments see De Bot, Lowie, & Verspoor, 2005; Dong, Gui, & MacWhinney, 2005; Ecke, 2004; Francis, 2005; Herdina & Jessner, 2002).

7.4.2. Language Storage and Access

The key debate in the field of bilingual modeling concerns the nature of the relationship between the two languages, namely whether the two lexicons are separate or integrated, and whether access to these lexicons is selective or non-selective (Costa, 2004; De Bot, 2004b; Kroll & Sunderman, 2003; Kroll & Tokowicz, 2005). Kroll and Sunderman (2003) point out insightfully that assumptions about representation are often confounded with assumptions about access,

yet because the form of representation and the mode of access are potentially independent, there is room for logical alternatives, such as non-selectively accessed separate lexicons or selectively accessed integrated lexicons. Kroll and Tokowicz (2005) further point out that the answer to the question of how the two languages are represented need not be the same for orthography, phonology, semantics, and syntax, and that the structure of representation may vary with the linguistic level and with the language learning history of a particular individual.

We take this argument one step further and argue that the framing of the questions themselves may be misguided and oversimplified, and that there may be another alternative, namely separate but interconnected lexicons, where the transmission of activation will depend on the nature of established connections. However, commonly used methodologies are insufficient to disambiguate the notions of shared versus connected. It is not clear whether what is accessed through reaction times is the degree of sharedness or the strength of connection. One may argue that this is an irrelevant point because the two may be the same thing. Our response is that, if shared means same and connected means linked to each other but also to distinct conceptual and semantic representations, then the point is relevant because there exists a meaningful difference between the two. The two notions could be disambiguated through the use of methodologies that engage participants in sorting and categorization tasks that highlight the conceptual structure of the domains in question (e.g., Ameer et al., 2005; Malt & Sloman, 2003).

We recognize that the dichotomizing approach (separate/shared, selective/non-selective) is infinitely more elegant and parsimonious, but we are also concerned that this is a reductionist approach that may fail to explain actual bilingual phenomena. To give an example from a somewhat different field, if we were to compare two models of the acquisition of L2 phonology, the Speech Learning Model (Flege, 1995; Keidel et al., 2003) is superior to Best's Perceptual Assimilation Model (Best, McRoberts, & Goodell, 2001) because the former considers the interaction between L1 and L2 in perception and acquisition, while the latter assumes direct perception without interference from the L1 and thus fails to account for CLI effects in perception. Similarly, models that assume interconnected lexicons are superior to models that assume separate lexicons, whether selectively or non-selectively accessed, because the former allow us to account for lexical transfer effects.

Models that assume selectively accessed interconnected lexicons are also superior to those that assume non-selectively accessed integrated lexicons, where all words are connected to each other, because the latter models fail to reflect the idiosyncratic nature of the links in the bilingual lexicon and thus transferability constraints. For instance, the Bilingual Interaction Activation (BIA) model (Dijkstra & Van Heuven, 1998, 2002) reflects the fact that a non-response

language is activated during word recognition in another language. Interference is explained in the model through the levels of activation, and levels of activation through the activation of the language nodes and respective word frequencies. Unfortunately, the word frequencies in question are taken from monolingual corpora and do not reflect the subjective frequencies in the lexicons of various bilinguals (see also Thomas & Van Heuven, 2005) or the idiosyncratic links formed in such lexicons.

To sum up, from the perspective of CLI research, more ecologically valid models will assume neither separate nor shared but interconnected lexicons, where access will be constrained by the strength and kind of interlingual links established between the words and structures in question. The Distributed Feature Model put forth by De Groot and associates (De Groot, 1992, 1993, 1995; Van Hell & De Groot, 1998) comes closest to reflecting the variety of possible connections, positing that within the same lexicon, some representations will be separate and others shared or partially shared.

7.4.3. Interaction Between Languages

The finding that CLI effects are not limited to negative transfer and involve a variety of phenomena, including positive transfer, preference, avoidance, and conceptual change, also has implications for bilingual modeling—it challenges a pervasive assumption that the main mode of interaction between the two or more languages is competition. A radical version of the competition view of L2 learning and processing is represented by Truscott and Sharwood Smith (2004), who state that “L2 competence cannot be fully expressed due to competition from the L1 lexicon” (p. 15). The authors argue that the appearance of L1 characteristics in L2 production, comprehension, and judgments stems not from the incorporation of L1 features into the L2 grammar or lexicon, but from the fact that the overly activated L1 enters directly into L2 processing and production. One can argue against such a view by pointing out, for instance, that forward transfer at the level of input often results in faulty initial representations, but the authors deflect this argument, reframing such transfer as input competition, just as they reframe transfer at the level of production as output competition.

We see three main problems with this radical version of the competition view. First of all, this reductionist approach lacks explanatory power for cases of preference or avoidance, does not allow us to differentiate between different types of transfer, and fails to explain convergence, restructuring, and shift on the level of representation. The second problem is its apparent unfalsifiability, whereby all cases of transfer are *a priori* discounted as a performance issue, yet one has no direct access to L2 competence. The third and perhaps most apparent problem is the fact that the authors acknowledge that one language may often

interfere with processing, comprehension, and production in another language in a systematic and consistent manner, but simply refuse to call this phenomenon transfer, framing it instead as competition.

Having said this, we want to emphasize that we do not have any doubt that many instances of CLI stem from competition and that the notions of activation and inhibition are central to our understanding of the process. Activation-inhibition models (Green, 1993, 1998; Paradis, 1985, 1993, 2004) posit that each linguistic item, such as a word or a syntactic rule, and each linguistic subsystem, such as a language or a dialect, have an activation threshold, which determines the amount of activation necessary for that item or subsystem to be activated. Frequently activated items or subsystems have a lower activation threshold and thus need less stimulation, while those activated less frequently may “fall into disuse” and require more stimulation. At the same time, the inhibition of the non-selected language is never complete and it may interfere with performance in the selected language. Consequently, in activation-inhibition models, transfer is explained as interference from an insufficiently inhibited non-selected language (Köpke, 2002).

The activation-inhibition approach to transfer has been particularly influential in the study of the lexicon, where it has been shown that words from a non-selected language with a high level of activation can affect the speed of lexical processing and lexical decisions in the selected language (Jared & Kroll, 2001; Van Hell & Dijkstra, 2002) and can also emerge as lexical intrusions into the selected language in the form of crosslinguistic lexical blends or unintentional language switches (Dewaele, 1998; Hammarberg, 2001; Paradis, 2004; Poulish, 1999; Williams & Hammarberg, 1998). Several factors have been noted to increase the likelihood of background activation: frequency and recency of use, language proficiency (seen as strength of representation or level of activation), L2 status, order of acquisition, formal similarities between the background word and a word in the target language, and typological similarity between the background language and the target language (De Bot, 2004b; Hammarberg, 2001; Köpke, 2002; Poulish, 1999; Williams & Hammarberg, 1998).

The notion of competition offers an appealing and clear way to proceed in empirical investigations and an elegant explanation of an array of linguistic phenomena, including lexical borrowing, lexical blends, unintentional code-switching, difficulties of conducting a lexical search in a less-activated language, and increased processing time required by bilingual speakers as compared to monolinguals. At the same time, the competition metaphor obscures the equally important phenomena of *cooperation* and *facilitation*, that is, ongoing collaborative interaction between the two or more languages that allows for positive transfer, creative wordplay, intentional code-switching, preference, avoidance, phonological, semantic, conceptual, and syntactic change on the level of representation, and other bi- and multilingual phenomena.

Interestingly, the model that best reflects these idiosyncratic, dynamic, and interactive links is the revised version of the Competition Model (MacWhinney, 1987, 1997), named the Unified Competition Model (MacWhinney, 2005). The new version of the model adopts a new theoretical construct, namely *resonance*, which refers to reciprocal connections between the elements of the two or more languages that grow in strength with repeated coactivation. Resonant connections between elements are of a nonconventional nature and may rely on lexical analysis, sound symbolism, synesthesia, mappings between words and images, or other provisional relations. MacWhinney (2005) argues that multilingual processing relies more on activation and resonance than on inhibition, because resonant activation, that is, the activation of new connections, is more effective in explaining new learning.

From the perspective assumed here, the notion of resonance is an important attempt to reflect the dynamic process of the establishment of interlingual identifications that facilitate a variety of connections, which in turn may lead to changes in linguistic, semantic, and conceptual representation. We also see the need for more theorizing that attempts to capture the phenomena of convergence, restructuring, or shift, evident throughout the linguistic system and yet hard to explain through the common notions of activation and inhibition.

7.4.4. Semantic and Conceptual Levels of Representation

The presence of forward and reverse conceptual transfer, as well as differences identified between semantic and conceptual transfer, also have important implications for modeling the bi- and multilingual lexicon. Starting with Potter et al.'s (1984) Concept Mediation Model, most models have assumed that semantic and conceptual representations are shared across languages. This lack of attention to crosslinguistic differences is not entirely surprising considering that bilingual lexicon models originate in the field of cognitive psychology, which is predominantly concerned with monolingual speakers. The assumption of shared representations was justified by the fact that bilinguals can translate most words from one language to another, by the evidence of crosslinguistic semantic priming, and by the evidence of interference from one language in picture naming in another (Kroll & Sunderman, 2003). Kroll and Tokowicz (2005) point out that the reliance on tasks that involve decontextualized words and pictures may have further contributed to this assumption as these circumstances were the most likely to evoke the same meanings.

We fully agree with Kroll and Tokowicz (2005) and contend that the conclusions about shared representation may have been a little too hasty and based on insufficient evidence and on the confusion between the notions of shared and interconnected. Further conversation is needed in the field about the precise

nature of semantic and conceptual representation and about the meaning of particular effects. Do crosslinguistic effects observed in semantic priming, picture naming, and word translation experiments unequivocally establish that the representations in question are identical, or do they simply establish the existence of a link between the translation equivalents, most likely through their core or prototypical meanings? Based on the evidence available on semantic and conceptual transfer, we argue that the latter is more likely and, as indicated earlier in the discussion of storage, the triangulation of different methodologies may be able to disambiguate the issue.

We do not doubt that conceptual representations in all of the languages that a multilingual knows rely on the same mechanisms of episodic, autobiographic, and procedural memory and perceptual assimilation. From the point of view of the hardware, they are undoubtedly shared. At the same time, evidence accumulated from crosslinguistic studies in linguistic anthropology, cognitive linguistics, linguistic typology and SLA suggests just as clearly that speakers of different languages rely on somewhat different lexicalized and grammaticized concepts that may be interconnected and yet different in structure, boundaries, and/or the prototypicality of certain category members. This linguistic and cultural specificity so far has not been taken into account in the majority of models.

To date, the most visible attempts to address linguistic and cultural specificity have been made by De Groot and associates (De Groot, 1992, 1993, 1995; Van Hell & De Groot, 1998), who put forth the Distributed Feature Model, where concepts are seen as constellations of semantic features. The model assumes that the degree to which representation is shared is a function of word type. Concrete and cognate words are assumed to overlap completely or to a great degree, while abstract and non-cognate words share fewer semantic features. The evidence for this model comes from translation tasks where a longer amount of time indicates a lower degree of overlap. Further research has expanded this model, suggesting that the degree of overlap will also depend on the bilingual's level of proficiency and context of acquisition (Kroll & Tokowicz, 2005).

While an important step forward, this model in its present form has three main weaknesses. The first is its reliance on a feature-based view of conceptual representation, which does not allow us to account for differences in the transfer of core versus peripheral meanings (e.g., Ijaz, 1986; Kellerman, 1978, 1983). The second weakness is the lack of acknowledgment of differences in representations of concrete words documented in recent research (e.g., Ameel et al., 2005; Malt et al., 1999, 2003). This weakness is easily explained by the reliance on translation tasks, which, similar to semantic priming, offer only indirect and limited evidence of representation, indicative of the time it takes to access and link the core or prototypical meanings, but not of the structure of representation per se.

To give but one example, we could find that Russian-English bilinguals can easily access the translation equivalents *glass*/*stakan* and *cup*/*chashka* and exhibit

semantic priming effects in both directions. It is possible, however, that this performance draws exclusively on the links made between the shared core exemplars of these categories, such as porcelain *cups* / *chashki* and *glasses* / *stakany* made out of glass. A categorization task that involves core and peripheral exemplars, such as paper and plastic containers, may elicit different performance patterns from different groups of bilinguals. Bicultural bilinguals will divide the same set of objects differently depending on whether they are asked to subdivide them into *cups* and *glasses* or into *stakany* and *chashki*. In the trial that uses the English-language labels, these participants would place paper and plastic containers used for coffee or water into the category of cups. In the trial that uses Russian-language labels, the same objects would be placed into the category of *stakany* (= glasses). Other bilinguals may display evidence of L1 conceptual transfer (placing, for instance, plastic containers into the category labeled *glasses*) or L2 conceptual transfer (placing the same plastic containers into the category labeled *chashki* [= cups]). A model that differentiates between core and peripheral meanings would account much better for these results.

The third and perhaps the most significant weakness of this and several other models of the bilingual lexicon is the lack of differentiation between the semantic and conceptual levels of representation. In response to an earlier argument along the same lines (Pavlenko, 1999), De Groot (2002) argued that the two types of knowledge originate from the same source, and pinpointing the difference between the two would be a tedious task. Francis (1999, 2005) likewise contended that separating the two levels is unviable in experimental practice. We disagree with the contention that separating the two levels is unnecessary and impossible in bilingual speakers and hope to have demonstrated with numerous examples in Chapters 3, 4, and 5 that in some cases bi- and multilingual speakers exhibit clear dissociations between the two levels, which lead to different types of transfer (semantic and conceptual). Conflating the two levels of representation does not allow us to differentiate between instances of semantic and conceptual transfer which oftentimes have distinct causes and manifestations and to account for these effects.

In the view proposed here, the conflation of semantic and conceptual representation and the failure to recognize the linguistic and cultural specificity of semantic and conceptual representations are the key weaknesses of most current models of the bilingual lexicon. Models that acknowledge the specificity and differentiate between the two levels have a clear advantage in terms of explanatory power and ecological validity. Among such models are Paradis' (2004) Subsystems Hypothesis and De Groot's own recent model of the simultaneous interpretation process (Christoffels & De Groot, 2005).

7.4.5. CLI in the Multilingual Lexicon

To sum up, we have argued that the limitations of current models of bi- and multilingual representation and processing often stem from their over-reliance on assumptions and frameworks adopted in the study of the monolingual lexicon and memory in the field of cognitive psychology. These limitations reflect an inherent difficulty of any interdisciplinary research: some scholars, pressured for time to be up-to-date on research in their own field or area, are unable to follow developments in other disciplines, while others may be understandably skeptical about findings from studies that employ frameworks and methodologies different from the ones they themselves employ. And yet, we believe, the time has come for an interdisciplinary study of CLI and the bi- and multilingual mental lexicon and for greater convergence between the fields of bilingualism and SLA, between the study of the psycholinguistics of bilingualism and that of vocabulary development, and between psycholinguistic, sociolinguistic, and anthropological approaches to bi- and multilingual minds. We have tried to advance this interaction by drawing on studies from a variety of fields and by pointing to the implications of these studies for ways in which models of bi- and multilingual representation, processing, and acquisition portray storage, access, interaction between the languages, and the relationship between the semantic and conceptual levels of representation.

Throughout, we have argued that future models of the bi- and multilingual lexicon need to incorporate a much more context-sensitive picture of conceptual representations which acknowledges that both abstract and concrete concepts can be represented differently in different languages and that some bilinguals' conceptual representations will differ from those found in monolingual speakers of the respective languages. We may also need to differentiate between at least three conceptual categories – abstract, concrete, and emotion concepts (Altarriba, 2006). Since task effects are of major concern and importance in the field, it would be best to supplement semantic priming and word and picture naming tasks with tasks that explicitly involve conceptual representations (for one attempt at such triangulation see Dong, Gui & MacWhinney, 2005).

Secondly, new models need to reconsider the relationship between concepts and language choice. It has been commonly assumed that the conceptualizer or the undifferentiated conceptual system begins top-down processing by activating lexical links in both languages of a bilingual (Costa, 2004). The studies discussed in Chapters 4 and 5 suggest that if we acknowledge the linguistic and cultural specificity of concepts, the interaction between conceptual representations and the language of choice becomes a two-way street: Linguistic and social contexts may trigger or activate concepts and frames that are linked to one language, while inhibiting others and making them less relevant or at least less accessible (e.g., Ross, Xun, & Wilson, 2002; Trafimow et al., 1997).

CLI effects will be best reflected by models that assume neither separate, nor shared, but interlinked lexicons, because such models allow for a change in the links or connections as time goes by (e.g., Kroll & Stewart, 1994; MacWhinney, 1997, 2005). These links can be established between words within and across languages, and within (e.g., lexeme to lexeme) and across levels of representation (e.g., lexeme to conceptual category). These dynamic connections will allow us to differentiate between formal, semantic and conceptual transfer and to accommodate cases, where, for instance, in the use of L3 lexemes, formal lexical transfer originates from the L2, while semantic transfer originates from the L1 (see e.g. Odlin & Jarvis, 2004).

Access, in this view, will be selective in areas where there are no connections or only a few (e.g., in cases of language-specific semantic and conceptual representations) and non-selective in areas with strong interlingual connections (e.g., in cases of translation equivalence and semantic or conceptual transfer). Furthermore, we do not necessarily assume that non-selective access in such highly interconnected areas will always result in language competition. In terms of learning effects, it may also result in restructuring or convergence, and in terms of performance effects it may result in creative multilingual wordplay. Awareness of these effects may help us overcome the limitations of competition as a dominant metaphor for interaction in bi- and multilingual memory.

We would also like to say a few words about what at present appears non-transferable. Similar to claims made earlier about imagery (Bugelski, 1977), studies of autobiographic memory and affective processing show that affective and autobiographic associations linked to words in one language are not transferred to their translation equivalents in other languages (Javier & Marcos, 1989; Pavlenko, 2005b, 2006; Schrauf, 2000). The lack of affective transfer explains why many L2 users find it easier to swear, talk about love, and discuss painful events from one's childhood in a second language, where affective associations are either absent or not as strong as they are in the L1. The lack of transfer of autobiographic memory associations explains why L2-related concepts are first perceived as decontextualized and can only be internalized in the process of L2 socialization that centrally engages autobiographic and episodic memory. We do not imply, however, that words of a later-learned language will not have affective connotations or autobiographic associations for the L2 user. Rather, we contend that these connotations and associations are not transferable from another language; they will have to be acquired experientially in the language in question. In sum, it appears that the conceptual category linked to a word may affect the processing and use of its translation equivalent in another language, while the positive or negative affect and the autobiographic memories associated with that word will not be transferred to the translation equivalent.

Last but not least, findings in the area of transferability raise important issues with regard to the generalizability of bi- and multilingual processing and

representation models. The importance of linguistic factors, and in particular crosslinguistic similarity, suggests that the outcomes of the interaction between two or more languages change depending on the languages in question. In other words, what is transferable from language A to language B may not transfer to language C. This suggests that there are limitations on the degree to which generic models can represent actual interactions between two or more languages, and these limitations on applicability need to be acknowledged in future modeling efforts. The specificity of interactions within particular linguistic configurations also suggests that models of tri- and multilingual representation and processing should not simply duplicate bilingual models. To reflect the findings on CLI in the multilingual lexicon, they need to acknowledge the possibility of distinct interactions between L1 and L2, L1 and L3, and L2 and L3.

7.5. IMPLICATIONS FOR FUTURE RESEARCH

Throughout this book, we have attempted to point to fruitful directions for future CLI research in each area. In what follows, we will not repeat these comments, but rather summarize our main arguments and make more general recommendations as to methodological standards and fruitful areas for future transfer research.

7.5.1. Methodology

In terms of methodology, we have argued that to ensure methodological rigor in transfer research, any identification of CLI in both intrasubjective (individual-oriented) and intersubjective (group-oriented) studies should rest on three types of evidence. The first is *intragroup homogeneity*, i.e. evidence that the behavior in question is not an isolated incident, but a common tendency of individuals who know the same combination of languages. In other words, the researcher should establish that a group of speakers performs consistently with respect to a particular language feature. The second is *intergroup heterogeneity*, i.e. evidence that the behavior in question is not something that all language users do regardless of the combinations of L1s and L2s that they know. This means that the researcher has to show that speakers of different source languages perform differently with regard to the particular language feature in the recipient language. The third is *crosslinguistic performance congruity*, that is evidence that language users' behavior in one language is motivated by their use of another language. Here, the researcher has to compare performance in the source and recipient languages to show that performance in the recipient language is directly motivated by the language structures and patterns the speakers produce in the same contexts in the source language. In addition, researchers have to consider which

moderator variables, or outside factors, may interact with CLI to affect the participants' performance.

To avoid presenting the task of transfer research as an insurmountable challenge, we have also discussed ways in which one could use previously conducted research to address some of these requirements. For example, in the absence of actual performance data from the source language, one might consider using available electronic corpora or previously conducted studies and external descriptions of the language in question. Similarly, in order to place the findings of a case study in a larger context, one might consider using electronic corpora for both the source and the recipient language.

We have also attempted to facilitate the task for future researchers by providing an analytical scheme for characterizing CLI types across ten dimensions: (a) area of language knowledge/use, (b) directionality, (c) cognitive level, (d) type of knowledge, (e) intentionality, (f) mode, (g) channel, (h) form, (i) manifestation, and (j) outcome (for details, see Table 1.2. in Chapter 1).

Regarding methodology, we have argued that the field is in dire need of true longitudinal studies that compare manifestations of CLI at different points in the language development of a single individual or group of individuals (see, e.g., Young-Scholten, 2004). These studies will complement the findings of pseudo-longitudinal and cross-sectional studies and offer unique insights into the interaction between CLI and other factors in the processes of language development and attrition. Secondly, CLI studies need to triangulate data collection methods, because different types of data collected from the same participants at the same point in time may reveal somewhat different patterns of CLI (see, e.g., Jarvis, 2003). Complementary types of data can be collected through observation (unsolicited language use), experimental elicitation (guided language use, e.g., cloze tests), clinical elicitation (unguided language use, e.g., film recalls), metalinguistic judgments (e.g., grammaticality tests), and self-reports (e.g., think-aloud tasks).

In the study of conceptual representation, transfer, and change, there is a clear need for a greater theoretical and methodological awareness. In the field of SLA, for instance, it has become quite fashionable to discuss conceptual proficiency (Kecskes & Papp, 2000), conceptual fluency (Kecskes & Cuenca, 2005), and conceptual development in L2 learning (Lantolf, 2005; Lantolf & Thorne, 2006). At times, however, this research direction is presented as novel and self-contained, without any reference to previous research in cognitive psychology (for an overview, see Murphy, 2002) or, for that matter, bilingualism (for an overview, see Pavlenko, 2005a). The lack of interdisciplinarity and theoretical grounding in this work is particularly evident in methodological assumptions made with regard to the nature of concepts and evidence for conceptual change. We hope that the overview of research on conceptual transfer and change we have presented in this book will raise awareness of existing research, contribute to greater scrutiny of

particular methodologies, and lead to productive interdisciplinary studies along the lines of those conducted by Malt and associates (Ameel et al., 2005; Malt et al., 1999, 2003), whose work builds on previous research in cognitive psychology and displays a sophisticated understanding of the nature of conceptual representation.

Of particular concern to us are reaction-time-based methodologies currently used to investigate the bilingual mental lexicon: picture naming, word naming, translation, semantic priming, and Stroop-type interference tasks. These approaches allow researchers to examine the intricacies of bilingual processing (and in particular perception and recognition), but they are of limited use when it comes to the study of representation and production, because, as argued earlier, the speed of translation or crosslinguistic priming effects provide us with indirect evidence and limited understanding of bilinguals' semantic and conceptual representations and the links between them. A further methodological concern arises from the fact that research on transferability has identified task type to be an important factor affecting the amount and pattern of CLI in performance (e.g., Jarvis, 2003; Köpke, 2002). Consequently, it is possible that effects identified in decontextualized single-word tasks may not arise in on-line performance in naturalistic contexts. Yet current models of bilingual representation and processing are created specifically to explain effects identified in artificial lab tasks and do not address linguistic phenomena observed in everyday bi- and multilingual interaction (for a similar argument about bilingual processing models and code-switching data, see Myers-Scotton, 2005).

To achieve ecological validity, research conducted through the use of psycholinguistic methodologies needs to be triangulated with studies that use verbal and nonverbal elicitation methods used in other research fields, such as cultural psychology or linguistic anthropology. Verbal elicitation methods, such as observation, experimental and clinical elicitation, metalinguistic judgments and self-reports, have already been outlined earlier. Nonverbal elicitation methods include tasks where participants are asked to make judgments about similarities between particular pictures or objects (Alloway & Corley, 2004; Athanasopoulos, 2006; Cook et al., 2006; Gennari et al., 2002) or to draw on paper their own mental images of certain uses of language (Kellerman, 1999; Negueruela et al., 2004). Mixed elicitation methods include tasks in which participants are asked to name, sort, and judge the familiarity and typicality of particular sets of objects (Ameel et al., 2005; Malt & Sloman, 2003). Researchers could also rely on mixed analytical methods, analyzing both verbal and nonverbal behavior, such as gesture performance in bi- and multilingual speakers (e.g., Brown & Gullberg, 2005; Gullberg, 2006a, b, in press; Kellerman & Van Hoof, 2003; McCafferty & Stam, in press; Negueruela et al., 2004).

Finally, as discussed in Chapter 1 of this book, the groundwork is currently being laid for Phase 4 of transfer research. This development is apparent in the

emergence of new imaging studies that attempt to capture brain activity in bilinguals' performance of various linguistic tasks. Methodologically, these studies comprise two types. Electroencephalographic and magnetoencephalographic recording studies rely on EEG, magnetic source imaging, and event-related brain potentials (ERPs) (e.g., Hahne, 2001; Hahne & Friederici, 2001). Hemodynamic methods rely on the close coupling between changes in the activation of a population of neurons and changes in blood supply, and involve positron emission tomography (PET) (e.g., Emmorey et al., 2005) and functional magnetic resonance imaging (fMRI) (e.g., Hasegawa, Carpenter & Just, 2002; Nakada, Fujii, & Kwee, 2001).

The overwhelming majority of the studies still examine the patterns of activation in terms of L1 versus L2. A few studies however have begun to address language-specific patterns of activation in bilinguals. Thus, Nakada and associates (2001) used fMRI to compare brain activation patterns in English-Japanese and Japanese-English bilinguals engaged in a silent reading task. The researchers found that patterns of activation for L1 English and L1 Japanese were somewhat different but patterns of activation for L2 reading were similar to L1 in both groups, thus suggesting a carryover of L1 reading strategies into L2. Similarly, Emmorey and associates (2005) found that monolingual English speakers displayed only left parietal activation when producing spatial prepositions, while simultaneous ASL-English bilinguals engaged the parietal cortex bilaterally, when describing spatial relations in either ASL or English. The researchers attributed this pattern to the ongoing activation of ASL in the bilinguals' production of English prepositions.

While major concerns still exist with regard to validity, generalizability, and interpretability of the data coming from neuroimaging studies, CLI researchers need to pay increasing attention to this research (for informative reviews of neuroimaging studies of bilingual processing and representation see Abutalebi, Cappa, & Perani, 2005; Vaid & Hull, 2002). At the same time, researchers working in the area of neuroimaging also need to pay closer attention to CLI research and perhaps add some behavioral measures to their repertoires, as in some cases it is not clear whether the same pattern of activation in the L1 and L2 of a certain group of bilinguals means that the two languages are subserved by the same substrate or whether it indicates forward transfer or convergence in a particular area.

7.5.2. Research Areas

Our review allows us to single out several general directions for future transfer research, starting with linguistic areas. In relatively new areas, such as discourse and sociolinguistics, where transfer research is just beginning, there is a clear need for more overall research on various types and directions of CLI and on

factors affecting transferability. In areas such as phonology, where research has largely been concentrated in one domain, such as segmental transfer, more research needs to be conducted in other domains, such as suprasegmental transfer. And in areas, such as syntax or the lexicon, where a substantial amount of research has already been conducted, it would eventually be useful to carry out meta-analyses of the findings.

Outside of the traditional areas of research that explore oral language, increased attention is now paid to second language reading and writing, or biliteracy, critical for the achievement of academic competence. While transfer is only one of the relevant factors that affect spelling, reading, and writing abilities, it is certainly a constant potential source of influence, especially among beginning and intermediate-level learners, who are less familiar with the L2 orthography, lexicon, and writing conventions. Researchers working in the areas of biliteracy and L2 writing may eventually need to develop their own taxonomies and theoretical frameworks that reflect various types of CLI in the written mode (for an up-to-date treatment of L2 writing systems, see Cook & Bassetti, 2005a).

With regard to directionality, forward transfer—or L1 effects on subsequently learned languages—is much better documented to date than reverse, lateral, and bidirectional transfer. Future research should pay more attention to reverse transfer and examine the relationship between reverse transfer and L1 attrition. Studies of three or more languages should pay particular attention to lateral transfer effects and attempt to determine constraints on lateral transfer in various linguistic areas. For instance, we have not yet seen much evidence of lateral syntactic or discursive transfer, and it is not clear whether this is because such transfer does not occur or because studies have not yet looked specifically for this type of transfer.

In terms of other dimensions, CLI effects have to be investigated not only in production, but also in comprehension and perception, as comprehension in particular remains an unexplored area in transfer research. More attention needs to be paid to nonverbal manifestations of CLI, such as gestures and categorization patterns, in tasks that consider both verbal and nonverbal performance. Furthermore, traditionally, investigations of CLI took into consideration only instances of negative transfer, even though negative transfer may account for only a minor portion of the effects of CLI. There still exists a need to account for the overall effects of CLI, including both positive and negative transfer, preference, and avoidance. We also pointed to the need to distinguish carefully between learning-related and performance-related transfer effects.

Several directions also look promising in terms of understanding the relationship between CLI and the process of second language acquisition. The differentiation between semantic and conceptual transfer argued for in this book has interesting implications not only for the modeling of the bilingual mental

lexicon but also for learnability. Namely, it is possible that errors due to negative conceptual transfer will persist longer than errors due to negative semantic transfer because of the challenges involved in inhibiting and restructuring already existing conceptual representations. It is up to future research to examine this hypothesis. Another interesting direction is to compare CLI effects in the implicit and explicit knowledge of the same individuals, as it appears that they may be more evident where implicit knowledge is involved (e.g., Jarvis, 2003).

More research is also needed in the area of transferability constraints in order to better understand what conditions make transfer more or less likely and what conditions are most conducive to which specific patterns of CLI. To begin with linguistic factors, more studies of the multilingual lexicon are necessary to disambiguate the effects of perceived versus real crosslinguistic similarities, and to understand factors affecting lateral transfer. Linguistic context effects deserve closer attention in future work; it is also important to examine whether frequency and recency effects vary depending on the linguistic subsystem (e.g., Köpke, 2002). In terms of cognitive, attentional, and developmental factors, further research is needed to better understand the interaction between CLI and universal and developmental constraints. Individual case studies may also need to start paying attention to participants' cognitive language learning abilities and attention to and awareness of language, as the relationship between these factors and transfer is still not well understood. In terms of language knowledge and experience, future studies need to disambiguate the role of proficiency versus socialization in semantic and conceptual transfer. Last but not least, we are also in need of analyses that could compare transferability criteria in individual CLI and borrowability criteria in language contact situations (for discussions of these criteria in the latter context, see Backus, 2005; Clyne, 2003; Thomason & Kaufman, 1988).

Finally, to account for the full range and diversity of CLI phenomena in human speech, research on transfer in sign language studies (e.g., Emmorey et al., 2005) needs to be integrated into overall CLI theory through an open dialogue between researchers working with spoken and sign languages. There also exists a clear need for more interaction and dialogue between researchers who study CLI phenomena in the areas of language contact, childhood bilingualism, child and adult second language acquisition, and first language attrition. The terminology and typologies of CLI put forth in these fields often diverge and so does the understanding of different aspects of CLI or even of what has been established to date. For instance, what is seen as an instance of syntactic transfer in SLA research may be categorized as an instance of structural borrowing in research on language contact, semantic extension may be seen as semantic copying, and a preference pattern as frequential copying (e.g., Backus, 2005). An excellent example of the negotiation of one such shared term, "convergence," is offered in a special issue of *Bilingualism: Language and Cognition*, edited by Bullock and Toribio (2004).

Furthermore, while it may be unrealistic to expect that the fields will agree to use the same terminology, it may be productive to pursue a dialogue on respective findings, and to examine, as mentioned earlier, whether criteria for transferability established in the field of SLA correspond to criteria for borrowability or attractiveness established in the field of language contact research. It might also be interesting to compare the findings in transfer and language contact research in order to establish which individual patterns become patterns of language use at the group level (for an example of one such discussion of the role of transfer in language variation and change, see Treffers-Daller & Mougeon, 2005). It is our sincere hope that, as a result of such dialogue, future monographs on CLI will be able to substantially expand their focus, comparing CLI in bilingual first language acquisition to that in adult second language learning, CLI in individuals and in groups, and CLI in sign and spoken languages.

References

- Abrahamsson, N. (1999). Vowel epenthesis of /sC(C)/ onsets in Spanish/Swedish interphology: A longitudinal case study. *Language Learning*, 49, 473–508.
- Abutalebi, J., Cappa, S., & Perani, D. (2005). What can functional neuroimaging tell us about the bilingual brain? In J. Kroll & A. De Groot (Eds.), *Handbook of bilingualism: Psycholinguistic approaches* (pp. 497–515). Oxford, UK: Oxford University Press.
- Adams, J. (2003). *Bilingualism and the Latin language*. Cambridge, UK: Cambridge University Press.
- Adams, J., & Swain, S. (2002). Introduction. In J. Adams, M. Janse, & S. Swain (Eds.), *Bilingualism in ancient society: Language contact and the written word* (pp. 1–20). Oxford, UK: Oxford University Press.
- Adams, J., Janse, M., & Swain, S. (Eds.) (2002). *Bilingualism in ancient society: Language contact and the written word*. Oxford, UK: Oxford University Press.
- Adjémian, C. (1983). The transferability of lexical properties. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (pp. 250–268). Rowley, MA: Newbury House.
- Akamatsu, N. (2003). The effects of first language orthographic features on second language reading in text. *Language Learning*, 53, 207–231.
- Alloway, T., & Corley, M. (2004). Speak before you think: The role of language in verb concepts. *Journal of Cognition and Culture*, 4, 319–345.
- Alonso, M. R. (2002). *The role of transfer in second language acquisition*. Vigo, Spain: University of Vigo Press.
- Altarriba, J. (2006). Cognitive approaches to the study of emotion-laden and emotion words in monolingual and bilingual memory. In A. Pavlenko (Ed.), *Bilingual minds: Emotional experience, expression, and representation* (pp. 232–256). Clevedon, UK: Multilingual Matters.
- Altenberg, E. (1991). Assessing first language vulnerability to attrition. In H. Seliger & R. Vago (Eds.), *First language attrition* (pp. 189–206). Cambridge, UK: Cambridge University Press.
- Alvarez, J. (1998). *Something to declare*. Chapel Hill, NC: Algonquin Books of Chapel Hill.
- Ameel, E., Storms, G., Malt, B., & Sloman, S. (2005). How bilinguals solve the naming problem. *Journal of Memory and Language*, 52, 309–329.
- Andersen, R. (1977). The impoverished state of cross-sectional morpheme acquisition/accuracy methodology. *Working Papers on Bilingualism*, 14, 47–82.

- Andersen, R. (1979). The relationship between first language transfer and second-language overgeneralization: Data from the English of Spanish speakers. In R. Andersen (Ed.), *The acquisition and use of Spanish and English as first and second languages* (pp. 43–58). Washington, D.C.: TESOL.
- Andersen, R. (1980). Creolization as the acquisition of a second language as a first language. In A. Valdman & A. Highfield (Eds.), *Theoretical orientations in creole studies* (pp. 273–295). New York: Academic Press.
- Andersen, R. (1983). Transfer to somewhere. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (pp. 177–201). Rowley, MA: Newbury House.
- Anderson, J. (1987). The markedness differential hypothesis and syllable structure difficulty. In G. Ioup & S. Weinberger (Eds.), *Interlanguage phonology: The acquisition of a second language sound system* (pp. 279–291). Rowley, MA: Newbury House.
- Andrews, D. (1993). American-immigrant Russian: Socio-cultural perspectives on borrowings from English in the language of the third wave. *Language Quarterly*, 31, 153–176.
- Andrews, D. (1994). The Russian color categories *sinij* and *goluboj*: An experimental analysis of their interpretation in the standard and emigre languages. *Journal of Slavic Linguistics*, 2, 9–28.
- Andrews, D. (1999). *Sociocultural perspectives on language change in diaspora: Soviet immigrants in the United States*. Amsterdam: Benjamins.
- Aoyama, K. (2003). Perception of syllable-initial and syllable-final nasals in English by Korean and Japanese speakers. *Second Language Research*, 19, 251–265.
- Arabski, J. (Ed.) (2006). *Cross-linguistic influences in the second language lexicon*. Clevedon, UK: Multilingual Matters.
- Archibald, J. (1998). Second language phonology, phonetics, and typology. *Studies in Second Language Acquisition*, 20, 189–211.
- Ard, J., & Homburg, T. (1983). Verification of language transfer. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (pp. 157–176). Rowley, MA: Newbury House.
- Ard, J., & Homburg, T. (1992). Verification of language transfer. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (Revised ed., pp. 47–70). Amsterdam: Benjamins.
- Athanasiadou, A., & Tabakowska, E. (Eds.) (1998). *Speaking of emotions: Conceptualisation and expression*. Berlin: De Gruyter.
- Athanasopoulos, P. (2006). Effects of grammatical representation of number on cognition in bilinguals. *Bilingualism: Language and Cognition*, 9, 89–96.
- Auer, P. (Ed.) (1998). *Code-switching in conversation: Language, interaction, and identity*. London: Routledge.
- Bachman, L. F. (1990). *Fundamental considerations in language testing*. Oxford, UK: Oxford University Press.
- Bachman, L. F., & Palmer, A. S. (1996). *Language testing in practice*. Oxford, UK: Oxford University Press.
- Backus, A. (2005). Codeswitching and language change: One thing leads to another? *International Journal of Bilingualism*, 9, 307–340.
- Backus, A., Nortier, J., & Treffers-Daller, J. (Eds.) (2005). Codeswitching and contact-induced language change. Special issue. *International Journal of Bilingualism*, 9, 3–4.

- Baetens Beardsmore, H. (1971). A gender problem in a language contact situation. *Lingua*, 27, 141–159.
- Balcom, P. (1999). These constructions don't acquire easily: Middle constructions and multicompetence. *Canadian Journal of Applied Linguistics*, 2, 5–20.
- Bardovi-Harlig, K. (1987). Markedness and salience in second language acquisition. *Language Learning*, 37, 385–407.
- Bardovi-Harlig, K. (1999). Exploring the interlanguage of interlanguage pragmatics: A research agenda for acquisitional pragmatics. *Language Learning*, 49, 677–713.
- Bardovi-Harlig, K. (2000). Tense and aspect in second language acquisition: Form, meaning, and use. *Language Learning*, 50, supplement 1, xi–491.
- Bardovi-Harlig, K., & Hartford, B. S. (1993). Learning the rules of academic talk: A longitudinal study of pragmatic development. *Studies in Second Language Acquisition*, 15, 279–304.
- Barron, A. (2006). Learning to say 'you' in German: The acquisition of sociolinguistic competence in a study abroad context. In M. A. DuFon & E. Churchill (Eds.), *Language learners in study abroad contexts* (pp. 59–88). Clevedon, UK: Multilingual Matters.
- Barsalou, L. (2003). Situated simulation in the human conceptual system. *Language and Cognitive Processes*, 18, 513–562.
- Barsalou, L., & Medin, D. (1986). Concepts: Fixed definitions or dynamic context-dependent representations? *Cahiers de Psychologie Cognitive*, 6, 187–202.
- Bates, E., & MacWhinney, B. (1982). Functionalist approaches to grammar. In E. Wanner & L. Gleitman (Eds.), *Language acquisition: The state of the art* (pp. 173–218). Cambridge, UK: Cambridge University Press.
- Bates, E., & MacWhinney, B. (1989). Functionalism and the Competition Model. In B. MacWhinney & E. Bates (Eds.), *The crosslinguistic study of sentence processing* (pp. 3–73). Cambridge, UK: Cambridge University Press.
- Bebout, L. (1985). An error analysis of misspellings made by learners of English as a first and as a second language. *Journal of Psycholinguistic Research*, 14, 569–593.
- Becker, A. (1995). *Body, self, and society: The view from Fiji*. Philadelphia, PA: University of Pennsylvania Press.
- Becker, A., & Carroll, M. (Eds.) (1997). *The acquisition of spatial relations in a second language*. Amsterdam: Benjamins.
- Beebe, L. (1980). Sociolinguistic variation and style shifting in second language acquisition. *Language Learning*, 30, 433–447.
- Beebe, L., & Zuengler, J. (1983). Accommodation theory: An explanation for style shifting in second language dialects. In N. Wolfson & E. Judd (Eds.), *Sociolinguistics and second language acquisition* (pp. 195–213). Rowley, MA: Newbury House.
- Beebe, L., Takahashi, T., & Uliss-Weltz, R. (1990). Pragmatic transfer in ESL refusals. In R. Scarcella, E. S. Andersen, & S. Krashen (Eds.), *On the development of communicative competence in a second language* (pp. 55–73). New York: Newbury House.
- Belz, J., & Kinginger, C. (2002). The cross-linguistic development of address form use in telecollaborative language learning: Two case studies. *Canadian Modern Language Review*, 59, 189–214.
- Belz, J., & Kinginger, C. (2003). Discourse options and the development of pragmatic competence by classroom learners of German: The case of address forms. *Language Learning*, 53, 591–647.

- Ben-Rafael, M. (2004). Language contact and attrition: The spoken French of Israeli Francophones. In M. Schmid, B. Köpke, M. Keijzer, & L. Weilemar (Eds.), *First language attrition: Interdisciplinary perspectives on methodological issues* (pp. 165–187). Amsterdam: Benjamins.
- Berman, R. (1999). Bilingual proficiency/proficient bilingualism: Insights from narrative texts. In G. Extra & L. Verhoeven (Eds.), *Bilingualism and migration* (pp. 187–208). Berlin: De Gruyter.
- Berman, R., & Slobin, D. (1994). *Relating events in narrative: A crosslinguistic developmental study*. Mahwah, NJ: Erlbaum.
- Best, C., McRoberts, G., & Goodell, E. (2001). Discrimination of non-native consonant contrasts varying in perceptual assimilation to the listener's native system. *Journal of the Acoustic Society of America*, 109, 775–794.
- Bhatia, T., & Ritchie, W. (Eds.) (2004). *The handbook of bilingualism*. Oxford, UK: Blackwell.
- Bialystok, E. (1978). A theoretical model of second language learning. *Language Learning*, 28, 69–84.
- Birdsong, D. (1989). *Metalinguistic performance and interlanguage competence*. New York: Springer.
- Biskup, D. (1992). L1 influence on learners' rendering of English collocations: A Polish/German empirical study. In P. Arnaud & H. Béjoint (Eds.), *Vocabulary and applied linguistics* (pp. 85–93). London: Macmillan.
- Blum-Kulka, S., & Olshtain, E. (1986). Too many words: Length of utterance and pragmatic failure. *Studies in Second Language Acquisition*, 8, 165–180.
- Bohn, O.-S. (1995). Cross-language speech perception in adults: First language transfer doesn't tell it all. In W. Strange (Ed.), *Speech perception and linguistic experience: Theoretical and methodological issues* (pp. 279–304). Timonium, MD: York.
- Bohnacker, U. (2005). From V2 to V2: Swedish learners of German. In A. Brugos, M.R. Clark-Cotton, & S. Ha (Eds.), *BUCLD 29 Proceedings* (pp. 73–84). Somerville, MA: Cascadia.
- Bongartz, C. (2002). *Noun combination in interlanguage: Typology effects in complex determiner phrases*. Tübingen, Germany: Niemeyer.
- Bonvillain, N. (2003). *Language, culture, and communication* (fourth edition). Upper Saddle River, NJ: Prentice Hall.
- Boroditsky, L. (2001). Does language shape thought? Mandarin and English speakers' conceptions of time. *Cognitive Psychology*, 43, 1–22.
- Boroditsky, L., & Trusova, E. (2003). *Cross-linguistic differences in the representation of events: Verb aspect and completion in English and Russian*. Paper presented at the 25th Annual Conference of the Cognitive Science Society, July, Boston, MA.
- Boroditsky, L., Schmidt, L., & Phillips, W. (2003). Sex, syntax, and semantics. In D. Gentner & S. Goldin-Meadow (Eds.), *Language in mind: Advances in the study of language and thought* (pp. 61–79). Cambridge, MA: MIT Press.
- Boroditsky, L., Winawer, J., & Witthoft, N. (2006). *The Russian blues: Effects of language on perception*. Paper presented at the 2nd Biennial Conference on Cognitive Science, June, St. Petersburg, Russia.
- Boström Aronsson, M. (2001). It-clefts and pseudo-clefts in Swedish advanced learner English. *Moderna Språk*, 95, 16–23.

- Bouton, L. F. (1992). The interpretation of implicature in English by NNS: Does it come automatically—without being explicitly taught? In L. F. Bouton & Y. Kachru (Eds.), *Pragmatics and language learning* (Vol. 3, pp. 53–65). Urbana-Champaign: University of Illinois, Division of English as an International Language.
- Bouton, L. F. (1994). Can NNS skill in interpreting implicatures in American English be improved through explicit instruction? A pilot study. In L. F. Bouton & Y. Kachru (Eds.), *Pragmatics and language learning* (Vol. 5, pp. 88–109). Urbana-Champaign: University of Illinois, Division of English as an International Language.
- Bowerman, M. (1996a). Learning how to structure space for language: A crosslinguistic perspective. In P. Bloom, M. Peterson, L. Nadel, & M. Garrett (Eds.), *Language and space* (pp. 385–436). Cambridge, MA: MIT Press.
- Bowerman, M. (1996b). The origins of children's spatial semantic categories: Cognitive versus linguistic determinants. In J. Gumperz & S. Levinson (Eds.), *Rethinking linguistic relativity* (pp. 145–176). Cambridge, UK: Cambridge University Press.
- Bowerman, M., & Choi, S. (2001). Shaping meanings for language: Universal and language-specific in the acquisition of spatial semantic categories. In M. Bowerman & S. Levinson (Eds.), *Language acquisition and conceptual development* (pp. 475–511). Cambridge, UK: Cambridge University Press.
- Bowerman, M., & Choi, S. (2003). Space under construction: Language-specific spatial categorization in first language acquisition. In D. Gentner & S. Goldin-Meadow (Eds.), *Language in mind: Advances in the study of language and thought* (pp. 387–427). Cambridge, MA: MIT Press.
- Bowerman, M., & Levinson, S. (Eds.) (2001). *Language acquisition and conceptual development*. Cambridge, UK: Cambridge University Press.
- Boyd, S. (1993). Attrition or expansion? Changes in the lexicon of Finnish and American adult bilinguals in Sweden. In K. Hyltenstam & A. Viberg (Eds.), *Progression and regression in language: Sociocultural, neuropsychological and linguistic perspectives* (pp. 386–411). Cambridge, UK: Cambridge University Press.
- Boyd, S., & Andersson, P. (1991). Linguistic change among bilingual speakers of Finnish and American English in Sweden: Background and some tentative findings. *International Journal of the Sociology of Language*, 90, 13–35.
- Brauer, M. (1998). Stroop interference in bilinguals: The role of similarity between the two languages. In A. Healy & L. Bourne (Eds.), *Foreign language learning: Psycholinguistic studies on training and retention* (pp. 317–337). Mahwah, NJ: Erlbaum.
- Braun, F. (2001). The communication of gender in Turkish. In M. Hellinger & H. Bussman (Eds.), *Gender across languages. Volume 1* (pp. 283–310). Amsterdam: Benjamins.
- Broselow, E. (1992). Nonobvious transfer: On predicting epenthesis errors. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (pp. 71–86). Amsterdam: Benjamins.
- Brown, A., & Gullberg, M. (2005). *Convergence in established and emerging language systems: Evidence from speech and gesture in L1 Japanese*. Paper presented at the 2nd International Conference on First Language Attrition (ICFLA), August 17–20, Amsterdam, Netherlands.
- Brumberg, S. (1986). *Going to America, going to school. The Jewish immigrant public school encounter in turn-of-the-century New York City*. New York: Praeger.

- Bugelski, B. (1977). The association of images. In J. Nicholas (Ed.), *Images, perception, and knowledge* (pp. 37–46). Dordrecht: Reidel.
- Bullock, B., & Toribio, A. J. (Eds.) (2004). Bilingualism and linguistic convergence. Special issue. *Bilingualism: Language and Cognition*, 7 (2).
- Byon, A. S. (2004). Learning linguistic politeness. *Applied Language Learning*, 14, 37–62.
- Cahan, A. (1926/1969). *The education of Abraham Cahan*. Philadelphia: The Jewish Publication Society of America.
- Camacho, J. (1999). From SOV to SVO: The grammar of interlanguage word order. *Second Language Research*, 15, 115–132.
- Caplan, D. (1992). *Language: Structure, processing, and disorders*. Cambridge, MA: MIT Press.
- Carlisle, R. S. (1998). The acquisition of onsets in a markedness relationship. *Studies in Second Language Acquisition*, 20, 245–260.
- Carroll, J. (1962). The prediction of success in intensive foreign language training. In R. Glaser (Ed.), *Training research and education* (pp. 87–136). Pittsburgh: University of Pittsburgh Press.
- Carroll, J. (1963). Linguistic relativity, contrastive linguistics, and language learning. *International Review of Applied Linguistics*, 1, 1–20.
- Carroll, M. (1993). Deictic and intrinsic orientation in spatial descriptions: A comparison between English and German. In J. Altarriba (Ed.), *Cognition and culture* (pp. 23–44). Amsterdam: Elsevier.
- Carroll, M. (1997). Changing place in English and German: Language-specific preferences in the conceptualization of spatial relations. In J. Nuyts & E. Pederson (Eds.), *Language and conceptualization* (pp. 137–161). Cambridge, UK: Cambridge University Press.
- Carroll, M., Murcia-Serra, J., Watorek, M., & Bendiscioli, A. (2000). The relevance of information organization to second language acquisition studies. *Studies in Second Language Acquisition*, 22, 441–466.
- Casasanto, D., Boroditsky, L., Phillips, W., Greene, J., Goswamy, S., Bocanegra-Thiel, S., Santiago-Diaz, I., Fotokopoulou, O., Pita, R., & Gil, D. (2004). *How deep are effects of language on thought? Time estimation in speakers of English, Indonesian, Greek, and Spanish*. Paper presented at the 26th Annual Conference of the Cognitive Science Society, August, Chicago, IL.
- Caskey-Sirmons, L., & Hickerson, N. (1977). Semantic shift and bilingualism: Variation in color terms of five languages. *Anthropological Linguistics*, 19, 358–367.
- Cebrian, J. (2000). Transferability and productivity of L1 rules in Catalan-English interlanguage. *Studies in Second Language Acquisition*, 22, 1–26.
- Celce-Murcia, M., & Larsen-Freeman, D. (1999). *The grammar book: An ESL/EFL teacher's course* (second edition). Boston: Heinle & Heinle.
- Celce-Murcia, M., Brinton, D. M., & Goodwin, J. M. (1996). *Teaching pronunciation: A reference for teachers of English to speakers of other languages*. Cambridge, UK: Cambridge University Press.
- Cenoz, J. (2001). The effect of linguistic distance, L2 status and age on cross-linguistic influence in third language acquisition. In J. Cenoz, B. Hufeisen, & U. Jessner (Eds.), *Cross-linguistic influence in third language acquisition: Psycholinguistic perspectives* (pp. 8–20). Clevedon, UK: Multilingual Matters.
- Cenoz, J. (2002). Age of learning and oral production in the third language. *Interface*, 16, 63–73.

- Cenoz, J. (2003). The intercultural style hypothesis: L1 and L2 interaction in requesting behaviour. In V. Cook (Ed.), *Effects of the second language on the first* (pp. 62–80). Clevedon, UK: Multilingual Matters.
- Cenoz, J., Hufeisen, B., & Jessner, U. (Eds.) (2001). *Cross-linguistic influence in third language acquisition: Psycholinguistic perspectives*. Clevedon, UK: Multilingual Matters.
- Cenoz, J., Hufeisen, B., & Jessner, U. (Eds.) (2003). *The multilingual lexicon*. Dordrecht, The Netherlands: Kluwer.
- Chan, A.Y.W. (2004). Syntactic transfer: Evidence from the interlanguage of Hong Kong Chinese ESL learners. *The Modern Language Journal*, 88, 56–74.
- Chaudron, C., & Parker, K. (1990). Discourse markedness and structural markedness: The acquisition of English noun phrases. *Studies in Second Language Acquisition*, 12, 43–64.
- Chen, H.-C. (1992). Lexical processing in multilingual speakers. In R. Harris (Ed.), *Cognitive processing in bilinguals* (pp. 253–264). Amsterdam: Elsevier.
- Choi, S., & Bowerman, M. (1991). Learning to express motion events in English and Korean: The influence of language-specific lexicalization patterns. *Cognition*, 41, 83–121.
- Choi, S., McDonough, L., Bowerman, M., & Mandler, J. (1999). Early sensitivity to language-specific spatial categories in English and Korean. *Cognitive Development*, 14, 241–268.
- Christoffels, I., & De Groot, A. (2005). Simultaneous interpreting: A cognitive perspective. In J. Kroll & A. De Groot (Eds.), *Handbook of bilingualism: Psycholinguistic approaches* (pp. 454–479). Oxford, UK: Oxford University Press.
- Churchill, E. & DuFon, M. A. (2006) Evolving threads in study abroad research. In M. A. DuFon & E. Churchill (Eds.), *Language learners in study abroad contexts* (pp. 1–27). Clevedon, UK: Multilingual Matters.
- Clarke, M., Losoff, A., MacCracken, M., & Still, J. (1981). Gender perception in Arabic and English. *Language Learning*, 31, 159–169.
- Clyne, M. (2003). *Dynamics of language contact: English and immigrant languages*. Cambridge, UK: Cambridge University Press.
- Collins, L. (1999). *Marking time: The acquisition of tense and grammatical aspect by French-speaking learners of English*. Unpublished doctoral dissertation, Concordia University, Montréal, Québec, Canada.
- Collins, L. (2002). The roles of L1 influence and lexical aspect in the acquisition of temporal morphology. *Language Learning*, 52, 43–94.
- Comrie, B. (1985). *Tense*. Cambridge, UK: Cambridge University Press.
- Connor, U. (1984). Recall of text: Differences between first and second language readers. *TESOL Quarterly*, 18, 239–256.
- Connor, U. (1996). *Contrastive rhetoric: Cross-cultural aspects of second-language writing*. Cambridge, UK: Cambridge University Press.
- Cook, V. (1991). The poverty-of-the-stimulus argument and multi-competence. *Second Language Research*, 7, 103–117.
- Cook, V. (1992). Evidence for multicompetence. *Language Learning*, 42, 557–591.
- Cook, V. (1997). Monolingual bias in second language acquisition research. *Revista Canaria de Estudios Ingleses*, 34, 35–50.
- Cook, V. (1999). Going beyond the native speaker in language teaching. *TESOL Quarterly*, 33, 185–209.

- Cook, V. (2001). Using the first language in the classroom. *Canadian Modern Language Review*, 57, 402–423.
- Cook, V. (Ed.) (2002). *Portraits of the L2 user*. Clevedon, UK: Multilingual Matters.
- Cook, V. (Ed.) (2003). *Effects of the second language on the first*. Clevedon, UK: Multilingual Matters.
- Cook, V., & Bassetti, B. (Eds.) (2005a). *Second language writing systems*. Clevedon, UK: Multilingual Matters.
- Cook, V., & Bassetti, B. (2005b). An introduction to researching second language writing systems. In V. Cook & B. Bassetti (Eds.), *Second language writing systems* (pp. 1–67). Clevedon, UK: Multilingual Matters.
- Cook, V., Iarossi, E., Stellakis, N., & Tokumaru, Y. (2003). Effects of the L2 on the syntactic processing of the L1. In V. Cook (Ed.), *Effects of the second language on the first* (pp. 193–213). Clevedon, UK: Multilingual Matters.
- Cook, V., Bassetti, B., Kasai, C., Sasaki, M., & Takahashi, J. A. (2006). Do bilinguals have different concepts? The case of shape and material in Japanese L2 users of English. *International Journal of Bilingualism*, 10, 137–152.
- Corbett, G. (1991). *Gender*. Cambridge, UK: Cambridge University Press.
- Corder, S. P. (1983). A role for the mother tongue. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (pp. 85–97). Rowley, MA: Newbury House.
- Correa-Beningfield, M. (1990). Prototype theory and second language acquisition. *Revue de Phonetique Appliquée*, 95–97, 131–135.
- Costa, A. (2004). Speech production in bilinguals. In T. Bhatia & W. Ritchie (Eds.), *The handbook of bilingualism* (pp. 201–223). Malden, MA: Blackwell.
- Costa, A., Colome, A., Gomez, O., & Sebastian-Galles, N. (2003a). Another look at cross-language competition in bilingual speech production: Lexical and phonological factors. *Bilingualism: Language and Cognition*, 6, 167–179.
- Costa, A., Kovacic, D., Franck, J., & Caramazza, A. (2003b). On the autonomy of grammatical gender systems of the two languages of a bilingual. *Bilingualism: Language and Cognition*, 6, 181–200.
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd edition). Thousand Oaks, CA: Sage.
- Cruse, D. (2001). The lexicon. In M. Aronoff & J. Rees-Miller (Eds.), *The handbook of linguistics* (pp. 238–264). Oxford, UK: Blackwell.
- Curtin, S., Goad, H., & Pater, J. V. (1998). Phonological transfer and levels of representation: The perceptual acquisition of Thai voice and aspiration by English and French speakers. *Second Language Research*, 14, 389–405.
- Dagut, M., & Laufer, B. (1985). Avoidance of phrasal verbs—a case for contrastive analysis. *Studies in Second Language Acquisition*, 7, 73–79.
- Damasio, A. (1989). Concepts in the brain. *Mind and Language*, 4 (1/2), 24–28.
- De Angelis, G., & Selinker, L. (2001). Interlanguage transfer and competing linguistic systems in the multilingual mind. In J. Cenoz, B. Hufeisen, & U. Jessner (Eds.), *Cross-linguistic influence in third language acquisition: Psycholinguistic perspectives* (pp. 42–58). Clevedon, UK: Multilingual Matters.
- De Bot, K. (Ed.) (2004a). Language attrition. *The International Journal of Bilingualism* (special issue), 8, 233–408.

- De Bot, K. (2004b). The multilingual lexicon: Modelling selection and control. *The International Journal of Multilingualism*, 1, 17–32.
- De Bot, K., & Hulsen, M. (2002). Language attrition: Tests, self-assessments, and perceptions. In V. Cook (Ed.), *Portraits of the L2 user* (pp. 253–274). Clevedon, UK: Multilingual Matters.
- De Bot, K., Lowie, W., & Verspoor, M. (2005). Dynamic Systems Theory and applied linguistics: The ultimate ‘so what’? *International Journal of Applied Linguistics*, 15, 116–118.
- De Bot, K., Paribakht, T. S., & Wesche, M. B. (1997). Toward a lexical processing model for the study of second language vocabulary acquisition: Evidence from ESL reading. *Studies in Second Language Acquisition*, 19, 309–329.
- De Groot, A. M. B. (1992). Determinants of word translation. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 18, 1001–1018.
- De Groot, A. M. B. (1993). Word-type effects in bilingual processing tasks: Support for a mixed-representational system. In R. Schreuder & B. Weltens (Eds.), *The bilingual lexicon* (pp. 27–51). Amsterdam: Benjamins.
- De Groot, A. M. B. (1995). Determinants of bilingual lexicosemantic organization. *Computer Assisted Language Learning*, 8, 151–180.
- De Groot, A. M. B. (2002). Lexical representation and lexical processing in the L2 user. In V. Cook (Ed.), *Portraits of the L2 user* (pp. 32–63). Clevedon, UK: Multilingual Matters.
- De Groot, A. M. B., Dannenburg, L., & Van Hell, J. G. (1994). Forward and backward word translation by bilinguals. *Journal of Memory and Language*, 33, 600–629.
- De Guerrero, M. (2005). *Inner speech – L2: Thinking words in a second language*. New York: Springer.
- De Vincenzi, M. (1999). Differences between the morphology of gender and number: Evidence from establishing coreferences. *Journal of Psycholinguistic Research*, 28, 537–553.
- Dechert, H., & Raupach, M. (Eds.) (1989). *Transfer in language production*. Norwood, NJ: Ablex.
- DeKeyser, R. (2003). Implicit and explicit knowledge. In C. Doughty & M. Long (Eds.), *Handbook of second language learning* (pp. 313–348). Oxford, UK: Blackwell.
- Dewaele, J.-M. (1998). Lexical inventions: French interlanguage as L2 versus L3. *Applied Linguistics*, 19, 471–490.
- Dewaele, J.-M. (2004). Vous or tu? Native and non-native speakers of French on a sociolinguistic tightrope. *IRAL*, 42, 383–402.
- Dewaele J.-M., & Veronique, D. (2001). Gender assignment and gender agreement in advanced French interlanguage: A cross-sectional study. *Bilingualism: Language and Cognition*, 4, 275–297.
- Dickerson, L. (1975). The learner’s interlanguage as a system of variable rules. *TESOL Quarterly*, 9, 401–407.
- Dijkstra, T. (2003). Lexical processing in bilinguals and multilinguals: The word selection problem. In J. Cenoz, B. Hufeisen, & U. Jessner (Eds.), *The multilingual lexicon* (pp. 11–26). Dordrecht, The Netherlands: Kluwer.
- Dijkstra, T., & Van Heuven, W. (1998). The BIA model and bilingual word recognition. In J. Grainger & A. Jacobs (Eds.), *Localist connectionist approaches to human cognition* (pp. 189–225). Mahwah, NJ: Erlbaum.

- Dijkstra, T., & Van Heuven, W. (2002). The architecture of the bilingual word recognition system: From identification to decision. *Bilingualism: Language and Cognition*, 5, 175–197.
- Dijkstra, T., Van Jaarsveld, H., & Ten Brinke, S. (1998). Interlingual homograph recognition: Effects of task demands and language intermixing. *Bilingualism: Language and Cognition*, 1, 51–66.
- Dominguez, A., Cueto, F., & Segui, J. (1999). The processing of grammatical gender and number in Spanish. *Journal of Psycholinguistic Research*, 28, 485–498.
- Dong, Y., Gui, S., & MacWhinney, B. (2005). Shared and separate meanings in the bilingual mental lexicon. *Bilingualism: Language and Cognition*, 8, 221–238.
- Dörnyei, Z. (1995). On the teachability of communication strategies. *TESOL Quarterly*, 29, 55–84.
- Doughty, C. (1991). Second language instruction does make a difference: Evidence from an empirical study of SL relativization. *Studies in Second Language Acquisition*, 13, 431–469.
- DuFon, M. A., & Churchill, E. (Eds.) (2006). *Language learners in study abroad contexts*. Clevedon, UK: Multilingual Matters.
- Dufour, R., & Kroll, J. (1995). Matching words to concepts in two languages: A test of the concept mediation model of bilingual representation. *Memory and Cognition*, 23, 166–180.
- Dulay, H., & Burt, M. (1973). Should we teach children syntax? *Language Learning*, 23, 245–258.
- Dulay, H., & Burt, M. (1974). Natural sequences in child second language acquisition. *Language Learning*, 24, 37–53.
- Dulay, H., Burt, M., & Krashen, S. (1982). *Language two*. Oxford, UK: Oxford University Press.
- Durst, U. (2001). Why Germans don't feel 'anger'. In J. Harkins & A. Wierzbicka (Eds.), *Emotions in crosslinguistic perspective* (pp. 115–148). Berlin: Mouton de Gruyter.
- Dušková, L. (1969). On sources of errors in foreign language teaching. *IRAL*, 7, 11–36.
- Dušková, L. (1984). Similarity: An aid or hindrance in foreign language learning? *Folia Linguistica*, 18, 103–115.
- Dussias, P. (2003). Syntactic ambiguity resolution in second language learners: Some effects of bilinguality on L1 and L2 processing strategies. *Studies in Second Language Acquisition*, 25, 529–557.
- Dussias, P. (2004). Parsing a first language like a second: The erosion of L1 parsing strategies in Spanish-English bilinguals. *International Journal of Bilingualism*, 8, 355–371.
- Eades, D. (2005). Applied linguistics and language analysis in asylum seeker cases. *Applied Linguistics*, 26, 503–526.
- Ecke, P. (2001). Lexical retrieval in a third language: Evidence from errors and tip-of-the-tongue states. In J. Cenoz, B. Hufeisen, & U. Jessner (Eds.), *Cross-linguistic influence in third language acquisition: Psycholinguistic perspectives* (pp. 90–114). Clevedon, UK: Multilingual Matters.
- Ecke, P. (2004). Language attrition and theories of forgetting: A cross-disciplinary review. *International Journal of Bilingualism*, 8, 321–354.
- Ecke, P., & Hall, C. J. (2000). Lexikalische Fehler in Deutsch als Drittsprache: Translexikalischer Einfluss auf 3 Ebenen der mentalen Repräsentation. *Deutsch als Fremdsprache*, 1, 31–37.

- Eckman, F. R. (1977). Markedness and the contrastive analysis hypothesis. *Language Learning*, 27, 315–330.
- Eckman, F. R. (2004). From phonemic differences to constraint rankings. *Studies in Second Language Acquisition*, 26, 513–549.
- Eckman, F. R., Elreyes, A., & Iverson, G. K. (2003). Some principles of second language phonology. *Second Language Research*, 19, 169–208.
- Edwards, D. (1997). *Discourse and cognition*. London: Sage.
- Eisenstein, M., & Bodman, J. (1993). Expressing gratitude in American English. In G. Kasper & S. Blum-Kulka (Eds.), *Interlanguage pragmatics* (pp. 64–81). Oxford, UK: Oxford University Press.
- Ellis, N. (Ed.) (1994). *Implicit and explicit learning of languages*. New York: Academic Press.
- Ellis, R. (1986). *Understanding second language acquisition*. Oxford, UK: Oxford University Press.
- Ellis, R. (1994). *The study of second language acquisition*. Oxford, UK: Oxford University Press.
- Ellis, R. (2002). Does form-focused instruction affect the acquisition of implicit knowledge? *Studies in Second Language Acquisition*, 24, 223–236.
- Ellis, R. (2004). The definition and measurement of L2 explicit knowledge. *Language Learning*, 54, 227–275.
- Ellis, R. (2006). Modelling learning difficulty and second language proficiency: The differential contributions of implicit and explicit knowledge. *Applied Linguistics*, 27, 431–463.
- Ellis, R., & Barkhuizen, G. (2005). *Analysing learner language*. Oxford, UK: Oxford University Press.
- Emmorey, K., Grabowski, T., McCullough, S., Ponto, L., Hichwa, R., & Damasio, H. (2005). The neural correlates of spatial language in English and American Sign Language: A PET study with hearing bilinguals. *NeuroImage*, 24, 832–840.
- Engelberg, M. (2002). The communication of gender in Finnish. In M. Hellinger & H. Bussman (Eds.), *Gender across languages. Volume 2* (pp. 109–132). Amsterdam: Benjamins.
- Epstein, I. (1915). *La pensée et la polyglossie: Essai psychologique et didactique*. Lausanne: Librairie Payot et Cie.
- Ervin, S. (1962). The connotations of gender. *Word*, 18, 249–261.
- Ervin-Tripp, S. (1961, reprinted in 1973). Semantic shift in bilinguals. In A. Dil (Ed.), *Language acquisition and communicative choice. Essays by Susan M. Ervin-Tripp* (pp. 33–44). Stanford, CA: Stanford University Press.
- Escudero, P., & Boersma, P. (2004). Bridging the gap between L2 speech perception research and phonological theory. *Studies in Second Language Acquisition*, 26, 551–585.
- Ettner, C. (2002). In Chinese, men and women are equal – or – women and men are equal? In M. Hellinger & H. Bussman (Eds.), *Gender across languages. Volume 2* (pp. 29–55). Amsterdam: Benjamins.
- Eubank, L. (1993/1994). On the transfer of parametric values in L2 development. *Language Acquisition*, 3, 183–208.
- Eubank, L., Bischof, J., Huffstutler, A., Leek, P., & West, C. (1997). “Tom eats slowly cooked eggs”: Thematic-verb raising in L2 knowledge. *Language Acquisition*, 6, 171–199.

- Fabbro, F. (1999). *The neurolinguistics of bilingualism: An introduction*. Trieste, Italy: Psychology Press.
- Fabbro, F. (2002). The neurolinguistics of L2 users. In V. J. Cook (Ed.), *Portraits of the L2 user* (pp. 199–218). Clevedon, UK: Multilingual Matters.
- Faerch, C., & Kasper, G. (1989). Internal and external modification in interlanguage request realization. In S. Blum-Kulka, J. House, & G. Kasper (Eds.), *Cross-cultural pragmatics: Requests and apologies* (pp. 221–47). Norwood, NJ: Ablex.
- Faerch, C., Haastrup, K., & Phillipson, R. (1984). *Learner language and language learning*. Clevedon, UK: Multilingual Matters.
- Felix, S. W. (1977). Interference, interlanguage, and related issues. In H. Z. Molony & W. S. C. H. Molony (Eds.), *Deutsch im Kontakt mit anderen Sprachen* [German in contact with other languages] (pp. 184–212). Kronberg: Scriptor Verlag.
- Felix, S. W. (1980). Interference, interlanguage and related issues. In S. W. Felix (Ed.), *Second language development* (pp. 93–108). Tübingen, Germany: Gunther Narr.
- Felix-Brasdefer, J. C. (2003). Declining an invitation: A cross-cultural study of pragmatic strategies in American English and Latin American Spanish. *Multilingua*, 22, 225–255.
- Fillmore, C. (1977). Topics in lexical semantics. In R. Cole (Ed.), *Current issues in linguistic theory* (pp. 76–138). Bloomington, IN: Indiana University Press.
- Fischer, T. L. (2003). *Bidirectional transfer in conceptualization of event structure of German-English bilingual speakers*. Unpublished departmental M.A. thesis, Department of Linguistics, Ohio University. (Contact lingdept@ohio.edu for availability).
- Fischer-Jorgensen, E. (1968). Les occlusives françaises et danoises d'un sujet bilingue [French and Danish stops of a bilingual subject]. *Word*, 24, 112–153.
- Fishman, J. (1980). The Whorfian hypothesis: Varieties of valuation, confirmation and disconfirmation: I. *International Journal of the Sociology of Language*, 26, 25–40.
- Flaherty, M. (2001). How a language gender system creeps into perception. *Journal of Cross-Cultural Psychology*, 32, 18–31.
- Flege, J. E. (1981). The phonological basis of foreign accent: A hypothesis. *TESOL Quarterly*, 15, 443–455.
- Flege, J. E. (1987a). The production of “new” and “similar” phones in a foreign language: Evidence for the effect of equivalence classification. *Journal of Phonetics*, 15, 47–65.
- Flege, J. E. (1987b). Effects of equivalence classification on the production of foreign language speech sounds. In A. James & J. Leather (Eds.), *Sound patterns in second language acquisition* (pp. 9–39). Dordrecht, The Netherlands: Foris.
- Flege, J. E. (1995). Second-language speech learning: Theory, findings, and problems. In W. Strange (Ed.), *Speech perception and linguistic experience: Theoretical and methodological issues* (pp. 233–273). Timonium, MD: York Press.
- Flege, J. E. (1997). The role of category formation in second-language speech learning. In J. Leather & A. James (Eds.), *New Sounds 97: Proceedings of the Third International Symposium on the Acquisition of Second-Language Speech* (pp. 79–88). Klagenfurt, Austria: University of Klagenfurt.
- Flege, J. E., Bohn, O.-S., & Jang, S. (1997). Effects of experience on non-native speakers' production and perception of English vowels. *Journal of Phonetics*, 25, 437–470.
- Flege, J. E., & Eefting, W. (1987). Cross-language switching in stop consonant perception and production by Dutch speakers of English. *Speech Communication*, 6, 185–202.

- Flege, J. E., Frieda, E. M., & Nozawa, T. (1997). Amount of native-language (L1) use affects the pronunciation of an L2. *Journal of Phonetics*, 25, 169–186.
- Flege, J. E., Schirru, C., & MacKay, I. (2003). Interaction between the native and second language phonetic subsystems. *Speech Communication*, 40, 467–491.
- Flege, J. E., Frieda, E. M., Walley, A. C., & Randazza, L. A. (1998). Lexical factors and segmental accuracy in second language speech production. *Studies in Second Language Acquisition*, 20, 155–187.
- Foley, W. (1997). *Anthropological linguistics*. Oxford, UK: Blackwell.
- Foster, D. (2001). *Author unknown: Tales of a literary detective*. New York: Holt.
- Fouser, R. J. (2001). Too close for comfort? Sociolinguistic transfer from Japanese into Korean as an L₂3. In J. Cenoz, B. Hufeisen, & U. Jessner (Eds.), *Cross-linguistic influence in third language acquisition: Psycholinguistic perspectives* (pp. 149–169). Clevedon, UK: Multilingual Matters.
- Franceschini, R., Zappatore, D., & Nitsch, C. (2003). Lexicon in the brain: What neurobiology has to say about languages. In J. Cenoz, B. Hufeisen, & U. Jessner (Eds.), *The multilingual lexicon* (pp. 153–166). Dordrecht, The Netherlands: Kluwer.
- Francis, W. (1999). Cognitive integration of language and memory in bilinguals: Semantic representation. *Psychological Bulletin*, 125, 193–222.
- Francis, W. (2005). Bilingual semantic and conceptual representation. In J. Kroll & A. De Groot (Eds.), *Handbook of bilingualism: Psycholinguistic approaches* (pp. 251–267). Oxford, UK: Oxford University Press.
- Fries, C. (1945). *Teaching and learning English as a foreign language*. Ann Arbor, MI: University of Michigan Press.
- Gass, S. (1980). An investigation of syntactic transfer in adult L2 learners. In R. Scarcella & S. Krashen (Eds.), *Research in second language acquisition* (pp. 132–141). Rowley, MA: Newbury House.
- Gass, S. (1983). Language transfer and universal grammatical relations. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (pp. 69–82). Rowley, MA: Newbury House.
- Gass, S. (1987). The resolution of conflicts among competing systems: A bidirectional perspective. *Applied Psycholinguistics*, 8, 239–350.
- Gass, S. (1988). Integrating research areas: A framework for second language studies. *Applied Linguistics*, 9, 198–217.
- Gass, S. (1997). *Input, interaction, and the second language learner*. Mahwah, NJ: Erlbaum.
- Gass, S., & Selinker, L. (Eds.) (1983). *Language transfer in language learning*. Rowley, MA: Newbury House.
- Gass, S., & Selinker, L. (Eds.) (1992). *Language transfer in language learning* (Revised ed.). Amsterdam: Benjamins.
- Gass, S., & Selinker, L. (2001). *Second language acquisition: An introductory course*. Mahwah, NJ: Erlbaum.
- Gennari, S., Sloman, S., Malt, B., & Fitch, W. (2002). Motion events in language and cognition. *Cognition*, 83, 49–79.
- Gentner, D., & Boroditsky, L. (2001). Individuation, relativity, and early word learning. In M. Bowerman & S. Levinson (Eds.), *Language acquisition and conceptual development* (pp. 215–256). Cambridge, UK: Cambridge University Press.

- Gentner, D., & Goldin-Meadow, S. (2003). *Language in mind: Advances in the study of language and thought*. Cambridge, MA: MIT Press.
- George, H. (1972). *Common errors in language learning: Insights from English*. Rowley, MA: Newbury House.
- Gerber, E. (1985). Rage and obligation: Samoan emotion in conflict. In G. White & J. Kirkpatrick (Eds.), *Person, self, and experience: Exploring Pacific ethnopsychologies* (pp. 121–167). Berkeley, CA: University of California Press.
- Giacobbe, J., & Cammarota, M.-A. (1986). Learners' hypotheses for the acquisition of lexis. *Studies in Second Language Acquisition*, 8, 327–342.
- Gibson, M. (1997). Non-native perception and production of English attitudinal intonation. In J. Leather & A. James (Eds.), *New Sounds 97: Proceedings of the Third International Symposium on the Acquisition of Second-Language Speech* (pp. 96–102). Klagenfurt, Austria: University of Klagenfurt.
- Gibson, M., & Hufeisen, B. (2003). Investigating the role of prior foreign language knowledge. In J. Cenoz, B. Hufeisen, & U. Jessner (Eds.), *The multilingual lexicon* (pp. 87–102). Dordrecht, The Netherlands: Kluwer.
- Gipper, H. (1976). Is there a linguistic relativity principle? In R. Pinxten (Ed.), *Universalism versus relativism in language and thought. Proceedings of a colloquium on the Sapir-Whorf Hypothesis* (pp. 217–228). The Hague: Mouton.
- Goddard, C. (1991). Anger in the Western Desert: A case study in the cross-cultural semantics of emotion. *Man*, 26, 265–279.
- Goddard, C. (1998). *Semantic analysis: A practical introduction*. Oxford, UK: Oxford University Press.
- Gollan, T., & Silverberg, N. (2001). Tip-of-the-tongue states in Hebrew-English bilinguals. *Bilingualism: Language and Cognition*, 4, 63–83.
- Graham, R., & Belnap, K. (1986). The acquisition of lexical boundaries in English by native speakers of Spanish. *International Review of Applied Linguistics in Language Teaching*, 24, 275–286.
- Granfeldt, J. (2005). The development of gender attribution and gender agreement in French: A comparison of bilingual first and second language learners. In Dewaele, J.-M. (Ed.), *Focus on French as a foreign language: Multidisciplinary approaches* (pp. 164–190). Clevedon, UK: Multilingual Matters.
- Granger, S., Hung, J., & Petch-Tyson, S. (2002). *Computer learner corpora, second language acquisition and foreign language teaching*. Amsterdam: Benjamins.
- Grauberg, W. (1971). An error analysis in the German of first-year university students. In G. Perren & J. Trim (Eds.), *Applications of linguistics* (pp. 257–263). Cambridge, UK: Cambridge University Press.
- Green, D. (1993). Towards a model of L2 comprehension and production. In R. Schreuder & B. Weltens (Eds.), *The bilingual lexicon* (pp. 249–277). Amsterdam: Benjamins.
- Green, D. (1998). Mental control of the bilingual lexico-semantic system. *Bilingualism: Language and Cognition*, 1, 67–81.
- Green, D. (Ed.) (2001). The cognitive neuroscience of bilingualism: Special issue. *Bilingualism: Language and Cognition*, 4 (2).
- Grosjean, F. (1982). *Life with two languages: An introduction to bilingualism*. Cambridge, UK: Cambridge University Press.

- Grosjean, F. (1989). Neurolinguists, beware! The bilingual is not two monolinguals in one person. *Brain and Language*, 36, 3–15.
- Grosjean, F. (1992). Another view of bilingualism. In R. Harris (Ed.), *Cognitive processing in bilinguals* (pp. 51–62). Amsterdam: North Holland.
- Grosjean, F. (1998). Studying bilinguals: Methodological and conceptual issues. *Bilingualism: Language and Cognition*, 1, 131–149.
- Guion, S., Harada, T., & Clark, J. (2004). Early and late Spanish-English bilinguals' acquisition of English word stress patterns. *Bilingualism: Language and Cognition*, 7, 207–226.
- Guion, S. G., Flege, J. E., Liu, S. H., & Yeni-Komshian, G. H. (2000). Age of learning effects on the duration of sentences produced in a second language. *Applied Psycholinguistics*, 21, 205–228.
- Gullberg, M. (Ed.) (2006a). Special issue on gesture and second language acquisition. *International Review of Applied Linguistics*, 44 (2).
- Gullberg, M. (2006b). Some reasons for studying gesture and second language acquisition (hommage à Adam Kendon). *International Review of Applied Linguistics*, 44, 103–124.
- Gullberg, M. (in press). Language-specific encoding of placement events in gestures. In E. Pederson & J. Bohnemeyer (Eds.), *Event representations in language and cognition*. Cambridge: Cambridge University Press.
- Gumperz, J., & Levinson, S. (Eds.) (1996). *Rethinking linguistic relativity*. Cambridge, UK: Cambridge University Press.
- Gundel, J. K., & Tarone, E. (1992). Language transfer and the acquisition of pronominal anaphora. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (pp. 87–100). Amsterdam: Benjamins.
- Gürel, A. (2004). Attrition of L1 competence: The case of Turkish. In M. Schmid, B. Köpcke, M. Keijzer, & L. Weilemar (Eds.), *First language attrition: Interdisciplinary perspectives on methodological issues* (pp. 225–242). Amsterdam: Benjamins.
- Hahne, A. (2001). What's the difference in second-language processing? Evidence from event-related brain potentials. *Journal of Psycholinguistic Research*, 30, 251–266.
- Hahne, A., & Friederici, A. (2001). Processing a second language: Late learners' comprehension mechanisms as revealed by event-related brain potentials. *Bilingualism: Language and Cognition*, 4, 123–141.
- Håkansson, G., Pienemann, M., & Sayehli, S. (2002). Transfer and typological proximity in the context of second language processing. *Second Language Research*, 18, 250–273.
- Hall, J. K., Cheng, A., & Carlson, M. (2006). Reconceptualizing multicompetence as a theory of language knowledge. *Applied Linguistics*, 27, 220–240.
- Hammarberg, B. (2001). Roles of L1 and L2 in L3 production and acquisition. In J. Cenoz, B. Hufeisen, & U. Jessner (Eds.), *Cross-linguistic influence in third language acquisition: Psycholinguistic perspectives* (pp. 21–41). Clevedon, UK: Multilingual Matters.
- Hampton, J., & Moss, H. (2003). Concepts and meaning: Introduction to the special issue on conceptual representation. *Language and Cognitive Processes*, 18, 505–512.
- Hancin-Bhatt, B., & Bhatt, R. M. (1997). Optimal L2 syllables. *Studies in Second Language Acquisition*, 19, 331–378.
- Hansen, J. (2001). Linguistic constraints on the acquisition of English syllable codas by native speakers of Mandarin Chinese. *Applied Linguistics*, 22, 338–365.
- Harding, E. (2000). *Spelling errors in non-native speakers*. Unpublished departmental M.A.

- thesis, Department of Linguistics, Ohio University. (Contact lingdept@ohio.edu for availability).
- Harkins, J., & Wierzbicka, A. (Eds.) (2001). *Emotions in crosslinguistic perspective*. Berlin: De Gruyter.
- Harley, B. (1986). *Age in second language acquisition*. Clevedon, UK: Multilingual Matters.
- Harley, B., & Hart, D. (1997). Language aptitude and second language proficiency in classroom learners of different starting ages. *Studies in Second Language Acquisition*, 19, 379–400.
- Harré, R. (Ed.) (1986). *The social construction of emotions*. Oxford, UK: Blackwell.
- Harrington, M. (1987). Processing transfer: Language-specific strategies as a source of interlanguage variation. *Applied Psycholinguistics*, 8, 351–378.
- Hasegawa, M., Carpenter, P., & Just, M. (2002). An fMRI study of bilingual sentence comprehension and workload. *Neuroimage*, 15, 647–660.
- Hassall, T. (2001). Do learners thank too much in Indonesian? *Australian Review of Applied Linguistics*, 24, 97–112.
- Hasselgren, A. (1994). Lexical teddy bears and advanced learners: A study into the ways Norwegian students cope with English vocabulary. *International Journal of Applied Linguistics*, 4, 237–260.
- Hatch, E., & Lazaraton, A. (1991). *The research manual: Design and statistics for applied linguistics*. Boston: Heinle & Heinle.
- Haugen, E. (1953). *The Norwegian language in America*. Philadelphia: University of Pennsylvania Press.
- Heelas, P. (1986). Emotion talk across cultures. In R. Harré (Ed.), *The social construction of emotions* (pp. 234–266). Oxford, UK: Blackwell.
- Heilenman, L., & McDonald, J. (1993). Processing strategies in L2 learners of French: The role of transfer. *Language Learning*, 43, 507–557.
- Heinz, B. (2003). Backchannel responses as strategic responses in bilingual speakers' conversations. *Journal of Pragmatics*, 35, 1113–1142.
- Hellinger, M., & Bussman, H. (2001). *Gender across languages: The linguistic representation of women and men* (Volume 1). Amsterdam: Benjamins.
- Hellinger, M., & Bussman, H. (2002). *Gender across languages: The linguistic representation of women and men* (Volume 2). Amsterdam: Benjamins.
- Hellinger, M., & Bussman, H. (2003). *Gender across languages: The linguistic representation of women and men* (Volume 3). Amsterdam: Benjamins.
- Helms-Park, R. (2001). Evidence of lexical transfer in learner syntax: The acquisition of English causatives by speakers of Hindi-Urdu and Vietnamese. *Studies in Second Language Acquisition*, 23, 71–102.
- Hendricks, H. (2003). Using nouns for reference maintenance: A seeming contradiction in L2 discourse. In A. G. Ramat (Ed.), *Typology and second language acquisition* (pp. 291–326). Berlin: De Gruyter.
- Herdina, P., & Jessner, U. (2002). *A dynamic model of multilingualism: Perspectives of change in psycholinguistics*. Clevedon, UK: Multilingual Matters.
- Hiki, M. (1991). *A study of learners' judgments of noun countability*. Unpublished doctoral dissertation, Indiana University.
- Hilles, S. (1991). Access to Universal Grammar in second language acquisition. In

- L. Eubank (Ed.), *Point, counterpoint: Universal Grammar in the second language* (pp. 305–338). Amsterdam: Benjamins.
- Hinkel, E. (1992). L2 tense and time reference. *TESOL Quarterly*, 26, 557–571.
- Hoffman, D. (1989). Language and culture acquisition among Iranians in the United States. *Anthropology and Education Quarterly*, 20, 118–132.
- Hoffman-Hicks, S. (1999). *A longitudinal study of L2 French pragmatic competence: Study abroad vs. FL classroom learners*. Unpublished doctoral dissertation, Indiana University.
- Hohenstein, J., Eisenberg, A., & Naigles, L. (2006). Is he floating across or crossing afloat? Cross-influence of L1 and L2 in Spanish-English bilingual adults. *Bilingualism: Language and Cognition*, 9, 249–261.
- Holmes, D. I. (1998). The evolution of stylometry in humanities scholarship. *Literary and Linguistic Computing*, 13, 111–117.
- Holmes, V., & Dejean de la Bâtie, B. (1999). Assignment of grammatical gender by native speakers and foreign learners of French. *Applied Psycholinguistics*, 20, 479–506.
- House, J. (1996). Developing pragmatic fluency in English as a foreign language: Routines and metapragmatic awareness. *Studies in Second Language Acquisition*, 17, 225–252.
- Hutz, M. (2004). Is there a natural process of decay? A longitudinal study of language attrition. In M. Schmid, B. Köpcke, M. Keijzer, & L. Weilemar (Eds.), *First language attrition: Interdisciplinary perspectives on methodological issues* (pp. 189–206). Amsterdam: Benjamins.
- Hyltenstam, K. (1984). The use of typological markedness conditions as predictors in second language acquisition: The case of pronominal copies in relative clauses. In R. Andersen (Ed.), *Second languages: A crosslinguistic perspective* (pp. 39–58). Rowley, MA: Newbury House.
- Ijaz, I. H. (1986). Linguistic and cognitive determinants of lexical acquisition in a second language. *Language Learning*, 36, 401–451.
- Imai, M. (2000). Universal ontological knowledge and a bias toward language-specific categories in the construal of individuation. In S. Niemeier & R. Dirven (Eds.), *Evidence for linguistic relativity* (pp. 139–160). Amsterdam: Benjamins.
- Imai, M., & Gentner, D. (1997). A crosslinguistic study of early word meaning: Universal ontology and linguistic influence. *Cognition*, 62, 169–200.
- Imai, M., & Mazuka, R. (2003). Reevaluating linguistic relativity: Language-specific categories and the role of universal ontological knowledge in the construal of individuation. In D. Gentner & S. Goldin-Meadow (Eds.), *Language in mind: Advances in the study of language and thought* (pp. 429–464). Cambridge, MA: MIT Press.
- Itakura, H. (2002). Gender and pragmatic transfer in topic development. *Language, Culture and Curriculum*, 15, 161–183.
- Jackendoff, R. (1990). *Semantic structures*. Cambridge, MA: MIT Press.
- Jakovovits, L. (1970). *Foreign language learning*. Rowley, MA: Newbury House.
- Janse, M. (2002). Aspects of bilingualism in the history of the Greek language. In J. Adams, M. Janse, & S. Swain (Eds.), *Bilingualism in ancient society: Language contact and the written text* (pp. 332–390). Oxford, UK: Oxford University Press.
- Jared, D., & Kroll, J. (2001). Do bilinguals activate phonological representations in one or both of their languages when naming words? *Journal of Memory and Language*, 44, 2–31.
- Jarvis, S. (1994). *L1 influence on interlanguage lexical reference*. Unpublished manuscript, Indiana University.

- Jarvis, S. (1997). *The role of L1-based concepts in L2 lexical reference*. Unpublished doctoral dissertation, Indiana University.
- Jarvis, S. (1998). *Conceptual transfer in the interlingual lexicon*. Bloomington, IN: Indiana University Linguistics Club Publications.
- Jarvis, S. (2000a). Methodological rigor in the study of transfer: Identifying L1 influence in the interlanguage lexicon. *Language Learning*, 50, 245–309.
- Jarvis, S. (2000b). Semantic and conceptual transfer. *Bilingualism: Language and Cognition*, 3, 19–21.
- Jarvis, S. (2002). Topic continuity in L2 English article use. *Studies in Second Language Acquisition*, 24, 387–418.
- Jarvis, S. (2003). Probing the effects of the L2 on the L1: A case study. In V. Cook (Ed.), *Effects of the second language on the first* (pp. 81–102). Clevedon, UK: Multilingual Matters.
- Jarvis, S., Castañeda-Jiménez, G., & Nielsen, R. (2004). *Investigating L1 lexical transfer through learners' wordprints*. Paper presented at the Second Language Research Forum (SLRF) 2004, October, State College, PA.
- Jarvis, S., & Odlin, T. (2000). Morphological type, spatial reference, and language transfer. *Studies in Second Language Acquisition*, 22, 535–556.
- Jarvis, S., & Pavlenko, A. (2000). *Conceptual restructuring in language learning: Is there an end state?* Paper presented at SLRF 2000, September, Madison, WI.
- Jaspaert, K., & Kroon, S. (1992). From the typewriter of A.L.: A case study in language loss. In W. Fase, K. Jaspaert, & S. Kroon (Eds.), *Maintenance and loss of minority languages* (pp. 137–147). Amsterdam: Benjamins.
- Javier, R., & Marcos, L. (1989). The role of stress on the language-independence and code-switching phenomena. *Journal of Psycholinguistic Research*, 18, 449–472.
- Jeon, K. S. (2004). *Interaction-driven learning: Characterizing linguistic development*. Unpublished doctoral dissertation, Georgetown University.
- Jespersen, O. (1922). *Language: Its nature, development, and origin*. New York: Holt.
- Jessner, U. (2006). *Linguistic awareness in multilinguals: English as a third language*. Edinburgh, UK: Edinburgh University Press.
- Jiang, N. (2000). Lexical representation and development in a second language. *Applied Linguistics*, 21, 47–77.
- Jiang, N. (2002). Form-meaning mapping in vocabulary acquisition in a second language. *Studies in Second Language Acquisition*, 24, 617–637.
- Jin, H. (1994). Topic-prominence and subject-prominence in L2 acquisition evidence of English-to-Chinese typological prominence. *Language Learning*, 44, 101–112.
- Johnstone, B. (2000). *Qualitative methods in sociolinguistics*. Oxford, UK: Oxford University Press.
- Jordens, P. (1977). Rules, grammatical intuitions and strategies in foreign language learning. *Interlanguage Studies Bulletin*, 2 (2), 5–76.
- Kaltenbacher, E. (1997). German speech rhythm in L2 acquisition. In J. Leather & A. James (Eds.), *New Sounds 97: Proceedings of the Third International Symposium on the Acquisition of Second-Language Speech* (pp. 158–166). Klagenfurt, Austria: University of Klagenfurt.
- Kaplan, R. (1966). Cultural thought patterns in inter-cultural education. *Language Learning*, 16, 1–20.

- Kaplan, R. (1972). *The anatomy of rhetoric: Prolegomena to a functional theory of rhetoric*. Philadelphia: Center for Curriculum Development.
- Karasik, V., Prohvatheva, O., Zubkova, I., & Grabarova, E. (2005). *Inaia mental'nost'* [A different mentality]. Moscow: Gnosis.
- Kasper, G. (1992). Pragmatic transfer. *Second Language Research*, 8, 203–231.
- Kasper, G. (1997). The role of pragmatics in language teacher education. In K. Bardovi-Harlig & B. S. Hartford (Eds.), *Beyond methods: Components of language teacher education* (pp. 113–136). New York: McGraw-Hill.
- Kasper, G., & Rose, K. R. (1999). Pragmatics and SLA. *Annual Review of Applied Linguistics*, 19, 81–104.
- Kasper, G., & Schmidt, R. (1996). Developmental issues in interlanguage pragmatics. *Studies in Second Language Acquisition*, 18, 149–169.
- Kecskes, I., & Cuenca, I. (2005). Lexical choice as reflection of conceptual fluency. *International Journal of Bilingualism*, 9, 49–67.
- Kecskes, I., & Papp, T. (2000). *Foreign language and mother tongue*. Mahwah, NJ: Erlbaum.
- Keidel, J., Zevin, J., Kluender, K., & Seidenberg, M. (2003). Modeling the role of native language knowledge in perceiving nonnative speech contrasts. In M. Sale, D. Recasens, & J. Romero (Eds.), *Proceedings of the 15th International Congress of Phonetic Sciences* (pp. 2221–2224). Barcelona, Spain: Causal Productions.
- Keil, F. (1989a). *Concepts, kinds, and cognitive development*. Cambridge, MA: MIT Press.
- Keil, F. (1989b). Spiders in the web of belief: The tangled relations between concepts and theories. *Mind and Language*, 4, 43–50.
- Keil, F. (1994). Explanation, association, and the acquisition of word meaning. In L. Gleitman & B. Landau (Eds.), *The acquisition of the lexicon* (pp. 169–196). Cambridge, MA: MIT Press.
- Kellerman, E. (1977). Towards a characterization of the strategy of transfer in second language learning. *Interlanguage Studies Bulletin*, 2, 58–145.
- Kellerman, E. (1978). Giving learners a break: Native language intuitions as a source of predictions about transferability. *Working Papers on Bilingualism*, 15, 59–92.
- Kellerman, E. (1983). Now you see it, now you don't. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (pp. 112–134). Rowley, MA: Newbury House.
- Kellerman, E. (1986). An eye for an eye: Crosslinguistic constraints on the development of the L2 lexicon. In E. Kellerman & M. Sharwood Smith (Eds.), *Crosslinguistic influence in second language acquisition* (pp. 35–48). New York: Pergamon.
- Kellerman, E. (1989). The imperfect conditional. In K. Hyltenstam and L. Obler (Eds.), *Bilingualism across the lifespan: Aspects of acquisition, maturity and loss* (pp. 87–115). Cambridge, UK: Cambridge University Press.
- Kellerman, E. (1995). Crosslinguistic influence: Transfer to nowhere? *Annual Review of Applied Linguistics*, 15, 125–150.
- Kellerman, E. (1999). A break with tradition. In S. Foster-Cohen & C. Perdue (Eds.), *Proceedings of the 8th EUROSLA Conference, Paris. Vol. 2. From word to structure* (pp. 7–36). Paris: British Institute of Paris.
- Kellerman, E. (2001). New uses for old language: Cross-linguistic and cross-gestural influence in the narratives of non-native speakers. In J. Cenoz, B. Hufeisen, & U. Jessner (Eds.), *Cross-linguistic influence in third language acquisition: Psycholinguistic perspectives* (pp. 170–191). Clevedon, UK: Multilingual Matters.

- Kellerman, E., & Sharwood Smith, M. (Eds.). (1986). *Crosslinguistic influence in second language acquisition*. Oxford, UK: Pergamon.
- Kellerman, E., & Van Hoof, A.-M. (2003). Manual accents. *IRAL*, 41, 251–269.
- Kellman, S. (2000). *The translingual imagination*. Lincoln, NE: University of Nebraska Press.
- Kempton, W. (1981). *The folk classification of ceramics: A study of cognitive prototypes*. New York: Academic Press.
- Keys, K. (2002). First language influence on the spoken English of Brazilian students of EFL. *ELT Journal*, 56, 41–46.
- Kilborn, K. (1989). Sentence processing in a second language: The timing of transfer. *Language and Speech*, 32, 1–23.
- Kinginger, C., & Farrell, K. (2004). Assessing development of meta-pragmatic awareness in study abroad. *Frontiers: The Interdisciplinary Journal of Study Abroad*, 10, 19–42.
- Kirkpatrick, A., & Zhichang, X. (2002). Chinese pragmatic norms and 'China English'. *World Englishes*, 21, 269–279.
- Kleinmann, H. (1977). Avoidance behavior in adult second language acquisition. *Language Learning*, 27, 93–107.
- Kobayashi, H. (1984). Rhetorical patterns in English and Japanese. *TESOL Quarterly*, 18, 737–738.
- Koda, K. (1990). The use of L1 reading strategies in L2 reading: Effects of L1 orthographic structures on L2 phonological recoding strategies. *Second Language Research*, 6, 174–180.
- Koda, K. (2005). Learning to read across writing systems: Transfer, metalinguistic awareness, and second-language reading development. In V. Cook & B. Bassetti (Eds.), *Second language writing systems* (pp. 311–334). Clevedon, UK: Multilingual Matters.
- Koike, D. A. (1996). Transfer of pragmatic competence and suggestions in Spanish. In S. Gass & J. Neu (Eds.), *Speech acts across cultures: Challenge to communication in a second language* (pp. 257–281). Berlin: De Gruyter.
- Konishi, T. (1993). The semantics of grammatical gender: A cross-cultural study. *Journal of Psycholinguistic Research*, 22, 519–534.
- Köpke, B. (1999). *L'attrition de la première langue chez le bilingue tardif: Implications pour l'étude psycholinguistique du bilinguisme*. Ph.D. dissertation. Université de Toulouse-Le Mirail.
- Köpke, B. (2002). Activation thresholds and non-pathological first language attrition. In F. Fabbro (Ed.), *Advances in the neurolinguistics of bilingualism* (pp. 119–142). Udine: Forum.
- Koreneva, E. (2003). *Idiotka* [She-idiot]. Moscow: Astrel.
- Kornacki, P. (2001). Concepts of anger in Chinese. In J. Harkins & A. Wierzbicka (Eds.), *Emotions in crosslinguistic perspective* (pp. 255–289). Berlin: Mouton De Gruyter.
- Krashen, S. (1981). *Second language acquisition and second language learning*. Oxford, UK: Pergamon.
- Krashen, S. (1982). *Principles and practice in second language acquisition*. Oxford, UK: Pergamon.
- Krashen, S. (1983). Newmark's "Ignorance Hypothesis" and current second language acquisition theory. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (pp. 135–153). Rowley, MA: Newbury House.

- Kroll, J., & De Groot, A. M. B. (1997). Lexical and conceptual memory in the bilingual: Mapping form to meaning in two languages. In A. M. B. De Groot & J. Kroll (Eds.), *Tutorials in bilingualism: Psycholinguistic perspectives* (pp. 169–199). Mahwah, NJ: Erlbaum.
- Kroll, J., & De Groot, A. M. B. (Eds.) (2005). *Handbook of bilingualism: Psycholinguistic approaches*. Oxford, UK: Oxford University Press.
- Kroll, J., & Dussias, P. (2004). The comprehension of words and sentences in two languages. In T. Bhatia & W. Ritchie (Eds.), *The handbook of bilingualism* (pp. 169–200). Oxford, UK: Blackwell.
- Kroll, J., & Stewart, E. (1994). Category interference in translation and picture naming: Evidence for asymmetric connections between bilingual memory representations. *Journal of Memory and Language*, 33, 149–174.
- Kroll, J., & Sunderman, G. (2003). Cognitive processes in second language learners and bilinguals: The development of lexical and conceptual representations. In C. Dougherty & M. Long (Eds.), *The handbook of second language acquisition* (pp. 104–129). Malden, MA: Blackwell.
- Kroll, J., & Tokowicz, N. (2005). Models of bilingual representation and processing: Looking back and to the future. In J. Kroll & A. M. B. De Groot (Eds.), *Handbook of bilingualism: Psycholinguistic approaches* (pp. 531–553). Oxford, UK: Oxford University Press.
- Kronenfeld, D. (1996). *Plastic glasses and church fathers: Semantic extensions from the ethnoscience tradition*. Oxford, UK: Oxford University Press.
- Kronenfeld, D., Armstrong, J., & Wilmoth, S. (1985). Exploring the internal structure of linguistic categories: An extensionist semantic view. In J. Dougherty (Ed.), *Directions in cognitive anthropology* (pp. 91–110). Champaign, IL: University of Illinois Press.
- Krzeszowski, T. (1990). Prototypes and equivalence. In J. Fisiak (Ed.), *Further insights into contrastive analysis* (pp. 29–46). Amsterdam: Benjamins.
- Kubota, R. (1992). Contrastive rhetoric of Japanese and English: A critical approach. *Dissertation Abstracts International*, 54, 1709A.
- Kubota, R. (1998). An investigation of L1–L2 transfer in writing among Japanese university students: Implications for contrastive rhetoric. *Journal of Second Language Writing*, 7, 69–100.
- Kubota, R., & Lehner, A. (2004). Toward critical contrastive rhetoric. *Journal of Second Language Writing*, 13, 7–27.
- Kung, S.-C. (2004). Synchronous electronic discussions in an EFL reading class. *ELT Journal*, 58, 164–173.
- La Heij, W., Mak, P., Sander, J., & Willeboordse, E. (1998). The gender-congruency effect in picture-word tasks. *Psychological Research*, 61, 209–219.
- Ladefoged, P. (2006). *A course in phonetics* (Fifth ed.). Boston: Thomson Wadsworth.
- Lado, R. (1957). *Linguistics across cultures*. Ann Arbor, MI: University of Michigan Press.
- Laeuffer, C. (1997). Towards a typology of bilingual phonological systems. In A. James & J. Leather (Eds.), *Second-language speech* (pp. 325–342). Berlin: De Gruyter.
- Lakoff, G. (1987). *Women, fire, and dangerous things. What categories reveal about the mind*. Chicago: University of Chicago Press.
- Lantolf, J. (2005). *The importance of concepts for advanced proficiency*. Presentation at the

- CALPER Symposium on Perspectives on Advanced Language Proficiency, July. (Available at <http://calper.la.psu.edu/profdev.php?page=symposia>)
- Lantolf, J., & Thorne, S. (2006). *Sociocultural theory and the genesis of second language development*. Oxford, UK: Oxford University Press.
- Larsen-Freeman, D., & Long, M. (1991). *Introduction to second language acquisition research*. London: Longman.
- Latomaa, S. (1998). English in contact with "the most difficult language in the world": The linguistic situation of Americans living in Finland. *International Journal of the Sociology of Language*, 133, 51–71.
- Laufer, B. (2003). The influence of L2 on L1 collocational knowledge and on L1 lexical diversity in free written expression. In V. Cook (Ed.), *Effects of the second language on the first* (pp. 19–31). Clevedon, UK: Multilingual Matters.
- Laufer, B., & Eliasson, S. (1993). What causes avoidance in L2 learning: L1–L2 differences, L1–L2 similarity, or L2 complexity? *Studies in Second Language Acquisition*, 15, 35–48.
- Lazaraton, A. (2000). Current trends in research methodology and statistics in applied linguistics. *TESOL Quarterly*, 34, 175–181.
- Leather, J. (1987). F pattern inference in the perceptual acquisition of second-language tone. In A. James & J. Leather (Eds.), *Sound patterns in second language acquisition* (pp. 59–80). Dordrecht, The Netherlands: Foris.
- Leather, J. (1997). Interrelation of perceptual and productive learning in the initial acquisition of second-language tone. In A. James & J. Leather (Eds.), *Second-language speech: Structure and process* (pp. 75–101). Berlin: De Gruyter.
- Leather, J. (1999). Second-language speech research: An introduction. *Language Learning*, 49, Supplement 1, 1–56.
- Leather, J. (2003). Phonological acquisition in multilingualism. In M. del Pilar García Mayo & M. L. García Lecumberri (Eds.), *Age and the acquisition of English as a foreign language* (pp. 23–58). Clevedon, UK: Multilingual Matters.
- Leather, J., & James, A. (1996). Second language speech. In W. Ritchie & T. Bhatia (Eds.), *Handbook of second language acquisition* (pp. 269–316). New York: Academic Press.
- Lecours, A., & Joannette, Y. (1980). Linguistic and other aspects of paroxysmal aphasia. *Brain and Language*, 10, 1–23.
- Lee, J. S. (2000). Analysis of pragmatic speech styles among Korean learners of English: A focus on complaint-apology speech act sequences. *Dissertation Abstracts International*, 61, 535A.
- Lee, M. Y. P. (2003). Discourse structure and rhetoric of English narratives: Differences between native English and Chinese non-native English writers. *Text*, 23, 347–368.
- Levelt, W. (1989). *Speaking: From intention to articulation*. Cambridge, MA: MIT Press.
- Levenston, E. A., & Blum, S. (1977). Aspects of lexical simplification in the speech and writing of advanced adult learners. In E. Roulet (Ed.), *Actes du cinquième colloque de linguistique appliquée de Neuchâtel* (pp. 51–71). Geneva, Switzerland: Droz.
- Levinson, S. (1996). Language and space. *Annual Review of Anthropology*, 25, 353–382.
- Levinson, S. (1997). From outer to inner space: Linguistic categories and non-linguistic thinking. In J. Nuyts & E. Pederson (Eds.), *Language and conceptualization* (pp. 13–45). Cambridge, UK: Cambridge University Press.
- Levinson, S. (2003a). *Space in language and cognition: Explorations in cognitive diversity*. Cambridge, UK: Cambridge University Press.

- Levinson, S. (2003b). Language and mind: Let's get the issues straight! In D. Gentner & S. Goldin-Meadow (Eds.), *Language in mind: Advances in the study of language and thought* (pp. 25–46). Cambridge, MA: MIT Press.
- Levinson, S., Kita, S., Haun, D., & Rasch, B. (2002). Returning the tables: Language affects spatial reasoning. *Cognition*, 84, 155–188.
- Levis, J. M. (1999). Intonation in theory and practice, revisited. *TESOL Quarterly*, 33, 37–63.
- Li, P., & Farkas, I. (2002). A self-organizing connectionist model of bilingual processing. In R. Heredia & J. Altarriba (Eds.), *Bilingual sentence processing* (pp. 59–85). North-Holland, The Netherlands: Elsevier Science.
- Liceras, J. (1985). The role of intake in the determination of learners' competence. In S. Gass & C. Madden (Eds.), *Input in second language acquisition* (pp. 354–373). Rowley, MA: Newbury House.
- Linnarud, M. (1978). Cohesion and communication in the target language. *Interlanguage Studies Bulletin*, 3, 23–34.
- LoCastro, V. (1997). Pedagogical intervention and pragmatic competence development. *Applied Language Learning*, 8, 75–109.
- Lombardi, L. (2003). Second language data and constraints on manner: Explaining substitutions for the English interdental. *Second Language Research*, 19, 225–250.
- Long, M., & Sato, C. (1983). Classroom foreigner talk discourse: Forms and functions of teachers' questions. In H. Seliger & M. Long (Eds.), *Classroom oriented research in second language acquisition* (pp. 268–285). Rowley, MA: Newbury House.
- Lucy, J. (1992a). *Language diversity and thought. A reformulation of the linguistic relativity hypothesis*. Cambridge, UK: Cambridge University Press.
- Lucy, J. (1992b). *Grammatical categories and cognition. A case study of the linguistic relativity hypothesis*. Cambridge, UK: Cambridge University Press.
- Lucy, J. (1996). The scope of linguistic relativity: An analysis and review of empirical research. In J. Gumperz & S. Levinson (Eds.), *Rethinking linguistic relativity* (pp. 37–69). Cambridge, UK: Cambridge University Press.
- Lucy, J. (1997). Linguistic relativity. *Annual Review of Anthropology*, 26, 291–312.
- Lucy, J. (2000). Introductory comments. In S. Niemeier & R. Dirven (Eds.), *Evidence for linguistic relativity* (pp. ix–xxi). Amsterdam: Benjamins.
- Lucy, J., & Gaskins, S. (2001). Grammatical categories and the development of classification preferences: A comparative approach. In M. Bowerman & S. Levinson (Eds.), *Language acquisition and conceptual development* (pp. 257–283). Cambridge, UK: Cambridge University Press.
- Lucy, J., & Gaskins, S. (2003). Interaction of language type and referent type in the development of nonverbal classification preferences. In D. Gentner & S. Goldin-Meadow (Eds.), *Language in mind: Advances in the study of language and thought* (pp. 465–492). Cambridge, MA: MIT Press.
- Lucy, J., & Wertsch, J. (1987). Vygotsky and Whorf: A comparative analysis. In M. Hickmann (Ed.), *Social and functional approaches to language and thought* (pp. 67–86). New York: Academic Press.
- Lutz, C. (1988). *Unnatural emotions: Everyday sentiments on a Micronesian atoll and their challenge to Western theory*. Chicago: University of Chicago Press.
- Lutz, C., & White, G. (1986). The anthropology of emotions. *Annual Review of Anthropology*, 15, 405–436.

- Lux, P., & Grabe, W. (1991). Multivariate approaches to contrastive rhetoric. *Linguas Modernas*, 18, 133–160.
- MacKay, I., & Flege, J. E. (2004). Effects of the age of second language learning on the duration of first and second language sentences: The role of suppression. *Applied Psycholinguistics*, 25, 373–396.
- Mackey, A., & Gass, S. (2005). *Second language research: Methodology and design*. Mahwah, NJ: Erlbaum.
- MacWhinney, B. (1987). The Competition Model. In B. MacWhinney (Ed.), *Mechanisms of language acquisition* (pp. 249–308). Hillsdale, NJ: Erlbaum.
- MacWhinney, B. (1997). Second language acquisition and the Competition Model. In A. M. B. De Groot & J. Kroll (Eds.), *Tutorials in bilingualism: Psycholinguistic perspectives* (pp. 113–142). Mahwah, NJ: Erlbaum.
- MacWhinney, B. (2005). A unified model of language acquisition. In J. Kroll & A. De Groot (Eds.), *Handbook of bilingualism: Psycholinguistic approaches* (pp. 49–67). Oxford, UK: Oxford University Press.
- Maeshiba, N., Yoshinaga, N., Kasper, G., & Ross, S. (1996). Transfer and proficiency in interlanguage apologizing. In S. Gass & J. Neu (Eds.), *Speech acts across cultures: Challenge to communication in a second language* (pp. 155–187). Berlin: De Gruyter.
- Majid, A., Bowerman, M., Kita, S., Haun, D., & Levinson, S. (2004). Can language restructure cognition? *Trends in Cognitive Sciences*, 8, 108–114.
- Major, R. (1992). Losing English as a first language. *The Modern Language Journal*, 76, 190–208.
- Major, R. (1993). Sociolinguistic factors in loss and acquisition of phonology. In K. Hyltenstam & A. Viberg (Eds.), *Progression and regression in language: Sociocultural, neuropsychological and linguistic perspectives* (pp. 463–478). Cambridge, UK: Cambridge University Press.
- Malotki, E. (1983). *Hopi time. A linguistic analysis of the temporal concepts in the Hopi language*. Berlin: De Gruyter.
- Malt, B. (1993). Concept structure and category boundaries. In G. Nakamura, D. Medin, & R. Taraban (Eds.), *Categorization by humans and machines* (pp. 363–390). New York: Academic Press.
- Malt, B., & Sloman, S. (2003). Linguistic diversity and object naming by non-native speakers of English. *Bilingualism: Language and Cognition*, 6, 47–67.
- Malt, B., Sloman, S., & Gennari, S. (2003). Universality and language specificity in object naming. *Journal of Memory and Language*, 29, 20–42.
- Malt, B., Sloman, S., Gennari, S., Shi, M., & Wang, Y. (1999). Knowing versus naming: Similarity and the linguistic categorization of artifacts. *Journal of Memory and Language*, 40, 230–262.
- Marian, V., & Kaushanskaya, M. (2004). Self-construal and emotion in bicultural bilinguals. *Journal of Memory and Language*, 51, 190–201.
- Markman, A. (1999). *Knowledge representation*. Mahwah, NJ: Erlbaum.
- Markus, H., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98, 224–253.
- Markus, H., & Kitayama, S. (1994). The cultural construction of self and emotion: Implications for social behavior. In S. Kitayama & H. Markus (Eds.), *Emotion and*

- culture: *Empirical studies of mutual influence* (pp. 89–130). Washington, D.C.: American Psychological Association.
- Martohardjono, G., & Flynn, S. (1995). Language transfer: What do we really mean? In L. Eubank, L. Selinker, & M. Sharwood Smith (Eds.), *The current state of interlanguage: Studies in honor of William E. Rutherford* (pp. 205–218). Amsterdam: Benjamins.
- Masny, D., & d'Anglejan, A. (1985). Language, cognition, and second language grammaticality judgments. *Journal of Psycholinguistic Research*, 14, 175–197.
- Master, P. (1987). *A cross-linguistic interlanguage analysis of the acquisition of the English article system*. Unpublished doctoral dissertation, University of California, Los Angeles.
- Master, P. (1997). The English article system: Acquisition, function, and pedagogy. *System*, 25, 215–232.
- Matthews, J., & Brown, C. (2004). When intake exceeds input: Language specific perceptual illusions induced by L1 prosodic contrasts. *International Journal of Bilingualism*, 8, 5–27.
- McCafferty, S. (2002). Gesture and creating zones of proximal development for second language learning. *The Modern Language Journal*, 86, 192–203.
- McCafferty, S. (2004). Space for cognition: Gesture and second language learning. *International Journal of Applied Linguistics*, 14, 148–165.
- McCafferty, S. & Stam, G. (Eds.) (in press). *Gestures and second language acquisition*. Mahwah, NJ: Erlbaum.
- McClure, E., Mir, M., & Cadierno, T. (1993). What do you include in a narrative? A comparison of the written narratives of Mexican and American fourth and ninth graders. *Pragmatics and Language Learning*, 4, 209–224.
- McMahill, C. (2001). Self-expression, gender, and community: A Japanese feminist English class. In A. Pavlenko, A. Blackledge, I. Piller, & M. Teutsch-Dwyer (Eds.), *Multilingualism, second language learning, and gender* (pp. 307–344). Berlin: De Gruyter.
- Meara, P. (1999). Simulating recovery from bilingual aphasia. *International Journal of Bilingualism*, 3, 45–54.
- Meara, P. (2004). Modelling vocabulary loss. *Applied Linguistics*, 25, 137–155.
- Meara, P., Jacobs, G., & Rodgers, C. (2002). Lexical signatures in foreign language free-form texts. *ITL: Review of Applied Linguistics*, 135–136, 85–96.
- Meisel, J. (1980). Linguistic simplification. In S. Felix (Ed.), *Second language development: Trends and issues* (pp. 13–40). Tübingen, Germany: Gunter Narr.
- Meisel, J. (1983). Strategies of second language acquisition: More than one kind of simplification. In R. Andersen (Ed.), *Pidginization and creolization as language acquisition* (pp. 120–157). Rowley, MA: Newbury House.
- Mencken, H. L. (1937). *The American language: An inquiry into the development of English in the United States* (fourth edition, revised and enlarged). New York: Knopf.
- Mennen, I. (2004). Bi-directional interference in the intonation of Dutch speakers of Greek. *Journal of Phonetics*, 32, 543–563.
- Miozzo, M., & Caramazza, A. (1997). The retrieval of lexical-syntactic features in tip-of-the-tongue states. *Journal of Experimental Psychology, Learning, Memory, Cognition*, 23, 1410–1423.
- Montaño-Harmon, M. (1991). Discourse features of written Mexican Spanish: Current research in contrastive rhetoric and its implications. *Hispania*, 74, 417–425.
- Montrul, S. A. (1999). Activating AgrIOP in second language acquisition. In E. C. Klein &

- G. Martohardjono (Eds.), *The development of second language grammars: A generative approach* (pp. 81–107). Amsterdam: Benjamins.
- Morford, J. (1997). Social indexicality in French pronominal address. *Journal of Linguistic Anthropology*, 7, 3–37.
- Mori, K. (1997). *Polite lies. On being a woman caught between cultures*. New York: Holt.
- Mühlhäusler, P., & Harré, R. (1990). *Pronouns and people: The linguistic construction of social and personal identity*. Oxford, UK: Blackwell.
- Muljani, D., Koda, K., & Moates, D. (1998). The development of word recognition in a second language. *Applied Psycholinguistics*, 19, 99–113.
- Müller, M. (1861). *Lectures on the science of language*. New Delhi: Munshi Ram Manohar Lal.
- Munro, M., Derwing, T., & Burgess, C. (2003). The detection of foreign accent in backwards speech. In *Proceedings of the 15th International Congress of Phonetic Sciences* (pp. 535–538). Dept. Filologia Anglesa, Lletres, UAB, Bellaterra, Spain.
- Muravyova, L. (1986). *Verbs of motion in Russian*. Moscow: Russky Yazyk Publishers.
- Murphy, G. (2002). *The big book of concepts*. Cambridge, MA: MIT Press.
- Murphy, G., & Medin, D. (1985). The role of theories in conceptual coherence. *Psychological Review*, 92, 289–316.
- Muter, V., & Diethelm, K. (2001). The contribution of phonological skills and letter knowledge to early reading development in a multilingual population. *Language Learning*, 51, 187–219.
- Myers-Scotton, C. (2002). *Contact linguistics: Bilingual encounters and grammatical outcomes*. Oxford, UK: Oxford University Press.
- Myers-Scotton, C. (2005). Supporting a differential access hypothesis: Code-switching and other contact data. In J. Kroll & A. De Groot (Eds.), *Handbook of bilingualism: Psycholinguistic approaches* (pp. 326–348). Oxford, UK: Oxford University Press.
- Myhill, J. (1997). What is universal and what is language-specific in emotion words? Evidence from Biblical Hebrew. *Pragmatics and Cognition*, 5, 79–129.
- Naigles, L., Eisenberg, A., Kako, E., Hightner, M. & McGraw, N. (1998). Speaking of motion: Verb use in English and Spanish. *Language and Cognitive Processes*, 13, 521–549.
- Nakada, T., Fujii, Y., & Kwee, I. (2001). Brain strategies for reading in the second language are determined by the first language. *Neuroscience Research*, 40, 351–358.
- Nassaji, H., & Geva, E. (1999). The contribution of phonological and orthographic skills to adult ESL reading: Evidence from native speakers of Farsi. *Applied Psycholinguistics*, 20, 241–267.
- Nation, I. S. P. (1990). *Teaching and learning vocabulary*. New York: Newbury House.
- Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge, UK: Cambridge University Press.
- Negueruela, E., Lantolf, J., Rehn Jordan, S., & Gelabert, J. (2004). The “private function” of gesture in second language speaking activity: A study of motion verbs and gesturing in English and Spanish. *International Journal of Applied Linguistics*, 14, 113–147.
- Newmark, L. (1966). How not to interfere with language learning. Language learning: The individual and the process. *International Journal of American Linguistics*, 40, 77–83.
- Newmark, L., & Reibel, D. A. (1968). Necessity and sufficiency in language learning. *IRAL*, 6, 145–164.

- Niemeier, S., & Dirven, R. (Eds.). (2000). *Evidence for linguistic relativity*. Amsterdam: Benjamins.
- Niemi, J., Odlin, T., & Heikkinen, J. (Eds.) (1998). *Language contact, variation, and change*. Joensuu, Finland: Faculty of Humanities, University of Joensuu.
- Norris, J. M., & Ortega, L. (2000). Effectiveness of L2 instruction: A research synthesis and quantitative meta-analysis. *Language Learning*, 50, 417–528.
- Nuyts, J., & Pederson, E. (Eds.) (1997). *Language and conceptualization*. Cambridge, UK: Cambridge University Press.
- Odlin, T. (1989). *Language transfer: Cross-linguistic influence in language learning*. Cambridge, UK: Cambridge University Press.
- Odlin, T. (1990). Word order transfer, metalinguistic awareness, and constraints on foreign language learning. In B. VanPatten and J. F. Lee (Eds.), *Second language acquisition/foreign language learning* (pp. 95–117). Clevedon, UK: Multilingual Matters.
- Odlin, T. (1996). On the recognition of transfer errors. *Language Awareness*, 5, 166–178.
- Odlin, T. (2002). Language transfer and cross-linguistic studies: Relativism, universalism, and the native language. In R. Kaplan (Ed.), *The Oxford handbook of applied linguistics* (pp. 253–261). Oxford, UK: Oxford University Press.
- Odlin, T. (2003). Crosslinguistic influence. In C. Doughty & M. Long (Eds.), *The handbook of second language acquisition* (pp. 436–486). Oxford, UK: Blackwell.
- Odlin, T. (2005). Cross-linguistic influence and conceptual transfer: What are the concepts? *Annual Review of Applied Linguistics*, 25, 3–25.
- Odlin, T. (2006). Could a contrastive analysis ever be complete? In J. Arabski (Ed.), *Cross-linguistic influences in the second language lexicon* (pp. 22–35). Clevedon, UK: Multilingual Matters.
- Odlin, T., & Jarvis, S. (2004). Same source, different outcomes: A study of Swedish influence on the acquisition of English in Finland. *International Journal of Multilingualism*, 1, 123–140.
- Okada, T. (2005). A corpus-based study of spelling errors of Japanese EFL writers with reference to errors occurring in word-initial and word-final positions. In V. Cook & B. Bassetti (Eds.), *Second language writing systems* (pp. 164–183). Clevedon, UK: Multilingual Matters.
- Olshtain, E. (1983). Sociocultural competence and language transfer: The case of apology. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (pp. 232–249). Rowley, MA: Newbury House.
- Olshtain, E., & Barzilay, M. (1991). Lexical retrieval difficulties in adult language attrition. In H. Seliger & R. Vago (Eds.), *First language attrition* (pp. 139–150). Cambridge, UK: Cambridge University Press.
- Olshtain, E., & Blum-Kulka, S. (1985). Degree of approximation: Nonnative reactions to native speech act behavior. In S. Gass & C. Madden (Eds.), *Input in second language acquisition* (pp. 303–325). Rowley, MA: Newbury House.
- Omar, A. S. (1991). How learners greet in Kiswahili. In L. Bouton & Y. Kachru (Eds.), *Pragmatics and language learning* (Vol. 2, pp. 59–73). Urbana-Champaign: University of Illinois, Division of English as an International Language.
- Omar, A. S. (1992). *Opening and closing conversations in Kiswahili: A study of the performance of native speakers and learners*. Unpublished doctoral dissertation, Indiana University.

- Osgood, C. E. (1953). *Method and theory in experimental psychology*. Oxford, UK: Oxford University Press.
- Osipova, M. (2004). *Parallel'nye kommunikativnye innovatsii v russkom iazyke diaspory i metropolii* [Parallel communicative innovations in the Russian language of diaspora and metropolis]. In A. Mustajoki & E. Protassova (Eds.), *Russkoiazychnyi chelovek v inoiazychnom okruzenii* [Russians in diaspora] (pp. 161–168). Helsinki, Finland: Slavica Helsingiensia.
- Otheguy, R., & Garcia, O. (1988). Diffusion of lexical innovations in the Spanish of Cuban Americans. In J. Ornstein-Galicia, G. Green, & D. Bixler-Marquez (Eds.), *Research issues and problems in United States Spanish: Latin American and Southwestern varieties* (pp. 203–242). Pan American University at Brownsville.
- Otheguy, R., & Garcia, O. (1993). Convergent conceptualizations as predictors of degree of contact in U.S. Spanish. In A. Roca & J. Lipski (Eds.), *Spanish in the US: Linguistic contact and diversity* (pp. 135–154). Berlin: De Gruyter.
- Panayiotou, A. (2004a). Bilingual emotions: The untranslatable self. *Estudios de Sociolingüística*, 5, 1–19.
- Panayiotou, A. (2004b). Switching codes, switching code: Bilinguals' emotional responses in English and Greek. *Journal of Multilingual and Multicultural Development*, 25, 124–139.
- Panayiotou, A. (2006). Translating guilt: An endeavor of shame in the Mediterranean? In A. Pavlenko (Ed.), *Bilingual minds: Emotional experience, expression, and representation* (pp. 183–208). Clevedon, UK: Multilingual Matters.
- Paradis, M. (1985). On the representation of two languages in the brain. *Language Sciences*, 7, 1–39.
- Paradis, M. (1993). Linguistic, psycholinguistic, and neurolinguistic aspects of 'interference' in bilingual speakers: The Activation Threshold Hypothesis. *International Journal of Psycholinguistics*, 9, 133–145.
- Paradis, M. (1994). Neurolinguistic aspects of implicit and explicit memory: Implications for bilingualism and SLA. In N. Ellis (Ed.), *Implicit and explicit learning of languages* (pp. 393–419). San Diego, CA: Academic Press.
- Paradis, M. (1997a). The cognitive neuropsychology of bilingualism. In A. M. B. De Groot & J. Kroll (Eds.), *Tutorials in bilingualism. Psycholinguistic perspectives* (pp. 331–354). Mahwah, NJ: Erlbaum.
- Paradis, M. (1997b). Représentation lexicale et conceptuelle chez les bilingues: deux langues, trois systèmes. In J. Auger & Y. Rose (Eds.), *Explorations du lexique* (pp. 15–27). Québec: CIRAL.
- Paradis, M. (2000). Cerebral representations of bilingual concepts. *Bilingualism: Language and Cognition*, 3, 22–24.
- Paradis, M. (2004). *A neurolinguistic theory of bilingualism*. Amsterdam: Benjamins.
- Paribakht, T. S. (2005). The influence of first language lexicalization on second language lexical inferencing: A study of Farsi-speaking learners of English as a foreign language. *Language Learning*, 55, 701–748.
- Pater, J. (2003). The perceptual acquisition of Thai phonology by English speakers: Task and stimulus effects. *Second Language Research*, 19, 209–223.
- Pavlenko, A. (1996). Bilingualism and cognition: Concepts in the mental lexicon. In A. Pavlenko & R. Salaberry (Eds.), *Cornell working papers in linguistics*, vol. 14. *Papers in*

- second language acquisition and bilingualism* (pp. 39–73). Ithaca, NY: Cornell Linguistics Circle.
- Pavlenko, A. (1997). *Bilingualism and cognition*. Unpublished doctoral dissertation, Cornell University.
- Pavlenko, A. (1999). New approaches to concepts in bilingual memory. *Bilingualism: Language and Cognition*, 2, 209–230.
- Pavlenko, A. (2000). L2 influence on L1 in late bilingualism. *Issues in Applied Linguistics*, 11, 175–205.
- Pavlenko, A. (2001). “How am I to become a woman in an American vein?”: Transformations of gender performance in second language learning. In A. Pavlenko, A. Blackledge, I. Piller, & M. Teutsch-Dwyer (Eds.), *Multilingualism, second language learning, and gender* (pp. 133–174). Berlin: De Gruyter.
- Pavlenko, A. (2002a). Emotions and the body in Russian and English. *Pragmatics and Cognition*, 10, 201–236.
- Pavlenko, A. (2002b). Bilingualism and emotions. *Multilingua*, 21, 45–78.
- Pavlenko, A. (2002c). Conceptual change in bilingual memory: A neo-Whorfian approach. In F. Fabbro (Ed.), *Advances in the neurolinguistics of bilingualism* (pp. 69–94). Udine, Italy: Forum.
- Pavlenko, A. (2003a). Eyewitness memory in late bilinguals: Evidence for discursive relativity. *The International Journal of Bilingualism*, 7, 257–281.
- Pavlenko, A. (2003b). “I feel clumsy speaking Russian”: L2 influence on L1 in narratives of Russian L2 users of English. In V. Cook (Ed.), *Effects of the second language on the first* (pp. 32–61). Clevedon, UK: Multilingual Matters.
- Pavlenko, A. (2005a). Bilingualism and thought. In A. M. B. De Groot & J. Kroll (Eds.), *Handbook of bilingualism: Psycholinguistic approaches*. Oxford, UK: Oxford University Press.
- Pavlenko, A. (2005b). *Emotions and multilingualism*. Cambridge University Press.
- Pavlenko, A. (Ed.) (2006). *Bilingual minds: Emotional experience, expression, and representation*. Clevedon, UK: Multilingual Matters.
- Pavlenko, A., & Driagina, V. (2006). *Advanced-level narrative skills in Russian. A workbook for students and teachers*. (Available at www.calper.la.psu.edu)
- Pavlenko, A., & Driagina, V. (2007). Russian emotion vocabulary in American learners’ narratives. *Modern Language Journal*, 91, 213–234.
- Pavlenko, A., & Jarvis, S. (2001). Conceptual transfer: New perspectives on the study of cross-linguistic influence. *Cognition in language use. Selected papers from the 7th International Pragmatics Conference* (pp. 288–301). Antwerp: IPRA.
- Pavlenko, A., & Jarvis, S. (2002). Bidirectional transfer. *Applied Linguistics*, 23, 190–214.
- Pederson, E., Danziger, E., Wilkins, D., Levinson, S., Kita, S., & Senft, G. (1998). Semantic typology and spatial conceptualization. *Language*, 74, 557–589.
- Pellegrini, A. D., Galda, L., & Rubin, D. L. (1984). Context in text: The development of oral and written language in two genres. *Child Development*, 55, 1549–1555.
- Perdue, C. (Ed.) (1993). *Adult language acquisition: Cross-linguistic perspectives. Volume II. The results*. Cambridge, UK: Cambridge University Press.
- Pérez Firmat, G. (2003). *Tongue ties: Logo-eroticism in Anglo-Hispanic literature*. New York: Macmillan.
- Petrucelli, L. (2000). Listening for the Tao in eight tones. In K. Ogulnick (Ed.), *Language*

- crossings: Negotiating the self in a multicultural world* (pp. 159–165). New York: Teacher's College Press.
- Phinney, M. (1987). The pro-drop parameter in second language acquisition. In T. Roeper & E. Williams (Eds.), *Parameter setting* (pp. 221–238). Norwell, MA: Kluwer.
- Pisoni, D., Aslin, R., Perey, A., & Hennessy, B. (1982). Some effects of laboratory training on identification and discrimination of voicing contrasts in stop consonants. *Journal of Experimental Psychology: Human Perception and Performance*, 8, 297–314.
- Polunenko, A. (2004). *English past tense forms in Russian speakers' oral and written production*. Unpublished departmental M.A. thesis, Department of Linguistics, Ohio University. (Contact lingdept@ohio.edu for availability.)
- Porte, G. (2003). English from a distance: Code-mixing and blending in the L1 output of long-term resident overseas EFL teachers. In V. Cook (Ed.), *Effects of the second language on the first* (pp. 103–119). Clevedon, UK: Multilingual Matters.
- Potter, M., So, K.-F., Von Eckardt, B., & Feldman, L. (1984). Lexical and conceptual representation in beginning and more proficient bilinguals. *Journal of Verbal Learning and Verbal Behavior*, 23, 23–38.
- Poulisse, N. (1999). *Slips of the tongue: Speech errors in first and second language production*. Amsterdam: Benjamins.
- Prodeau, M. (2005). Gender and number in French L2: Can we find out more about the constraints on production in L2? In J.-M. Dewaele (Ed.), *Focus on French as a foreign language: Multidisciplinary approaches* (pp. 135–163). Clevedon, UK: Multilingual Matters.
- Protassova, E. (2004). *Fennorossy: Zhizn' i upotreblenie iazyka* [Finnorussians: Life and language use]. St. Petersburg, Russia: Zlatoust.
- Pütz, M., & Verspoor, M. (Eds.) (2000). *Explorations in linguistic relativity*. Amsterdam: Benjamins.
- Rahkonen, M., & Juurakko, T. (1998). Logit analysis in L2 research: Measuring L1 and L2/Ln effects. *International Journal of Applied Linguistics*, 8, 81–111.
- Raimes, A. (2003). *Language guide to transfer errors* [online]. Available: http://college.hmco.com/english/raimes/keys_writers/3e/instructors/esl/transfer.html (2/24/2003).
- Rakusan, J. (2001). The category of gender in grammar, in nature, and in metaphor. In E. Nemeth (Ed.), *Cognition in language use. Selected papers from the 7th International Pragmatics Conference* (pp. 350–360). Antwerp, Belgium: IPRA.
- Ravage, M. (1917). *An American in the making. The life story of an immigrant*. New York: Harper & Brothers.
- Rehner, K., Mougeon, R., & Nadasdi, T. (2003). The learning of sociolinguistic variation by advanced FSL learners: The case of *nous* versus *on* in immersion French. *Studies in Second Language Acquisition*, 25, 127–156.
- Reppen, R., & Grabe, W. (1993). Spanish transfer effects in the English writing of elementary school students. *Lenguas Modernas*, 20, 112–128.
- Richards, J. C. (1976). The role of vocabulary teaching. *TESOL Quarterly*, 10, 77–89.
- Richards, K. (2003). *Qualitative inquiry in TESOL*. New York: Palgrave Macmillan.
- Riney, T. J., Takada, M., & Ota, M. (2000). Segmentals and global foreign accent: The Japanese flap in EFL. *TESOL Quarterly*, 34, 711–738.
- Ringbom, H. (1978a). On learning related and unrelated languages. *Moderna Språk*, 72, 21–25.

- Ringbom, H. (1978b). The influence of the mother tongue on the translation of lexical items. *Interlanguage Studies Bulletin*, 3, 80–101.
- Ringbom, H. (1987). *The role of the first language in foreign language learning*. Clevedon, UK: Multilingual Matters.
- Ringbom, H. (1992). On L1 transfer in L2 comprehension and L2 production. *Language Learning*, 42, 85–112.
- Ringbom, H. (1993). At what point of time does transfer actually occur? In B. Ketteman & W. Wieden (Eds.), *Current issues in European second language acquisition research* (pp. 47–51). Tübingen, Germany: Gunter Narr.
- Ringbom, H. (1998). Vocabulary frequencies in advanced learner English: A crosslinguistic approach. In S. Granger (Ed.), *Learner English on computer* (pp. 41–52). London: Longman.
- Ringbom, H. (2001). Lexical transfer in L3 production. In J. Cenoz, B. Hufeisen, & U. Jessner (Eds.), *Cross-linguistic influence in third language acquisition: Psycholinguistic perspectives* (pp. 59–68). Clevedon, UK: Multilingual Matters.
- Ringbom, H. (2007). *The importance of cross-linguistic similarity in foreign language learning: Comprehension, learning and production*. Clevedon, UK: Multilingual Matters.
- Rintell, E. (1979). Getting your speech act together: The pragmatic ability of second language learners. *Working Papers on Bilingualism*, 17, 97–106.
- Robinson, M. A. (1992). Introspective methodology in interlanguage pragmatics research. In G. Kasper (Ed.), *Pragmatics of Japanese as a native and target language* (pp. 27–82). Honolulu: University of Hawaii Press.
- Roca, I., & Johnson, W. (1999). *A course in phonology*. Oxford, UK: Blackwell.
- Romaine, S. (1995). *Bilingualism* (second edition). Oxford, UK: Blackwell.
- Romaine, S. (1999). *Communicating gender*. Mahwah, NJ: Erlbaum.
- Rosaldo, M. (1980). *Knowledge and passion: Ilongot notions of self and social life*. Cambridge, UK: Cambridge University Press.
- Rosch, E. (1975). Cognitive representations of semantic categories. *Journal of Experimental Psychology: General*, 104, 192–233.
- Ross, M., Xun, W. Q. E., & Wilson, A. (2002). Language and the bicultural self. *Personality and Social Psychology Bulletin*, 28, 1040–1050.
- Rumelhart, D. (1980). Schemata: The building blocks of cognition. In R. Spiro, B. Bruce, & W. Brewer (Eds.), *Theoretical issues in reading comprehension: Perspectives from cognitive psychology, linguistics, artificial intelligence, and education* (pp. 33–58). Mahwah, NJ: Erlbaum.
- Ruspini, E. (2002). *Introduction to longitudinal research*. New York: Routledge.
- Russell, J. (1991). Culture and the categorization of emotions. *Psychological Bulletin*, 110, 426–450.
- Rutherford, W. (1983). Language typology and language transfer. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (pp. 358–370). Rowley, MA: Newbury House.
- Ryazanova-Clarke, L., & Wade, T. (1999). *The Russian language today*. London: Routledge.
- Sasaki, M., & Hirose, K. (1996). Explanatory variables for EFL students' expository writing. *Language Learning*, 46, 137–174.
- Sasaki, Y. (1991). English and Japanese interlanguage comprehension strategies: An analysis based on the Competition Model. *Applied Psycholinguistics*, 12, 47–73.

- Sasaki, Y. (1994). Paths of processing strategy transfers in learning Japanese and English as foreign languages. *Studies in Second Language Acquisition*, 16, 43–72.
- Sayehli, S. (2001). *Transfer and syntax? A study on the acquisition of German word order by Swedish native speakers*. Unpublished MA thesis, Lund University, Department of Linguistics.
- Scarcella, R. (1979). On speaking politely in a second language. In C. A. Yorio, K. Perkins, & J. Schachter (Eds.), *On TESOL '79* (pp. 275–287). Washington, DC: TESOL.
- Scarcella, R. (1983). Discourse accent in second language performance. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (pp. 306–326). Rowley, MA: Newbury House.
- Scarcella, R. (1992). Interethnic conversation and second language acquisition: Discourse accent revisited. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (pp. 109–137). Amsterdam: Benjamins.
- Schachter, J. (1974). An error in error analysis. *Language Learning*, 24, 205–214.
- Schachter, J., & Rutherford, W. (1979). Discourse function and language transfer. *Working Papers on Bilingualism*, 19, 3–12.
- Schmid, M. (2002). *First language attrition, use, and maintenance: The case of German Jews in anglophone countries*. Amsterdam: Benjamins.
- Schmid, M., Köpke, B., Keijzer, M., & Weilemar, L. (Eds.) (2004). *First language attrition: Interdisciplinary perspectives on methodological issues*. Amsterdam: Benjamins.
- Schmidt, R. (1977). Sociolinguistic variation and language transfer in phonology. *Working Papers on Bilingualism*, 12, 79–95.
- Schmidt-Atzert, L., & Park, H. (1999). The Korean concepts *dapdaphada* and *uulhada*: A cross-cultural study of the meaning of emotions. *Journal of Cross-Cultural Psychology*, 30, 646–654.
- Schrauf, R. (2000). Bilingual autobiographical memory: Experimental studies and clinical cases. *Culture and Psychology*, 6, 387–417.
- Schrauf, R. (2002). Comparing cultures within-subjects. *Anthropological Theory*, 2, 101–118.
- Schrauf, R., & Durazo-Arvizu, R. (2006). Bilingual autobiographical memory and emotion: Theory and methods. In A. Pavlenko (Ed.), *Bilingual minds: Emotional experience, expression, and representation*. Clevedon, UK: Multilingual Matters.
- Schrauf, R., Pavlenko, A., & Dewaele, J.-M. (2003). Bilingual episodic memory: An introduction. *International Journal of Bilingualism*, 7, 221–233.
- Schrauf, R., & Rubin, D. (2003). On the bilingual's two sets of memories. In R. Fivush & C. Haden (Eds.), *Autobiographical memory and the construction of a narrative self* (pp. 121–145). Mahwah, NJ: Erlbaum.
- Schrauf, R., & Rubin, D. (2004). The 'language' and 'feel' of bilingual memory: Mnemonic traces. *Estudios de Sociolingüística*, 5, 21–39.
- Schriefers, H., & Jescheniak, J. (1999). Representation and processing of grammatical gender in language production: A review. *Journal of Psycholinguistic Research*, 28, 575–600.
- Schumann, J. (1978). *The pidginization process: A model for second language acquisition*. Rowley, MA: Newbury House.
- Schumann, J. (1979). The acquisition of English negation by speakers of Spanish: A review of the literature. In R. Andersen (Ed.), *The acquisition and use of Spanish and English as first and second languages* (pp. 3–32). Washington, DC: TESOL.

- Schumann, J. (1986). Locative and directional expressions in basilectal speech. *Language Learning*, 36, 277–294.
- Schumann, J. (2001). Appraisal psychology, neurobiology, and language. *Annual Review of Applied Linguistics*, 21, 23–42.
- Schwartz, B., & Sprouse, R. (1994). Word order and nominative case in nonnative language acquisition: A longitudinal study of (L1 Turkish) German interlanguage. In T. Hoekstra & B. Schwartz (Eds.), *Language acquisition studies in generative grammar: Papers in honor of Kenneth Wexler from the 1991 GLOW Workshops* (pp. 317–368). Amsterdam: Benjamins.
- Schwartz, B., & Sprouse, R. (1996). L2 cognitive states and the full transfer/full access model. *Second Language Research*, 12, 40–72.
- Seeff-Gabriel, B. (2003). Phonological processing: A platform for assisting second-language learners with English spelling. *Child Language Teaching and Therapy*, 19, 291–310.
- Segalowitz, N., & Freed, B. (2004). Context, contact, and cognition in oral fluency acquisition: Learning Spanish in at home and study abroad contexts. *Studies in Second Language Acquisition*, 26, 173–199.
- Selinker, L. (1969). Language transfer. *General Linguistics*, 9, 67–92.
- Selinker, L. (1983). Language transfer. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (pp. 33–53). Rowley, MA: Newbury House.
- Selinker, L. (1992). *Rediscovering interlanguage*. London: Longman.
- Selinker, L., & Douglas, D. (1985). Wrestling with “context” in interlanguage theory. *Applied Linguistics*, 6, 190–204.
- Selinker, L., & Lakshamanan, U. (1992). Language transfer and fossilization: The Multiple Effects Principle. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (Revised ed., pp. 197–216). Amsterdam: Benjamins.
- Semin, G., Gorts, C., Nandram, S., & Semin-Goossens, A. (2002). Cultural perspectives on the linguistic representation of emotion and emotion events. *Cognition and Emotion*, 16, 11–28.
- Sera, M., Berge, C., & Del Pintado, J. (1994). Grammatical and conceptual forces in the attribution of gender by English and Spanish speakers. *Cognitive Development*, 9, 261–292.
- Shi, L. (2002). How Western-trained Chinese TESOL professionals publish in their home environment. *TESOL Quarterly*, 36, 625–634.
- Shimron, J., & Chernitsky, R. (1995). Typicality shift in semantic categories as a result of cultural transition: Evidence from Jewish Argentine immigrants to Israel. *Discourse Processes*, 19, 265–278.
- Shweder, R., & Bourne, E. (1984). Does the concept of the person vary cross-culturally? In R. Shweder & R. LeVine (Eds.), *Culture theory: Essays on mind, self, and emotion* (pp. 158–199). Cambridge, MA: Harvard University Press.
- Siegal, M. (1996). The role of learner subjectivity in second language sociolinguistic competency: Western women learning Japanese. *Applied Linguistics*, 17, 356–382.
- Siewierska, A. (2004). *Person*. Cambridge, UK: Cambridge University Press.
- Singler, D. (1996). Crosslinguistic lexical operations and the L2 mental lexicon. In T. Hickey & J. Williams (Eds.), *Language, education, and society in a changing world* (pp. 246–252). Clevedon, UK: Multilingual Matters.

- Singleton, D., & Little, D. (Eds.) (1984). *Language learning in formal and informal contexts*. Dublin, Ireland: IRAAL.
- Singleton, D., & Ryan, L. (2004). *Language acquisition: The age factor*. Clevedon, UK: Multilingual Matters.
- Sjöholm, K. (1976). A comparison of the test results in grammar and vocabulary between Finnish and Swedish-speaking applicants for English, 1974. In H. Ringbom & R. Palmberg (Eds.), *Errors made by Finns and Swedish-speaking Finns in the learning of English* (pp. 54–137). Åbo, Finland: Åbo Akademi, Publications of the Department of English.
- Sjöholm, K. (1995). *The influence of crosslinguistic, semantic, and input factors on the acquisition of English phrasal verbs: A comparison between Finnish and Swedish learners at an intermediate and advanced level*. Åbo, Finland: Åbo Akademi University Press.
- Skehan, P. (1989). *Individual differences in second-language acquisition*. London: Arnold.
- Slavoff, G., & Johnson, J. (1995). The effects of age on the rate of learning a second language. *Studies in Second Language Acquisition*, 17, 1–16.
- Slobin, D. (1993). Adult language acquisition: A view from child language study. In C. Perdue (Ed.), *Adult language acquisition: Cross-linguistic perspectives* (pp. 239–252). Cambridge, UK: Cambridge University Press.
- Slobin, D. (1996). From “thought and language” to “thinking for speaking”. In J. Gumperz & S. Levinson (Eds.), *Rethinking linguistic relativity* (pp. 70–96). Cambridge, UK: Cambridge University Press.
- Slobin, D. (2000). Verbalized events: A dynamic approach to linguistic relativity and determinism. In S. Niemeier & R. Dirven (Eds.), *Evidence for linguistic relativity* (pp. 107–138). Amsterdam: Benjamins.
- Slobin, D. (2001). Form-function relations: How do children find out what they are? In M. Bowerman & S. Levinson (Eds.), *Language acquisition and conceptual development* (pp. 406–449). Cambridge, UK: Cambridge University Press.
- Slobin, D. (2003). Language and thought online: Cognitive consequences of linguistic relativity. In D. Gentner & S. Goldin-Meadow (Eds.), *Language in mind: Advances in the study of language and thought* (pp. 157–191). Cambridge, MA: MIT Press.
- Slobin, D. (2004). The many ways to search for a frog: Linguistic typology and the expression of motion events. In S. Strömquist & L. Verhoeven (Eds.), *Relating events in narrative: Typological and contextual perspectives* (pp. 219–257). Mahwah, NJ: Erlbaum.
- Solan, L., & Tiersma, P. (2004). Author identification in American courts. *Applied Linguistics*, 25, 448–465.
- Solan, L., & Tiersma, P. (2005). *Speaking of crime: The language of criminal justice*. Chicago: University of Chicago Press.
- Stauble, A.-M. (1984). A comparison of a Spanish-English and a Japanese-English second language continuum: Negation and verb morphology. In R. Andersen (Ed.), *Second languages: A cross-linguistic perspective* (pp. 323–353). Rowley, MA: Newbury House.
- Stepanova Sachs, O., & Coley, J. (2006). Envy and jealousy in Russian and English: Labeling and conceptualization of emotions in monolinguals and bilinguals. In Pavlenko, A. (Ed.), *Bilingual minds: Emotional experience, expression, and representation* (pp. 209–231). Clevedon, UK: Multilingual Matters.
- Stockman, I. J., & Pluut, E. (1992). Segmental composition as a factor in the syllabification errors of second language speakers. *Language Learning*, 42, 21–45.

- Strömquist, S., & Verhoeven, L. (Eds.) (2004). *Relating events in narrative: Typological and contextual perspectives*. Mahwah, NJ: Erlbaum.
- Su, I. (2001). Transfer of sentence processing strategies: A comparison of L2 learners of Chinese and English. *Applied Psycholinguistics*, 22, 83–112.
- Swain, M., & Lapkin, S. (1990). Aspects of the sociolinguistic performance of early and late French immersion students. In R. Scarcella, E. Andersen, & S. Krashen (Eds.), *Developing communicative competence in a second language* (pp. 41–54). Boston: Heinle & Heinle.
- Swan, M., & Smith, B. (2001). *Learner English: A teacher's guide to interference and other problems* (second edition). Cambridge, UK: Cambridge University Press.
- Takahashi, S. (1996). Pragmatic transferability. *Studies in Second Language Acquisition*, 18, 189–223.
- Takahashi, T., & Beebe, L. (1987). The development of pragmatic competence by Japanese learners of English. *JALT Journal*, 8, 131–155.
- Takahashi, T., & Beebe, L. (1993). Cross-linguistic influence in the speech act of correction. In G. Kasper & S. Blum-Kulka (Eds.), *Interlanguage pragmatics* (pp. 138–157). Oxford, UK: Oxford University Press.
- Talamas, A., Kroll, J., & Dufour, R. (1999). From form to meaning: Stages in the acquisition of second language vocabulary. *Bilingualism: Language and Cognition*, 2, 45–58.
- Talmy, L. (1991). Path to realization: A typology of event conflation. *Proceedings of the Seventeenth Annual Meeting of the Berkeley Linguistics Society* (pp. 480–519).
- Tao, H., & Thompson, S. (1991). English backchannels in Mandarin conversations: A case study of superstratum pragmatic 'interference.' *Journal of Pragmatics*, 16, 209–223.
- Tarone, E. (1982). Systematicity and attention in interlanguage. *Language Learning*, 32, 69–82.
- Taylor, B. (1975). The use of overgeneralization and transfer learning strategies by elementary and intermediate students of ESL. *Language Learning*, 25, 73–107.
- Thatcher, B. L. (2000). L2 professional writing in a US and South American context. *Journal of Second Language Writing*, 9, 41–69.
- Thomas, M., & Van Heuven, W. (2005). Computational models of bilingual comprehension. In J. Kroll & A. De Groot (Eds.), *Handbook of bilingualism: Psycholinguistic approaches* (pp. 202–225). Oxford, UK: Oxford University Press.
- Thomason, S. (2001). *Language contact: An introduction*. Edinburgh, UK: Edinburgh University Press.
- Thomason, S., & Kaufman, T. (1988). *Language contact, creolization, and genetic linguistics*. Berkeley, CA: University of California Press.
- Toivanen, J. (2001). *Perspectives on intonation: English, Finnish, and English spoken by Finns*. Frankfurt, Germany: Lang.
- Towell, R., & Dewaele, J.-M. (2005). The role of psycholinguistic factors in the development of fluency amongst advanced learners of French. In J.-M. Dewaele (Ed.), *Focus on French as a foreign language: Multidisciplinary approaches* (pp. 210–239). Clevedon, UK: Multilingual Matters.
- Trafimow, D., Silverman, E., Fan, R. M.-T., & Law, J. (1997). The effects of language and priming on the relative accessibility of the private self and the collective self. *Journal of Cross-Cultural Psychology*, 28, 107–123.

- Treffers-Daller, J. (1999). Borrowing and shift-induced interference: Contrasting patterns in French-Germanic contact in Brussels and Strasbourg. *Bilingualism: Language and Cognition*, 2, 1–22.
- Treffers-Daller, J., & Mougeon, R. (Eds.) (2005). The role of transfer in language variation and change: Evidence from contact varieties of French. Special issue. *Bilingualism: Language and Cognition*, 8 (2).
- Truscott, J., & Sharwood Smith, M. (2004). Acquisition by processing: A modular perspective on language development. *Bilingualism: Language and Cognition*, 7, 1–20.
- Tyler, A. (1995). The coconstruction of cross-cultural miscommunication: Conflicts in perception, negotiation, and enactment of participant role and status. *Studies in Second Language Acquisition*, 17, 129–152.
- Ungerer, F., & Schmid, H.-J. (1996). *An introduction to cognitive linguistics*. London: Longman.
- Upton, T. A., & Lee-Thompson, L.-C. (2001). The role of the first language in second language reading. *Studies in Second Language Acquisition*, 23, 469–495.
- Vaid, J., & Hull, R. (2002). Re-envisioning the bilingual brain using functional neuroimaging: Methodological and interpretive issues. In F. Fabbro (Ed.), *Advances in the neurolinguistics of bilingualism* (pp. 315–355). Udine, Italy: Forum.
- Vainikka, A., & Young-Scholten, M. (1994). Direct access to X'-theory: Evidence from Korean and Turkish adults learning German. In T. Hoekstra & B. Schwartz (Eds.), *Language acquisition studies in generative grammar* (pp. 265–316). Amsterdam: Benjamins.
- Van Berkel, A. (2004). Learning to spell in English as a second language. *IRAL*, 42, 239–257.
- Van Berkum, J. (1997). Syntactic processes in speech production: The retrieval of grammatical gender. *Cognition*, 64, 115–152.
- Van Hell, J. (1998). *Cross-language processing and bilingual memory organization*. Unpublished doctoral dissertation, University of Amsterdam.
- Van Hell, J., & De Groot, A. (1998). Conceptual representation in bilingual memory: Effects of concreteness and cognate status in word association. *Bilingualism: Language and Cognition*, 1, 193–211.
- Van Hell, J., & Dijkstra, T. (2002). Foreign language knowledge can influence native language performance in exclusively native contexts. *Psychonomic Bulletin and Review*, 9, 780–789.
- Verhoeven, L., & Strömquist, S. (Eds.) (2001). *Narrative development in a multilingual context*. Amsterdam: Benjamins.
- Vermeulen, R., & Kellerman, E. (1999). Causation in narrative: The role of language background and proficiency in two episodes of 'the frog story'. In D. Albrechtsen, B. Henriksen, I. Mees, & E. Poulsen (Eds.), *Perspectives on foreign and second language pedagogy* (pp. 161–176). Odense, Denmark: Odense University Press.
- Verspoor, M., & Lowie, W. (2003). Making sense of polysemous words. *Language Learning*, 53, 547–596.
- Vigliocco, G., Antonini, T., & Garrett, M. F. (1997). Grammatical gender on the tip of Italian tongues. *Psychological Science*, 8, 314–317.
- Vildomec, V. (1963). *Multilingualism*. Leyden: Sythoff.
- Von Studnitz, R., & Green, D. (2002). Interlingual homograph interference in German-English bilinguals: Its modulation and locus of control. *Bilingualism: Language and Cognition*, 5, 1–23.

- Von Stutterheim, C. (2003). Linguistic structure and information organization: The case of very advanced learners. *EUROSLA Yearbook*, 3, 183–206.
- Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Vygotsky, L. (1986). *Thought and language*. Cambridge, MA: MIT Press.
- Waas, M. (1996). *Language attrition downunder. German speakers in Australia*. Frankfurt, Germany: Lang.
- Wade-Woolley, L. (1999). First language influences on second language word reading: All roads lead to Rome. *Language Learning*, 49, 447–471.
- Walters, J. (1979). The perception of deference in English and Spanish. In C. A. Yorio, K. Perkins, & J. Schachter (Eds.), *On TESOL '79* (pp. 288–296). Washington, D.C.: TESOL.
- Wang, M., Koda, K., & Perfetti, C. A. (2003). Alphabetic and nonalphabetic L1 effects in English word identification: A comparison of Korean and Chinese English L2 learners. *Cognition*, 87, 129–149.
- Wardhaugh, R. (1970). The contrastive analysis hypothesis. *TESOL Quarterly*, 4, 123–130.
- Weinert, S. (2004). The acquisition of vocabulary and cognitive development. *Sprache – Stimme – Gehör*, 28, 20–28.
- Weinreich, U. (1953). *Languages in contact*. The Hague: Mouton.
- Weist, R. (2002). Temporal and spatial concepts in child language: Conventional and configurational. *Journal of Psycholinguistic Research*, 31, 195–210.
- Wenzell, V. E. (1989). Transfer of aspect in the English oral narratives of native Russian speakers. In H. W. Dechert & M. Raupach (Eds.), *Transfer in language production* (pp. 71–97). Norwood, NJ: Ablex.
- White, L. (1985). The drop parameter in adult second language acquisition. *Language Learning*, 35, 47–62.
- White, L. (1987). Markedness and second language acquisition: The question of transfer. *Studies in Second Language Acquisition*, 9, 261–286.
- White, L. (1989). *Universal Grammar and second language acquisition*. Amsterdam: Benjamins.
- White, L. (2000). Second language acquisition: From initial to final state. In J. Archibald (Ed.), *Second language acquisition and linguistic theory* (pp. 130–155). Oxford, UK: Blackwell.
- White, L. (2003). On the nature of interlanguage representation: Universal Grammar in the second language. In C. Doughty & M. Long (Eds.), *Handbook of second language acquisition* (pp. 19–42). Oxford, UK: Blackwell.
- Whitman, R., & Jackson, K. (1972). The unpredictability of contrastive analysis. *Language Learning*, 22, 29–42.
- Whitney, W. (1881). On mixture in language. *Transactions of the American Philological Association*, 12, 5–26.
- Whorf, B. (1956). *Language, thought, and reality* (edited by J.B. Carroll). New York: Wiley.
- Wierzbicka, A. (1991). *Cross-cultural pragmatics. The semantics of human interaction*. Berlin: De Gruyter.
- Wierzbicka, A. (1992). *Semantics, culture, and cognition. Universal human concepts in culture-specific configurations*. Oxford, UK: Oxford University Press.
- Wierzbicka, A. (1994). Emotion, language, and cultural scripts. In S. Kitayama & H. Markus (Eds.), *Emotion and culture* (pp. 133–196). Washington, D.C.: American Psychological Association.

- Wierzbicka, A. (1998). "Sadness" and "anger" in Russian: The non-universality of the so-called "basic human emotions." In A. Athanasiadou and E. Tabakowska (Eds.), *Speaking of emotions: Conceptualisation and expression* (pp. 3–27). Berlin: De Gruyter.
- Wierzbicka, A. (1999). *Emotions across languages and cultures: Diversity and universals*. Cambridge/Paris: Cambridge University Press/Editions de la Maison des Sciences de l'Homme.
- Williams, L. (1979). The modification of speech perception and production in second-language learning. *Perception and Psychophysics*, 26, 95–104.
- Williams, L. (1980). Phonetic variation as a function of second-language learning. In G. Yeni-Komshian, J. Kavanagh, & C. Ferguson (Eds.), *Child phonology: Volume 2. Perception* (pp. 185–215). New York: Academic Press.
- Williams, S., & Hammarberg, B. (1998). Language switches in L3 production: Implications for a polyglot speaking model. *Applied Linguistics*, 19, 295–333.
- Winford, D. (2003). *An introduction to contact linguistics*. Oxford, UK: Blackwell.
- Wisniewski, E., Lamb, C., & Middleton, E. (2003). On the conceptual basis for the count and mass distinction. *Language and Cognitive Processes*, 18, 583–624.
- Wode, H. (1976). Developmental sequences in naturalistic second language acquisition. *Working Papers on Bilingualism*, 11, 1–13.
- Wode, H. (1977). On the systematicity of L1 transfer in L2 acquisition. *Proceedings from 1977 Second Language Research Forum (SLRF)* (pp. 160–169). Los Angeles: University of California, Department of Applied Linguistics.
- Wode, H. (1978). The L1 vs. L2 acquisition of English interrogation. *Working Papers on Bilingualism*, 15, 37–58.
- Xiao, M. (2004). *Comparative study of English and Japanese/Korean speakers' acquisition of null subjects and null objects in Chinese*. Unpublished departmental M.A. thesis, Department of Linguistics, Ohio University. (Contact lingdept@ohio.edu for availability.)
- Xie, T. (1992). Topic-controlled deletion in topic chains in Chinese: A comparison between native speakers and foreign language learners. *Journal of Chinese Language Teachers Association*, 27, 21–32.
- Yeni-Komshian, G., Flege, J. E., & Liu, S. (2000). Pronunciation proficiency in the first and second languages of Korean-English bilinguals. *Bilingualism: Language and Cognition*, 3, 131–149.
- Yip, V., & Matthews, S. (2000). Syntactic transfer in a Cantonese-English bilingual child. *Bilingualism: Language and Cognition*, 3, 193–208.
- Yip, V., & Tang, G. (1998). Acquisition of English reflexive binding by Cantonese learners: Testing the positive transfer hypothesis. In M.-L. Beck (Ed.), *Morphology and its interfaces in second language knowledge* (pp. 165–193). Amsterdam: Benjamins.
- Yoon, K. (1993). Challenging prototype descriptions: Perception of noun countability and indefinite vs. zero article use. *International Review of Applied Linguistics*, 31, 269–289.
- Yoshida, K. (1990). Knowing vs. behaving vs. feeling: Studies on Japanese bilinguals. In L. A. Arena (Ed.), *Language proficiency: Defining, teaching, and testing* (pp. 19–40). New York: Plenum.
- Young, R. (1991). *Variation in interlanguage morphology*. New York: Lang.
- Young, R. (1996). Form-function relations in articles in English interlanguage. In R. Bayley & D. Preston (Eds.), *Second language acquisition and linguistic variation* (pp. 135–175). Amsterdam: Benjamins.

- Young, R., & Bayley, R. (1996). VARBRUL analysis for language acquisition research. In R. Bayley & D. Preston (Eds.), *Second language acquisition and linguistic variation* (pp. 253–306). Amsterdam: Benjamins.
- Young-Scholten, M. (2004). Prosodic constraints on allophonic distribution in adult L2 acquisition. *International Journal of Bilingualism*, 8, 67–77.
- Yu, M.-C. (2004). Interlinguistic variation and similarity in second language speech act behavior. *The Modern Language Journal*, 88, 102–119.
- Yuan, B. (1997). Asymmetry of null subjects and null objects in Chinese speakers' L2 English. *Studies in Second Language Acquisition*, 19, 467–497.
- Yule, G. (1998). *Explaining English grammar*. Oxford, UK: Oxford University Press.
- Zobl, H. (1980). The formal and developmental selectivity of L1 influence on L2 acquisition. *Language Learning*, 30, 43–57.
- Zobl, H. (1982). A direction for contrastive analysis: The comparative study of developmental sequences. *TESOL Quarterly*, 16, 169–183.
- Zobl, H. (1983). L1 acquisition, age of L2 acquisition, and the learning of word order. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (pp. 205–221). Rowley, MA: Newbury House.
- Zobl, H. (1984). Cross-language generalizations and the contrastive dimension of the interlanguage hypothesis. In A. Davies, C. Cripe, & A. Howatt (Eds.), *Interlanguage* (pp. 79–97). Edinburgh, UK: Edinburgh University Press.
- Zobl, H. (1986). Word order typology, lexical government, and the prediction of multiple, graded effects in L2 word order. *Language Learning*, 36, 159–183.
- Zobl, H. (1992). Prior linguistic knowledge and the conservatism of the learning procedure: Grammaticality judgments of unilingual and multilingual learners. In S. Gass & L. Selinker (Eds.), *Language transfer in language learning* (Revised ed., pp. 176–196). Amsterdam: Benjamins.

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