Third or Additional Language Acquisition

Gessica De Angelis
Third or Additional Language Acquisition
SECOND LANGUAGE ACQUISITION
Series Editor: Professor David Singleton, Trinity College, Dublin, Ireland

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Chapter 1
The Multilingual Learner and Speaker

Introduction

Human beings are remarkable language learners who can easily learn and master several languages throughout their lives. Most of us have met people who can switch from one language to another within the same conversation, or children as young as four or five who can use one language with their mother, another with their father, and yet another with their kindergarten teacher. Multilingualism is, no doubt, a common achievement for many people around the world.

The increasing spread of multilingualism and the importance of language within society has led several scholars to investigate multilingual behaviour over the years, as evidenced by the strong tradition of work on sociolinguistic and educational aspects of multilingualism (Abu-Rabia, 1998; Baetens Beardsmore and Kohls, 1988; Bhatia, 2004; Bild and Swain, 1989; Brohy, 2001; Cenoz and Genesee, 1998; Cenoz et al., 2001; Clyne et al., 2004; Cummins, 2001; Dagenais and Day, 1998; Edwards, 1994; Jaspaert and Lemmens, 1990; Kramsch, 2006; Leman, 1990; Muñoz, 2000; Oksaar, 1983; Pandey, 1991). Research on the cognitive and psycholinguistic aspects of multilingualism has instead been much slower to appear. With the exception of a few early studies (Chamot, 1973; Chandrasekhar, 1978; Gulutsan, 1976; Haggis, 1973; Lococo, 1976; Tulving and Colotla, 1970; Vildomec, 1963), it is only in the 1980s that multilinguals’ processes begin to be examined closely and systematically, reaching the effect of raising a general awareness among scholars that multilinguals are learners and speakers of their own who should not be compared to L2 learners without some careful vigilance.

At present most studies on multilinguals’ acquisition and production processes can be found in academic journals, edited volumes, conference proceedings or unpublished M.A. or Ph.D. theses. This book intends to pull
these references together and provide a comprehensive and up-to-date overview of research conducted within the following core areas of inquiry: crosslinguistic influence, multilingual speech production, the multilingual lexicon, and the impact of bi/multilingualism on cognitive development and the language acquisition process.

Discussions in each chapter reflect the fundamental belief that research on multilingual behaviour can offer some valuable insights about the process of non-native language acquisition and speech production as a whole. On the one hand, it can no longer go unnoticed that a large part of the world’s population speaks several languages on a daily basis, and a focus on L2 speakers alone is clearly too restrictive for future progress. On the other, most of today’s language learners go on to learn languages beyond the second one, and L2 learner behaviour cannot adequately inform us about phenomena related to multilingualism. An increased understanding of multilinguals’ processes can therefore help us develop theories and frameworks that are comprehensive and generalizable to wide groups of individuals. Most importantly, since all humans are capable of learning and speaking more than two languages, they are all actual or potential multilingual learners and speakers at any given time in their lives. In fact, humans can be argued to be multilingual by default, with the option of being monolingual or bilingual depending on factors such as educational and social context, personal interest, individual motivation and so forth.

A first question rarely addressed about the multilingual mind relates to its capacity to retain and use linguistic information over time. We all know that individuals can learn a few foreign languages with ease, but we have hardly any knowledge of the possible number of languages that can be learned and maintained over short and long periods of time. The only information on the mind’s potential that we have amounts to occasional descriptive reports of polyglots who succeeded in acquiring and using an unusually large number of languages in their lives. For instance, Baker and Jones (1998) report on the achievements of three remarkable individuals. The first is a certain Harold Williams of New Zealand, who allegedly mastered 58 languages throughout his life. The second is Derick Herning of Lerwick, Scotland, who won the Polyglot of Europe Contest in 1990 thanks to his knowledge of 22 languages. The third is Alexander Schwartz, who worked for the United Nations from 1962 to 1986, translating from a total of 31 languages.

These are extraordinary language learners who are a world apart from the typical learner researchers encounter in their work. Nonetheless, their impressive achievements provide us with a measure of the mind’s potential to learn and maintain languages over time. From these three cases we can...
infer that the human mind is capable of handling an exceptionally large amount of linguistic information over long periods of time, which is a remarkable ability that theories and models of non-native language acquisition and speech production must necessarily be able to account for, regardless of how frequent or rare polyglots such as these may be in real life. While it is true that the average person will never learn thirty or fifty languages, it is the potential to learn and use language that concerns us the most here, as any model which aims to be comprehensive and generalizable must be able to describe how the mind works at its full potential, and not at its limited capacity.

Studies on multilingualism with specific reference to language acquisition and speech production are generally in short supply, but recent years has seen some positive changes in this regard. A noticeable growth of interest in these topics has emerged, as evidenced by the number of publications that have appeared in the literature within a fairly short period of time, particularly from the 1990s onwards. As is usually the case with any other emerging field of inquiry, there is a period of time in which the new field is conceived of as a mere extension of other well-established fields – in our specific case Second Language Acquisition (SLA) and Bilingualism. Any process of emergence inevitably sees opposing views fighting for space and clashing with one another, and the journey is rarely smooth. The study of multilinguals’ processes is no exception.

This chapter begins by exploring some of the issues that generally surround this process of emergence. The chapter is organized in four sections as follows. The first section introduces some basic differences between Second and Third or Additional Language Acquisition and overviews the ‘no-difference’ assumption that shapes so many of the SLA studies currently available. These initial remarks are followed in the second section by a description of some of the terminological issues in the field, and then in the third section by a discussion on the existence of a bilingual bias in multilingualism research. An outline of the book content concludes the chapter, with a brief introduction to the topics covered in each of the five chapters that follow.

From Second Language Acquisition to Third or Additional Language Acquisition

For several decades, language acquisition research has attempted to uncover the mechanisms underlying the language acquisition process, aiming to provide a comprehensive account of how humans learn their first and their non-native languages. While much progress has been made,
reviews of work conducted over the past fifty to sixty years (Cook, 2001; Gass and Selinker, 2001; Larsen-Freeman and Long, 1991; Mitchell and Myles, 1998) raise some concern with respect to the restricted focus that was applied. Most of the studies available focused on the acquisition of the first language or on the acquisition of the second language, while studies on the acquisition of languages beyond the L2 are rarely mentioned and are mostly missing. These reviews then tell us that most of what we know about language acquisition does not go beyond the L2, and this means that our understanding of how non-native languages are acquired is at best partial and incomplete.

Most scholars would agree that a general theory of non-native language acquisition cannot be based on L2 learner behaviour alone. A general theory must be able to explain how the mind operates when two, as well as more than two languages are involved, and must be based on the knowledge and understanding of how the mind acquires, treats, stores, organizes and uses all the linguistic information that is available to the learner, not just the information that belongs to the first or the second language.

If one were to state that learning a first language does not substantially differ from learning a second one, a chorus of objections would be raised in no time – and rightly so. Many arguments would be put forward, from the importance of learners’ age for acquisition, to learners’ different cognitive maturity, the presence or absence of prior knowledge in the mind and so forth. By contrast, stating, implying or assuming that the acquisition of a second language does not substantially differ from the acquisition of a third or additional language does not seem to cause much of a stir among scholars and goes frequently unchallenged. What are the reasons for this difference?

In reviewing the SLA literature it is clear that most researchers have been concerned with how second languages are acquired, and have not taken the time to place their findings and observations into the broader context of non-native language acquisition as a whole. Some may argue that this situation has arisen because a distinction between an L2 learner and an L3 or an L6 learner is in fact redundant, as the processes underlying the acquisition of all non-native languages is essentially the same. Others, on the other hand, may argue that prior knowledge and prior learning experience significantly affect the acquisition process and therefore that a distinction between types of acquisition is essential.

At present the onus of highlighting meaningful differences between the acquisition of a second language and the acquisition of third or additional languages rests upon those who actively work on multilingualism and language acquisition, who generally support the view that some differences between types of acquisition exist and should be accounted for. In contrast,
SLA scholars appear more willing to embrace a ‘no difference’ assumption in their work, and it is not uncommon to read statements to this effect. The ‘no-difference’ assumption probably finds its origin in the widespread tendency to overgeneralize the meaning of the word ‘second’ in the literature (see also discussion in Hufeisen, 2000). Most people understand SLA to be a field of research concerned with how second languages are acquired, and the term ‘second’ is usually taken to refer to a second language as well as to any other non-native language in the process of being acquired. From this broad interpretation of what a second language is, we can infer that a large number of scholars regard the process of acquiring a second language as sufficiently similar to that of acquiring additional languages, implicitly supporting the view that a distinction between types of acquisition is unnecessary. Moreover, the ‘no difference’ assumption is also openly stated in the literature. Singh and Carroll (1979: 51), for instance, explain that ‘there is, a priori, non reason to assume that L3 learning is any different from L2 learning. Learning a third language is [. . .] learning just another second language.’ More recently, Mitchell and Myles (1998: 2) wrote that the word ‘second’ is an umbrella term for them, arguing that ‘it is sensible to include “foreign” languages under one more general term of “second” languages, because [. . .] the underlying learning processes are essentially the same for more local and for more remote target languages, despite differing learning purposes and circumstances.’ These are two random quotes from the literature, but many more comments of this kind could be easily located. My primary objective, though, is not to list statements but to explore why scholars may take this position.

There are probably several reasons that concur in giving recognition to the ‘no difference’ assumption, including the two following. First, the general lack of research on multilinguals’ acquisition processes has made a systematic comparison between learners with and without prior knowledge of non-native languages difficult to carry out. Researchers do not have much information they can rely upon and, as a result, do not readily identify prior knowledge of non-native languages as a variable that can significantly affect and bias the results of their work. Insufficient evidence, on the other hand, also entails that scholars cannot easily engage in informed discussions on the similarities and differences between types of acquisition. Second, the field of SLA lacks a clear working distinction between those who are learning a second language and those who are learning third or additional languages. All learners are labelled as L2 learners – particularly when proficiency in the prior non-native language(s) is low – and it is usually up to the researcher to decide whether learners’ prior knowledge has the potential to bias the result of a study or not. Such freedom of choice, needless
to say, conflicts with the most basic principles of methodological rigour in language acquisition research.

While it may seem obvious to many that the prior knowledge of a non-native language is a variable that needs to be properly controlled, the reality is that the control for this specific variable is often poor, inadequate, if not lacking altogether. Learners’ linguistic background is usually monitored with care only in the case in which learners are highly proficient in a non-native language. When, however, learners have some basic knowledge of a non-native language, the additional knowledge is typically ignored or minimized, as the following example can illustrate.

In a study on learning strategies, Nayak et al. (1990) compared monolingual and multilingual students, who were assigned to the monolingual or the multilingual group according to a seven-point self-rating scale of language proficiency. Those included in the monolingual group were described as being ‘native speakers of English, with very minimal or no proficiency (ratings of 3 or below) in any other natural language’ (Nayak et al., 1990: 226). For Nayak and his colleagues, then, there is essentially no difference between having no knowledge, and having some knowledge of a non-native language. While one can argue against this position from various angles, on a broader level it is important to ask how one can decide who is a monolingual learner of an L2, and who is a bilingual learner of an L3. Are six months of instruction in a prior non-native language enough to be classified as an L3 learner? Are perhaps two or five years of instruction more suitable? Throughout the book it will become clear that we are not yet in the position to provide an answer to this question as there is hardly any evidence available on proficiency threshold levels in non-native language acquisition. Nonetheless, we will see that some studies have already shown that even as little as one or two years of formal instruction in a non-native language can affect the acquisition of another non-native language to a significant extent, hence some added caution with respect to subject selection procedures is indeed advisable.

Even though only time and further research will allow us to identify suitable proficiency threshold levels, in the absence of an agreed upon parameter we still have to question how most researchers have dealt with this decision so far. In reading the SLA literature, one is often under the impression that some of the second language learners used in research may have been exposed to some other non-native language in their lives. With this remark I do not intend to embark on isolating those studies which may have used multilingual learners rather than second language learners in the past, but rather to raise awareness about the possibility that third or additional language learners may have been used in place of L2 learners in
some occasions. The implication of this error is that some hypotheses about SLA may turn out to be incorrect or inaccurate as learners’ prior linguistic knowledge was not properly accounted for. The following two examples illustrate how frequently this situation can arise.

If we come across a study with adult Italian L1 learners of German as an L2, for instance, we can safely assume that these subjects are third or additional language learners and not L2 learners for the simple reason that the study of foreign languages, usually French or English, has been compulsory in Italian schools for several decades. Italian L1 speakers could be true L2 learners of German only in the case in which they had failed to complete compulsory education in Italy, or if they were illiterate. Similarly, if a study examines English L1 learners of French as an L2 at a Californian University, it is reasonable to wonder whether these subjects are true L2 learners, as a large number of students in California, and the United States in general, study Spanish in high school.

Scenarios of this kind are undoubtedly quite common in the SLA literature, mostly because the majority of subjects are adult university students or individuals raised in bilingual or multilingual environments. But does having some knowledge of a prior non-native language truly make a difference?

Common sense generally tells us that an individual who has gone through the experience of learning one or more non-native languages has already gained much knowledge and experience that is likely to be put to use in later learning. The transfer of prior linguistic knowledge and prior learning experience is a strong force in human cognition (Pennington, 1999; Wilson and Sperber, 2006), and when an individual engages in a cognitive task as demanding as language learning, it is reasonable to presume that prior linguistic knowledge and prior learning experience will play a role in the learning task. Since the distinction between the processes that underlie the acquisition of second or additional languages must be based on sound empirical evidence, the aim of the various chapters of this book is precisely to examine the evidence available in support of the two positions outlined (the difference versus no-difference assumption), placing special emphasis on the range of phenomena that are only possible when more than two languages are in the mind. While SLA research will clearly form a useful background for each discussion, the book will not specifically review the SLA literature as the objective is not to compare Second with Third or Additional Language Acquisition directly, but to examine the uniqueness of multilinguals’ processes with respect to the acquisition and production of languages beyond the L2.
Terminological (In)consistencies

The newness of a field goes hand in hand with a period of uncertainty about the most appropriate terminology to use. Whenever there is a need to express a new concept or describe a new phenomenon, the most frequent tendency is to borrow the terminology already used in well-established fields such as SLA or Bilingualism and adapt it to multilingualism. These borrowing strategies are usually helpful and effective, but they can also be problematic if a term starts to be used with more than one meaning. In order to avoid unnecessary overlaps, sometimes researchers resort to coining new terms altogether, but these terms are also influenced by existing ones and semantic clarity can sometimes be affected.

This section intends to illustrate the kind of terminological problems that scholars have dealt with in recent years, and are in actual fact still in the process of dealing with. Since it would be impossible to provide an exhaustive list of borrowed and newly coined terms used in the literature on multilingualism and the problems associated with each of them, the focus is purposely narrowed to four general concepts which can illustrate the type of inconsistency that have emerged. We can begin by considering the use of the terms ‘bilingual/bilingualism’ and ‘multilingual/multilingualism’ and the level of ambiguity that these terms can express.

Most people understand a multilingual person to be an individual familiar with three or more languages to some degree of fluency, and a bilingual an individual familiar with two languages, also to some degree of fluency. This is a clear and straightforward definition based on the number of languages an individual knows. In practice, when one reads definitions of bilingualism and multilingualism in the literature, it is clear that the number of languages the individual is familiar with is not central to the definition itself.

In the literature we find the terms ‘bilingual/bilingualism’ and ‘multilingual/multilingualism’ often used as synonyms, as the following examples can illustrate. The Concise Oxford Dictionary of Linguistics, for instance, describes bilingual communities as having ‘two or more different languages’ (Matthews, 1997: 39), a definition which effectively equates bilingualism with multilingualism. Myers-Scotton (2002) states that the term ‘bilingual refers to persons who speak two or more languages’ (Myers-Scotton, 2002: 1, italic in the original). As in the previous example, no dividing line between the bilingual and the multilingual individual seems to exist. Grosjean (1992: 51) also writes that ‘bilingualism is the regular use of two (or more) languages, and bilinguals are those people who need and use two (or more) languages in their everyday lives.’
In reading these definitions – and many more of this kind are available in the literature – we are under the impression that the word bilingual can refer to *anything* beyond the L1, when in actual fact the prefix ‘bi-’ means ‘two’ hence a bilingual can only be a speaker of two languages and not a speaker of *more* than two languages by definition (see also discussion in Cenoz et al., 2003; Herdina and Jessner, 2000). To complicate matters further, we also have to take into account the existence of the opposite phenomenon, i.e. the term multilingualism being used to refer to bilingualism. Hoffmann (2001) points out that, in the language context and the language planning literature, the term multilingualism is often used in place of bilingualism deliberately, as it reflects the distinction between a microlevel and a macrolevel of investigation. Multilingualism is preferred to bilingualism because it stresses the presence of linguistic varieties in sociolinguistic situations. Whatever the actual reasons for the use of the term multilingualism in place of bilingualism, or of bilingualism in place of multilingualism, the use of these terms as synonyms generates confusion in the field and one often needs to look for additional information in the text itself in order to be able to identify whether the author is talking about bilinguals or multilinguals.

Confusion can also arise whenever a term originally created to refer to bilinguals is used to refer to multilinguals even though the original premises are no longer applicable. This case can be illustrated with the use of the word ‘dominance’ and ‘dominant’ in the literature.

The relationship between the speakers’ languages in terms of balance and dominance is based on the speakers’ proficiency level in each language, whereby balance refers to having equal proficiency levels in two or more languages, and dominance to having one or more languages that are dominant over the other languages that are also in the mind (Peal and Lambert, 1962). The claim of balance or dominance then stems from a comparison between the individual’s proficiencies in the two languages (Butler and Hakuta, 2004; Edwards, 2004). Since a bilingual is usually totally fluent in one of the two languages – typically the L1 – the question is whether the other language is in a balanced or in a dominant relationship with the L1.

The notion of balance and dominance and the comparative paradigm it entails works well with bilinguals but does not work equally well with multilinguals. Since an individual can be dominant in one language only in relation to other languages in the mind, it is not possible to establish a relationship of balance or dominance between languages without properly assessing speakers’ proficiency levels in each language. If we consider a hypothetical speaker of five languages, for instance, it is reasonable to
presume that some of his or her languages will be more dominant than others, and it is in fact not uncommon to find multilinguals being described as ‘dominant’ in one or more of their languages. But what does the word ‘dominant’ mean if proficiency in the other languages is not measured? As already implied, the term is no longer clear as the initial premises are no longer applicable, and this results in an ambiguous and imprecise use of the term as a language cannot be dominant per se but only in relation to other languages in the mind.

Sometimes even the simplest of words can create terminological ambiguity. For instance, we can consider how the language being learned is referred to in the literature. So far, researchers have referred to a second language as an L2, and to more than one non-native language as L2s or LN or LX. A third or additional language is often referred to as an L3, regardless of whether it is a third, fourth or sixth language. Some researchers label languages according to order of acquisition (L3, L4 or L6) without taking into account issues of language proficiency. This situation is further complicated when studies include bilingual adults or children. At times there is no clear distinction between a childhood bilingual learning a third language and an adult with a second language who is learning a third language: they are all considered third language learners or multilingual learners. Fuzzy boundaries are of course highly problematic as they create the potential danger of generalizing research findings that instead should be confined to a given subset of learners (see also Hoffmann, 2001).

There are also cases in which more than one new term is put forward to express the same idea. One of such cases is the name of the field itself, which has been labelled in at least four different ways: (a) Multiple Language Acquisition; (b) Multilingual Acquisition; (c) Third Language Acquisition; and (d) Third or Additional Language Acquisition. All of these terms are regularly found in the literature but none of them has fully established itself to the present day, probably due to the weaknesses that each of them hold.

The first term – Multiple Language Acquisition – is problematic in some respects, because the word ‘multiple’ means more than one at the same time as in ‘multiple births’, ‘multiple copies’, ‘multiple personalities’ or ‘multiple choice exam’. Multiple Language Acquisition can then be argued to refer to the concurrent acquisition of two (or more) languages at the same time rather than to the acquisition of several languages at different points in time. There are many people who learn languages at different times in their lives and do not go through a process of multiple language acquisition per se. They become multiple language speakers or users as a result of having acquired several languages, but they do not acquire their languages at the same time. Multiple Language Acquisition is in my view better suited to
refer to some specific types of acquisition, for instance the case of children raised speaking multiple languages at the same time, or of adults learning two or more non-native languages at the same time. In this regard it is important to stress that research has already identified a difference between simultaneous and sequential acquisition in the development of relative clause structures (see Flynn et al., 2004) hence it is even more pressing that the distinction between sequential and simultaneous acquisition is clearly made.

The second term – Multilingual Acquisition – offers little continuity with the well-established terms of First and Second Language Acquisition. As an umbrella term for a field, Multilingual Acquisition seems to be imprecise and vague, mostly because ‘multilingual’ is a descriptive adjective that refers to the learner rather than to the language being learned. It is in fact the learner who is multilingual, and not the acquisition itself.

The third term – Third Language Acquisition – closely follows in the footsteps of First and Second Language Acquisition but with a less effective result. This term is perhaps the least suitable as a name for a field because the word ‘third’ places major emphasis on the third language at the exclusion of all the other languages also in the mind. Third Language Acquisition is in fact no better than Second Language Acquisition, which also places major emphasis on one specific language – the second one – at the expense of all other languages.

The last term – Third or Additional Language Acquisition – is long and impractical to use, but it is the one I favour the most as it refers to all languages beyond the L2 without giving preference to any particular language. In fact the use of the word ‘additional’ is not new in the SLA literature and on occasion one can still come across the expressions ‘second or additional language acquisition’ or ‘second or additional languages’. These expressions are, however, generally used with the intent to equate ‘second’ with ‘additional’ language acquisition, while the in the case of ‘third or additional language acquisition’, the intent is clearly the opposite.

The four instances of terminological (in)consistencies just reviewed are only a few of the examples that could be mentioned in a section on terminological issues in the field. Despite the obvious differences among these terms, they are all expression of scholars’ common underlying need to be able to use terminology that is consistent and unambiguous and that can convey meaning with clarity and precision. This is essential to avoid ambiguities, but also to prevent unnecessary biases in research.

Multilingualism research has already begun to show that some factors previously believed to be of little relevance for the (second) language acquisition process can instead affect it in some meaningful ways (see also
discussions in Grosjean 1998; Herdina and Jessner, 2000; Hufeisen 2000). The need for increased accuracy is therefore paramount for future progress. While terminology can only become fully established with time and with frequency of use, ambiguities and uncertainties can be minimized by providing specific and detailed information on learners’ linguistic and educational background. Ideally, all of the information listed below should be provided whenever possible, as all of these parameters have already been shown to have some effect on multilinguals’ cognitive and psycholinguistic processes:

- age of acquisition of each non-native language;
- sequence of acquisition of all languages;
- proficiency level in all non-native languages, and how proficiency level was measured;
- exposure to native and non-native language environments;
- classroom language of instruction for each non-native language (if learned in a formal setting);
- amount of formal instruction in each non-native language (years and hours per week);
- manner of acquisition (formal/instructed acquisition versus natural acquisition);
- context in which each language is or was used (for example at home, at school, with peers and so on);
- active or passive use of all languages;
- number of languages known to the speaker;
- productive and receptive skills for each language and how these were measured.

The Monolingual and the Bilingual Bias in Language Acquisition Research

The SLA literature contains several discussions on the existence of a monolingual bias in second language research. The monolingual bias refers to the practice of assessing and measuring second language competence or performance according to monolingual norms, even though L2 learners or speakers are not monolingual by definition and will never be able to reach monolingual standards (Baker and Jones, 1998; Bley-Vroman, 1983; Cook 1995, 1997a; De Angelis, 1999; De Angelis and Selinker, 2001; Grosjean 1992). This section briefly reviews some aspects of the monolingual bias in second language research and considers whether some of the existing arguments are of relevance to multilingualism as well. The section further comments
on the emergence of a new type of bias, namely a bilingual bias, which overshadows the identification of a range of phenomena that only multilingual speakers can display.

The best-known form of monolingual bias in second language research relates to the practice of using native-like norms to explain second language grammars. Bley-Vroman (1983) referred to this practice as the 'comparative fallacy in interlanguage studies'. The concept of comparative fallacy is central to both SLA and multilingualism research as it refers to any non-native language grammar that is measured against an ideal native-like norm. Given recent evidence that interlanguage grammars can be made up of combined features from the previously learned languages and the target language (Fuller, 1999), the topic is of direct relevance to multilingualism.

A comparative fallacy occurs whenever the grammar of the target language is used to determine the internal systematicity of the grammar of a non-native language. Non-native language grammars have been assumed to be independent since the early 1970s, when the similar notions of 'transitional idiosyncratic dialects' (Corder, 1971), 'approximative systems' (Nemser, 1971) and 'interlanguage' (Selinker, 1972) were originally proposed. In order to assess whether a non-native form or structure is grammatically correct or incorrect, or it is placed in its right obligatory context or not, researchers normally examine the non-native form or structure in the context in which it is used. The point of contention is that even though the non-native grammar is independent, it is measured against the grammar of the target language, as native speakers would know it, therefore against an L1-norm. Accordingly, Bley-Vroman argues that 'any study which classifies interlanguage (IL) data according to a target language (TL) scheme or depends on the notion of obligatory context or binary choice will likely fail to illuminate the structure of the IL' (Bley-Vroman, 1983: 15).

In other words, an interlanguage grammar cannot be measured against a native-like norm because the L1 grammar is not an interlanguage grammar by definition. It would be the equivalent of evaluating the grammar of Italian using the grammar of French. The grammars of the two languages are similar but not identical.

Bley-Vroman (1983) offered strong arguments in support of the view that the comparison of an independent non-native language grammar with an L1 grammar can only lead to 'a comparative fallacy' in second language research. His work has raised much awareness in SLA on the comparability of grammars and linguistic products. Nonetheless, the problems he outlined continue to persist today (see also Cook, 1997a), as non-native languages continue to be compared to native-like norms on a regular basis.
Moving on to another type of monolingual bias, we find the bias associated with debates on the fractional and holistic views of bilingualism (Grosjean, 1992), both of which relate to how a bilingual person is conceptualized. According to a fractional view of bilingualism, individuals have separate competencies for their two languages. Since these competencies are implied to be similar to those of a native speaker, the bilingual is conceived as two monolinguals within the same person. The major opponent of this perspective is Grosjean (1985, 1992, 1997, 2001, 2004), who instead argues that viewing L1 and L2 competences as separate entities generates a monolingual bias in second language research. Bilinguals must be looked at from a holistic perspective because ‘a bilingual is NOT the sum of two complete or incomplete monolinguals; rather, he or she has a unique and specific linguistic configuration’ (Grosjean, 1992: 55; capitalised in the original). From this position, the mind of a bilingual must necessarily be conceived as an intact whole whose competencies in the two languages do not exist in separation from one another but are part of an intact system.

Even though the fractional and holistic views of bilingualism specifically refer to bilingualism and bilingual competence, these two views shape and influence how multilinguals are also conceptualized. With an increase in number of languages, multilinguals’ competences are more prone to being viewed as separate and independent from one another, and not as an intact whole, as it is simply more convenient to do so. If we take research on crosslinguistic influence as an example, it is rare to find studies that examine the influence between languages from a holistic perspective. The influence is usually conceived as a phenomenon that occurs between two languages, regardless of the number of other languages that are actually in the mind and that may also contribute to the manifestation of crosslinguistic influence. I won’t go into much detail about this topic at this stage as it is dealt with extensively in Chapter 2. It can nonetheless be said that viewing multilinguals from a holistic perspective is most certainly a challenging endeavour, particularly in the case in which one needs to isolate linguistic information that is specific to a given language. From a methodological perspective, the fractional view of multilingualism is undoubtedly the most convenient, as it allows one to easily separate source and target language information in empirical research. This said, one cannot ignore the fact that the mind of a multilingual contains information that belongs to several languages and therefore that the presence of linguistic information from various languages is likely to lead to a state of integration of knowledge in the mind.

Existing theoretical perspectives increasingly view languages as being interconnected with one another rather than being separate entities, as
might have been prevalent in earlier thinking in SLA and Bilingualism. The question today is no longer whether linguistic information from different languages is integrated or not, but to what extent it is integrated and how this integration may affect the overall comprehension or production process. Cook’s (1991, 1992, 1995) notion of ‘multicompetence’ is perhaps one of the best examples of a proposal which conceives knowledge as an integrated whole in the mind. In the early 1990s, Cook observed that L1 competence and L2 competence were never treated as a single system and that the field did not have a term to even describe the integration of knowledge in the mind. In order to fill this terminological and theoretical void, Cook (1991, 1992, 1995) proposed the notion of ‘multicompetence’ which, in his own words, defines the ‘compound state of a mind with two grammars’ (Cook 1991: 112). The notion is in contrast with the idea of monocompetence, which is the competence of a mind with one grammar. Cook justifies the necessity of multicompetence by providing several examples in its support and arguing (1992: 585) that ‘at one level, multicompetence is undeniable; as L2 users do not have two heads, their mind must be different at some level of abstraction’. I will return to the notion of multicompetence in other sections of this book. At present I would however like to note that even though the definition specifically mentions the presence of two languages in the mind, the concept is sufficiently neutral to be suitable to describe the integration of knowledge in the multilingual mind as well.

One other form of bias which has come to light in recent years is a bilingual bias in multilingualism research. This bias is so pervasive that it is virtually impossible to list all the cases in which it can manifest itself. The bilingual bias refers to the tendency to view multilinguals as bilinguals with some additional languages rather than as speakers of several languages from the start. It also refers to the associated tendency of regarding bilinguals’ acquisition and production processes as default processes for multilinguals. Taking the position that multilinguals are bilinguals with additional languages essentially reflects the underlying assumption that the additional languages are somewhat superfluous. The multilingual mind becomes a mind with two languages, to which some more languages can be added (or dropped), but the addition (or reduction) of languages is somewhat optional. Traces of the bilingual bias can be found everywhere in the literature and will be pointed out as we move along the various chapters of the book. We have already seen some definitions of bilingualism above, where the multilingual speaker is to all effect regarded as a bilingual speaker. We can see traces of the bilingual bias in the trend to regard all languages beyond the L2 as ‘second’ languages, or all learners with
additional languages as L2 learners. Or we can see the bilingual bias every time a multilingual model is tailored to an ideal hypothetical bilingual speaker rather than a speaker of several languages.

Some authors provide coherent explanations in support of the strategy of assuming an identity of processes between bilinguals and multilinguals. For instance, in a discussion on word selection problems, Dijkstra (2003) claims that a straightforward extension of a bilingual model of word recognition to multilinguals (or of a monolingual model to a bilingual model) seems to suffice [. . .] Assuming that the theoretical frameworks proposed for monolinguals and bilinguals also apply to multilinguals is the most simple theoretical viewpoint, and for reasons of parsimony we should adhere to that view unless new evidence shows it is not psycholinguistically valid. Language processing in general is so complex, and multilingual processing even more, that this may be the best research strategy to follow until we have collected more evidence. (Dijkstra, 2003: 25)

While the argument that the absence of evidence constitutes evidence is an interesting one, the essential problem with this view is that some behaviours or production mechanisms may well be unique to multilinguals, and these cannot be identified if their existence is not even postulated.

From a theoretical point of view, the bilingual bias is undoubtedly most evident in psycholinguistic research where the step-by-step approach typically used to explain mental processes requires that information is meticulously broken down. An essential objective is the identification of what information is accessed or selected at any given time and which components are involved at each processing stage. To this end, assuming an identity between bilinguals’ and multilinguals’ processes is convenient, but perhaps not as fruitful as one would wish it to be, as the assumption inevitably holds us back in the elaboration of proposals suitable for multilinguals as well.

**Book Outline**

This book is organized around four main areas of inquiry, which are crosslinguistic influence, multilingual speech production models, the multilingual lexicon, and the impact of bi/multilingualism on cognitive development. Below is a brief outline of the content of each chapter.

Chapters 2 and 3 examine research on crosslinguistic influence (CLI) with special reference to the influence of one or more non-native language on a
target language. Non-native languages have been regarded as potential sources of influence for decades (see Odlin, 1989; Sharwood-Smith, 1994), yet a closer look at the evidence available shows an almost exclusive focus on L1 influence in the past. This means that our current knowledge of CLI is partial and incomplete as it is mostly restricted to how and when the native language influences a non-native one.

In these two chapters, it is argued that CLI phenomena cannot be adequately understood by looking at L2 learner behaviour alone. Humans are capable of learning more than two languages, and thinking that a bilingual or multilingual individual will rely exclusively on the L1 during the acquisition process is both improbable and unfeasible. The chapters intend to highlight how non-native language knowledge is also used and, more broadly, how it affects the acquisition and production process as a whole. Chapter 2 examines the factors that are known to trigger or hinder instances of CLI from non-native languages. The factors examined are language distance, target language proficiency, source language proficiency, recency of use, length of residence and exposure to a non-native language environment, order of acquisition, and formality of context. Chapter 3 looks at what can be transferred from one or more non-native languages to a target language in the areas of lexis, morphology, phonetics and phonology, and syntax.

Chapter 4 examines the few models of multilingual speech production currently available. After an initial review of two key models of monolingual production (Dell, 1986; Levelt, 1989), the chapter examines the models of bilingual speech production which have been argued to be able to account for multilingual speech production as well (de Bot, 1992; Green, 1986; Grosjean, 1992). Special emphasis is placed on the rigid route that some of these models propose that does not allow us to adequately account for the variability of non-native speech. Issues of comparability are also discussed, along with some possible explanations for the complexity of crosslinguistic influence phenomena in multilingual speakers. Several problems associated with these models are also raised, mostly stemming from the practice of using a model devised for one type of speaker (the bilingual) to account for another type of speaker (the multilingual).

Chapter 5 is about the multilingual lexicon. Past research on the structure of the bilingual lexicon focused extensively on establishing whether bilinguals represent words in single or separate lexicons, and whether lexical access is selective or non-selective. The chapter provides an overview of existing research on multilinguals’ lexical organization, as well as on the hypothesized changes in lexical organization over time and the role of language proficiency in bringing about these changes. The chapter
additionally examines issues related to storage capacity and processing loads, and the evidence of integration and separation of knowledge in the mind.

Chapter 6 examines the effect of prior language knowledge on cognitive development and on the language acquisition process. Prior language knowledge and prior language learning experience are commonly believed to facilitate the acquisition of additional languages and exert a positive influence on cognitive development. The chapter examines this claim from various angles. First, an historical overview illustrates how research on bilingualism changed over time, from being negative about the effect of bilingualism on cognitive development, to being neutral and then positive about it. Next, the chapter examines the relationship between bilingualism, language acquisition and cognitive development by focusing on research on foreign language achievement and the role of bilingual literacy and metalinguistic awareness in the learning process. Studies developed within an information processing framework are also examined, with particular attention to claims associated with the development of cognitive skills such as the ability to discover rules in a new language, or to memorize. The chapter ends with a discussion on whether the number of languages known to the speaker can also affect cognitive development and the language acquisition process in some meaningful ways.

Taking into consideration the empirical evidence presented in each chapter, Chapter 7 revisits and answers two of the main questions posed at the beginning of the book. The first question is whether multilinguals should be considered as learners and speakers in their own right and, consequently, whether the distinction between Second Language Acquisition and Bilingualism, and Third or Additional Language Acquisition and Multilingualism is fully justified. The second question is how proficient in a non-native language L2 learners are supposed to be before they can begin to be classified as L3 learners in research. The chapter then provides a brief synthesis of the general conclusions reached, and some suggestions for further research.
Chapter 2

Factors Affecting Non-native Language Influence

Non-Native Languages and Crosslinguistic Influence

The study of crosslinguistic influence (CLI) seeks to explain how and under what conditions prior linguistic knowledge influences the production, comprehension and development of a target language. The term crosslinguistic influence was first introduced in the mid-1980s (cf. Kellerman, 1984; Sharwood-Smith, 1983) as a theory-neutral term for the various types of influences that are possible on the target language, such as ‘transfer, interference, avoidance, borrowing and L2 related-aspects of language loss’ (Sharwood-Smith and Kellerman, 1986: 1). This chapter is chiefly concerned with transfer phenomena in multilinguals’ oral and written production and the terms crosslinguistic influence and transfer are used interchangeably with no implied difference in meaning.

Non-native languages have been regarded as potential sources of influence for several decades (for early research, see Selinker, 1969; Vildomec, 1963) and continue to be included in most of the definitions of CLI that we find in the literature. Odlin, for instance, defines CLI as ‘the influence resulting from similarities and differences between the target language and any other language that has been previously (and perhaps imperfectly) acquired’ (1989: 27). Sharwood-Smith defines crosslinguistic influence as ‘the influence of the mother tongue on the learner’s performance in and /or development of a given target language; by extension, it also means the influence of any “other tongue” known to the learner on that target language’ (1994: 198, italic in the original). Gass and Selinker say that ‘for most researchers, language transfer is the use of native language (or other language) knowledge – in some as yet unclear way – in the acquisition of a second (or additional) language’ (1983: 372).

From these definitions and remarks we can generally infer that, from as early as the 1960s, researchers have widely believed non-native languages
to be potential sources of transfer. Given the amount of time that has gone by, one would also expect to find a substantial number of studies on non-native language influence in the literature, but this is not the case. Empirical studies on non-native language influence are quite rare and on the whole far less common than those on native language influence.

More empirical data on CLI and multilingualism can undoubtedly help us move beyond L1 influence towards a broader understanding of CLI phenomena, whether specifically concerned with native or non-native languages. There are in fact several advantages that can be gained from doing research with multilinguals, including the two described here. First, the study of CLI and multilingual behaviour offers the possibility to re-examine some well-established hypotheses about L1 influence in light of a third or additional language and consequently confirm, challenge, refute or modify existing theoretical claims. Second, scholars have the opportunity to explore – in some cases for the first time – those dimensions of CLI that can only exist when a minimum of three languages are in the mind, for example the simultaneous influence of two or more languages on a target language, or the interaction between non-native languages at a single point in time and over time. Essentially, whatever is associated with more than two languages allows us to raise a number of fresh questions about the mind and its processing operations.

A critical question with respect to CLI and multilingualism is whether the traditional conceptualization of transfer is sufficiently broad to include and accommodate phenomena that are specific to multilingualism. Transfer is customarily viewed as a phenomenon that concerns two languages – a source language and a guest or target language. The definitions of CLI reported earlier clearly reflect this position, as transfer is described as a process that occurs between an L1 and an L2, an L2 and an L3, or an L2 and an L1 and so forth. The possibility that the source of the influence may rest with more than one language is not contemplated and therefore not included in any of the definitions examined. But does this mean that the simultaneous influence of more than one language is not a feasible option, or that traditional views of transfer are too rigid in conceptualization and therefore not totally suitable to account for phenomena specific to multilingualism? The latter can be argued to be the most probable.

Viewing transfer as a one-to-one type of association is a logical and viable option for speakers who are familiar with two languages, but the same type of association ceases to be the only possibility when more than two languages are in the mind. In this case, there are at least two types of CLI that are technically possible. The first is the influence between the source...
and the target language, which is the one-to-one type of association already mentioned; the second is the simultaneous influence of more than one language upon a target language, i.e. a many-to-one type of association. This second kind of CLI occurs when two or more languages interact with one another and concur in influencing the target language, or when one language influences another, and the already influenced language in turn influences another language in the process of being acquired. In the absence of a widely accepted term for this kind of CLI I shall use the term of reference of ‘combined CLI’. 

Most studies on non-native linguistic influence have been concerned with one-to-one type of associations, hence with instances of transfer between two non-native languages, or between the non-native language and the native language (Cook, 2003; Kecskes and Papp, 2000; Pavlenko, 1999; Pavlenko and Jarvis, 2001, 2002). Research on multiple sources of influence has instead been much slower to appear, possibly because identifying and separating multiple sources of knowledge in production is methodologically complex and challenging. Difficulties aside, hypotheses about CLI will never be comprehensive if the mechanisms underlying the use of multiple sources of knowledge are not properly defined, and for this reason work on combined CLI seems to be an essential strand of research for future progress.

The purpose of the chapter is to examine research on CLI and multilingualism highlighting those types of behaviours that can only arise when a minimum of three languages are in the mind. Some of these will concern one-to-one types of associations, and others will concern many-to-one types of associations, as defined above. Some mention of L1 influence and L1 loss will necessarily be made where relevant, but the literature on L1 influence will not be explicitly reviewed as the chapter mostly deals with issues associated with non-native linguistic influence, language interaction and multiple sources of knowledge.

Research on multilingualism and CLI has already identified several of the factors that affect learners’ reliance on previously learned languages and constrain the type and amount of influence on the target language. A number of these factors are important to explain both native and non-native language influence, while others are more distinctive of multilinguals’ processes. The factors examined in the next sections with reference to non-native language influence are the following: language distance; target language proficiency and source language proficiency; recency of use; length of residence and exposure to a non-native language environment; order of acquisition; and formality of context.
Language Distance

There is wide agreement among researchers that transfer is most likely to occur between languages that are closely related to one another than between languages that are distantly related (Ahukanna et al., 1981; Bouvy, 2000; Cenoz, 2001, 2003b; Cenoz and Valencia, 1994; Chandrasekhar, 1978; Charkova, 2004; Clyne, 1997; Clyne and Cassia, 1999; De Angelis, 1999, 2005a, 2005b, 2005c; De Angelis and Selinker, 2001; Dewaele, 1998; Ecke, 2001, 2003; Fouser, 2001; Möhle, 1989; Ringbom, 1987, 2001, 2003; Vildomec, 1963; Voorwinde, 1981; Williams and Hammarberg, 1998).

Language distance refers to the distance that a linguist can objectively and formally define and identify between languages and language families. Sometimes the term formal similarity is also used to refer to a relationship of similarity between the features or components of two or more languages without necessarily implying a genetic relationship between them. A further distinction relates to the notion of perceived language distance. This is the distance that learners perceive to exist between languages that may, or may not, correspond to the distance that actually exists between them. Perceived language distance is frequently called upon in the literature on multilingualism to explain instances of crosslinguistic influences in production, hence it is the one that concerns us the most in the present section.

The notion of perceived language distance was originally proposed by Kellerman in the 1970s. Kellerman (1977, 1978, 1983) identified the importance of learners’ perception of language distance with a study on idiomatic expressions conducted with Dutch L1 learners of English as an L2. The study examined whether 81 Dutch L1 speakers believed a list of 17 idiomatic expressions containing the Dutch verb ‘breken’ could be translated into the English L2 with the verb ‘to break’. Kellerman found a difference in learners’ acceptance rates of these expressions. Those whose meaning was closer to the primary meaning of the verb such as ‘he broke his leg’ displayed a higher acceptance rate than those whose meaning was more distant from the primary sense of the verb. For instance, the acceptance rate for ‘he broke his leg’ was 100%, while the acceptance rate for ‘some workers have broken the strike’ was a mere 11%. These results were then compared with those of Jordens’ (1977), who had also conducted a study on idiomatic expressions, but with Dutch L1 learners of German as an L2. The comparison led Kellerman to propose the notion of psychotypology or perceived language distance.

In brief, Kellerman argued that transferability is influenced by two interacting constraints, psychotypology and prototypicality. Whenever a
learner perceives two languages as being close to one another (psychotypology), L1 features are likely to influence L2 forms. The second constraint (prototypicality) is nonetheless a much stronger determinant of CLI with the claim that ‘the less representative of the prototypical meaning a usage of a given form is, the lower its transferability’ (Kellerman, 1987: 65).

In the literature on L1 influence, psychotypology is no longer regarded as a popular term and it is often replaced by expressions that include words like typological proximity, relatedness, similarity or language distance (Jarvis, 2000; Odlin, 1989; Ringbom, 1987). In contrast, in the literature on multilingualism and CLI the term psychotypology continues to appear with frequency (Bouvy, 2000; Cenoz, 2001; De Angelis, 2005a; De Angelis and Selinker, 2001; Ecke, 2001; Kellerman, 2001; Ringbom, 2001). In an effort to simplify the matter, I shall refer to learners’ perception of typological proximity and relatedness using these terms as synonyms, adding explanations and clarifications where necessary. Psychotypology is therefore here regarded as equivalent to perceived typological proximity, and perceived similarity or perceived language distance.

The notion of psychotypology was not conceived with multilingual learners in mind, and was originally proposed to account for learners’ perception of the transferability of idiomatic expression between related languages (Dutch, English and German). The original focus, then, was quite narrow. Accordingly, Kellerman never addressed the issue of how the notion would work with a combination of related and unrelated languages, or how it would interact with other factors also known to trigger instances of CLI in multilinguals.

As already mentioned, multilinguals familiar with related and unrelated languages are generally argued to be most influenced by the languages perceived to be the closest to the target language. However, some studies have also shown that learners rely on their knowledge of distant languages on some occasions, even when they have knowledge of languages more closely related to the target language. While this unusual behaviour highlights a general need for more studies with multilingual speakers, it also calls for some caution with respect to making statements about language distance and CLI as relatedness does not automatically imply that crosslinguistic influence will occur. Moreover, relatedness and formal similarity must be carefully distinguished, as one does not necessarily imply the other. Learners perceive relatedness and similarity at different levels, and may rely on their prior knowledge depending on how they judge the overall level of closeness between languages, or the similarity of some features of components of two or more languages. For instance, most learners would perceive the existence of similarities between French and
English words due to the high number of cognates that these languages share, but the same learners would also perceive that French and English differ considerably in their phonetic characteristics and phonological patterns.

Ringbom (2002) provides a classification of transfer based on the difference between form and meaning which is very useful in accounting for the difference between relatedness and similarity. His proposal is also the only attempt I am aware of to elaborate on the psychotypological explanation to account for multilingual behaviour and multilinguals’ processes.

Ringbom (2002) believes in the existence of three levels of transfer, which he calls an overall level, an item level and a system level. The overall level of transfer refers to learners’ overall perception of similarity between their languages, ‘beginning from a common alphabet and phonemes in common over the division into grammatical categories (case, gender, word classes) to the number of cognates and other lexical similarities’ (Ringbom, 2002: 1). Ringbom believes that learners’ judgement of the overall similarity between languages has a general facilitative effect on learning, and on comprehension processes in particular. Learners’ decisions are additionally based on the similarity between individual items, a reliance that, he argues, ‘illustrates a principle well known in applied linguistics: that the whole is more than the sum of the individual parts: i.e. a large number of individual item similarities put together produce a more general facilitating effect on learning’ (Ringbom, 2002: 2).

The second type of transfer – item transfer – is more specifically associated with the process of establishing interlingual identifications during the learning process. Item transfer may lead to positive or negative transfer in both comprehension and production. At the early stages of acquisition, learners often establish a one-to-one relationship between individual items by equating the meaning of an L2 word with that of an L1 word. Since at the early stages of acquisition learners have limited knowledge of the target language, they identify similarities between items by relying on form rather than meaning. Item transfer occurs whenever there is an underlying assumption that two items similar in form are also similar in meaning. False friends would be a typical example of negative item transfer. The incorrect associations made are usually rectified later on during the learning process, when learners begin to understand the real meaning of words and of individual items. As the knowledge of the language increases, then learners begin to re-examine the initial simplified one-to-one mapping and consequently revise the interlingual identifications originally made.
System transfer, the third type, refers to the process by which a learner identifies an identity of meaning between items, but not necessarily of form. This type of transfer is usually negative and can manifest itself in various ways, for instance in the form of semantic extensions or loan translations with compounds. Ringbom (2001) illustrates system transfer with the following example of a semantic extension. A Finnish L1 speaker with Swedish L2 wrote an essay in the English and L3 stating that 'he bit himself in the language'. In Finnish, the word *kieli* means both 'tongue' and 'language'. The erroneous use of the word 'language' instead of 'tongue' is the result of the learner's incorrect assumption of a semantic identity between the two words. Ringbom (2001) generally maintains that transfer of meaning occurs from the L1 rather than the L2, unless a speaker is highly fluent in the non-native language. System transfer is therefore primarily a manifestation of L1 influence rather than non-native linguistic influence. Item transfer is instead more frequent because it is an expression of both L1 influence and non-native linguistic influence.

Similarly, Sikogukira (1993) highlights how similarity of form and meaning does not equally influence learners' judgements. In a study on English-French cognates with L1 speakers of Kirundi, a Bantu language, Sikogukira found that learners were more likely to reject French-English cognates whose meanings were the same or similar to each other, than cognates with different meanings. It may be recalled that cognates have four essential properties (Carroll, 1992). In addition to being always structural units, words, and sharing formal resemblance, they ‘may be but need not be semantically identical’ (Carroll, 1992: 93). Sikogukira (1993) generally maintained that his results were due to an underlying lack of confidence in passing judgements of acceptability on French-English cognates. He also proposed that learners do not use a blanket transfer strategy with cognates, but assess their transferability using supplementary information such as ‘the category of cognates, the sense relations holding between cognates and other semantically related lexemes, and the learners’ level of proficiency’ (Sikogukira 1993: 110).

Learners undoubtedly perceive similarities at various levels, and form and meaning are not equally relied upon in this process. With multilingual speakers, differences can become even more prominent as the increase in number of languages provides learners with more information to draw upon and compare. The distinction between levels of transfer that Ringbom (2001) has proposed is particularly useful to begin to account for the difference between multilinguals’ general reliance on one source language, and the occurrence of specific instances of transfer that involve form, meaning, or both, sometimes from distant languages.
With respect to learners’ general reliance on one source language, multilinguals show a tendency to select one of their languages as their primary source of information. Chandrasekhar (1978) explained the phenomenon with the ‘base language’ hypothesis, according to which learners are mainly influenced by the language that most resembles the target language. More recently, Williams and Hammarberg (1998) have claimed that relatedness is only one of the factors that determine which language becomes learners’ main source of information. Learners assign the role of ‘main supplier’ to one of their languages, and the role assignment process occurs by relying on relatedness as well as three other additional factors, which are L1/L2 status, recency of use, and proficiency level. The main supplier is the language that scores the highest on these four conditions.

So far, research on multilingual behaviour has confirmed the base language hypothesis only in part. In fact, it is becoming increasingly clear that more than one language can become learners’ preferred source of information at any one time, often leading to forms of combined CLI. Multilinguals can clearly draw upon a vast amount of linguistic information that is simply not available to the L2 learner, and the exclusive reliance on one source language is likely to decrease as more languages are added to the mind. Nonetheless, relatedness and formal similarities remain important triggers of CLI.

Relatedness is here defined on the basis of genetic affiliation, whereby languages are said to be related or close to one other when they belong to the same family (e.g. Indo-European) or the same subgroup of a family (e.g. Romance or Germanic subgroups within the Indo-European family). Formal similarity instead explicitly identifies the similarity between specific features or components of languages, ranging from their grammatical structures to their lexicons, phonetic features, graphic forms and so forth. Two unrelated languages can consequently be formally similar with respect to some features or components. The usefulness of this distinction will become clear as we examine the evidence of language distance and CLI available in the literature. We can, however, start to emphasise this distinction by mentioning Ringbom’s (2003) most interesting paper ‘If you know Finnish as L2, there will be no major problem learning Swahili’. In this paper, Ringbom explains that, even though there is no genetic relationship between Swahili, a Bantu language, and Finnish, a Finno-Ugric language, there are a number of formal similarities between these two languages that a learner can easily identify. Finnish and Swahili are both agglutinative languages, for instance, they display extensive morphemic and morphophonemic variation, and are both vowel-dominant. In addition, since many
Swahili words have been borrowed from English, open-minded learners with knowledge of English can easily find some familiar words. Some of these words are, for instance, tikiti (English: ticket), keki (English: cake, Finnish: kakku), baisikeli (English: bycicle), or sukari (English: sugar, Finnish: sokeri). Ringbom (2003) also correctly notes the difference between similarity perceived, and similarity assumed. In comprehension, he says, similarities between languages or their components are perceived, while in production similarities are assumed.

Let us now move on to examine the empirical evidence on language distance in three contexts: (1) when learners have knowledge of related and unrelated languages; (2) when learners have knowledge of languages that belong to the same language family, but not the same subgroup within the family; (3) when learners have knowledge of languages that belong to the same family, and to the same subgroup within the family.

With respect to having knowledge of related and unrelated languages, several studies have compared Indo-European with non-Indo-European languages. With regard to African languages, Ahukanna et al. (1981) found that Igbo L1 informants relied extensively on the English L2 during the acquisition of the French L3. Since English and French belong to the same Indo-European family while Igbo does not, it was clear that learners relied on the language closest to the target language for information. Similarly, Sikogukira (1993) found that Kirundi L1 speakers were more influenced by their French L2 when acquiring English as a non-native language.

One unusual case with respect to genetic relationship is that of Basque, as the origin of Basque remains unknown to date. Nonetheless, the data involving Basque is in line with the findings just mentioned. In a study with Spanish L1 speakers who had prior knowledge of Basque, Cenoz (2001) found that these learners relied more extensively on Spanish than Basque when learning English as a third language. Spanish and English belong to the same Indo-European family while Basque does not. With respect to Asian languages, Fouser (2001) reports on two English L1 informants influenced by their prior knowledge of Japanese L2 in the acquisition of Korean as an L3 or L5. The author explains that Japanese and Korean are commonly believed to be related to one another, even though their relationship is still a matter of debate in the field (Shibatani, 1990). Japanese is nonetheless closer to Korean than the informants’ English L1 would be. Ringbom (1987) also mentions the work of Uljin et al. (1981), who showed that Vietnamese immigrants to the United States were helped by their knowledge of French in the acquisition of English as a non-native language. Ringbom (1987) also discusses how his English L3 learners were generally more influenced by Swedish than Finnish, regardless of whether Swedish
was the L1 or the L2. Swedish and English are Germanic languages, while Finnish is a Finno-Ugric language.

Finding evidence in favour of language closeness is relatively easy and straightforward whenever speakers are familiar with a combination of related and unrelated languages and only two of these (the source and the target) are related to one another. These are the cases listed above. The question becomes more complex and challenging whenever learners are familiar with languages that belong to the same language family, but not to the same subgroup within the family. In this case, the evidence shows the following two general tendencies. First, learners continue to rely on the languages more closely related to the target, irrespective of whether these are first or non-native languages. Second, learners no longer elect one language as the preferred source of information and may rely on more than one language at the same time. With respect to the first tendency, several studies can be mentioned. Chandrasekhar (1978), for instance, found that her Hindi L1 informants relied on their knowledge of English as an L2 when acquiring German as an L3. Similarly, Ecke (2001) showed that Spanish L1 speakers were more influenced by their knowledge of English as an L2 while in tip-of-the-tongue (TOT) states in the German L3. Singh and Carroll (1979) also showed that Hindi L1 learners of French were most influenced by their prior knowledge of the English L2 than those learners whose native language was a European one (French or German). With respect to relying on more than one source of information, Bouvy (2000) discusses how some of her French L1 learners of English relied on their prior knowledge of two related languages (Dutch and German) rather than on their knowledge of Spanish.

This takes us to the most challenging issue of all, which is how to predict multilinguals’ behaviour when several languages that belong to the same family, and to the same subgroup within the family, are in the mind. Let us imagine the case of a speaker familiar with five Romance languages in the process of learning the sixth Romance language. With this language background, it would be very hard to predict which of the languages already in the mind is most likely to become the learner’s preferred source of information during the acquisition process. In order to offer a useful prediction, other factors would necessarily need to be examined. Williams and Hammarberg (1998) propose to use typology as well as three other additional factors as predictive tools. The other three factors are proficiency level in each language, recency of use of all languages, and L2 status. It may be recalled that the main supplier is assumed to be the language that scores the highest on these four conditions.
While Williams and Hammarberg’s (1998) proposal has proven useful and correct with some language combinations, some empirical data also suggests that other factors are likely to be involved. De Angelis (1999), for instance, examined the Italian oral production of a French-Canadian L1 speaker with prior knowledge of Spanish as a second language. French was expected to emerge as the main source language since the informant had not used her Spanish for the previous 30 years and claimed not to be fluent in this language. According to Williams and Hammarberg’s model, French scored the highest on the four conditioning factors outlined. French, however, did not turn out to be the speaker’s preferred source of information; in fact the learner did not rely on her French L1 at all, while she showed a clear reliance on her little and rusty knowledge of Spanish as a second language. Since Spanish, French and Italian are all Romance languages, it is somewhat peculiar that a rusty L2 (Spanish) not spoken for thirty years would override the French native language and become the primary source of information. Clearly some other factors must have influenced the speaker’s decision.

De Angelis (2005b) accounts for this unusual data by proposing the existence of two interacting constraints which concur in blocking native language influence in favour of non-native language influence. These two constraints are perception of correctness and association of foreignness. In brief, perception of correctness predicts that multilinguals resist incorporating L1 information into the target language as L1 information is perceived to be incorrect from the start, and this results in an increased acceptance level for non-native words into the target language. Association of foreignness refers to the cognitive association that learners establish between non-native languages, which are assigned the common status of ‘foreign languages’. Whenever several languages related to each other are in the mind, this cognitive association favours the use of non-native language words over the use of native ones as foreign languages are generally perceived to be closer to each other than to the native language. Association of foreignness thus results in an increased acceptance level for non-native information into the target language.

A similar proposal with respect to foreignness which precedes De Angelis (2005b) is found in Williams and Hammarberg (1998). The English L1 speaker in this study, who was also the first author, relied more extensively on her German L2 than on her English L1 when acquiring Swedish as an additional language. Given the same condition of relatedness, the authors asked the question of why the German L2 would take precedence over the English L1. They argued that the speakers’ behaviour was the result of a deliberate strategy. The learner (Williams) said that she did not want to
sound like a native speaker of English so she refrained from integrating L1 elements into the Swedish target language. She also reported relying on a foreign language because it sounded more foreign to her, hence closer to the Swedish target language. This explanation differs from the claim found in De Angelis (2005b) who argues that association of foreignness is a cognitive constraint and not a deliberate strategy a learner can control.


I studied Spanish in Sweden as an exchange student. A question would be posed in Swedish with the goal of a reply in Spanish, but in my head it went Swedish English Swedish, as I were speaking ‘foreign’ – that is, any language other than English was ‘foreign’. It was very confusing for the instructor, and I often wouldn’t know which language I had produced in.

Cohen (1995) explains this behaviour by saying that the learner’s mind ‘would go into a “foreign language” mode in what would appear the dominant foreign language rather than the target one’ (Cohen 1995: 102).

Along the same line, Schmidt and Frota (1986: 255) write:

I am beginning to wonder if I have English stored in one part of my brain and Arabic in another. If so, I am putting Portuguese where Arabic is. Or maybe I’ve got a translate-to-foreign language program [. . .] This morning in class I said yinmink [Arabic, perhaps] without realizing that it wasn’t Portuguese until L looked at me and signalled noncomprehension.

In contrast with all the studies reported so far is the evidence that some multilinguals rely on distant languages for information, even when they have knowledge of languages closely related to the target language (Rivers, 1979; Schmidt and Frota, 1986; Selinker and Baumgartner-Cohen, 1995). These reports are admittedly few in number and are mostly found in the form of diary studies. Nonetheless, the evidence they provide must be accounted for, above all because they describe a type of behaviour which does not confirm the base language hypothesis (Chandrasekhar, 1978) that so many other studies seem to support.

Rivers (1979) discusses the case of an English L1 learner of Spanish with good prior knowledge of French and a little knowledge of German and Italian. Given this language combination, one would predict a strong
reliance on French and possibly Italian during the acquisition process, which is a reliance the author indeed reports. However, the learner was also found to be influenced by her knowledge of German to a great extent, a non-native language she had not used for a long time and in which she claimed to have very little fluency. Similarly, Schmidt and Frota (1986) discuss the case of an English L1 learner of Portuguese during a trip to Brazil. The learner had an interesting and varied language background. He was a fluent speaker of Arabic with some knowledge of French (three years in high school), some knowledge of German (one semester of study) and some tourist survival knowledge of Dutch, Italian, Greek, Hebrew and Farsi. With this language combination, the most likely candidates as source languages are the English L1 or the French L2. As was the case in the previous study, some influence from these languages was reported, but in the early stages of acquisition the learner was also found to be influenced by his knowledge of Arabic to a large extent. Arabic was the learner’s most fluent foreign language but had not been spoken for a very long time. Selinker and Baumgartner-Cohen (1995) also found some influence from French and Hebrew on the German speech of one of the authors (Selinker), a native speaker of English.

While these studies suggest that some instances of crosslinguistic influence can also occur from languages that are typologically more distant from the target language, a closer look at the type of information that is transferred shows that learners tend to draw upon those elements of the source language that are phonetically similar, hence formally similar, to those in the target language. This is not an unfailing rule, but a definite tendency, which additionally entails that the learner must be somewhat familiar with the target form in order to transfer. To mention a few examples, in a discussion on the pronunciation of the number setenta (seventy) in Portuguese, Schmidt and Frota (1986) claim that the learner was incorrectly pronouncing this word as ‘sittenta’ due to the influence of the Arabic word sitta, which means six in English. Similarly, Rivers (1979) comments on the use of the German sehr gut with the Spanish maid, an expression phonetically and structurally similar to the English very good. Selinker and Baumgartner-Cohen (1995) note the replacement of the target German du hast with the French tu as in the sentence tu as mein fax bekommen (Did you get my fax)? On the basis of this type of evidence – and more examples can be found in the actual articles – CLI from distant languages seems to occur whenever a condition of phonetic similarity is met. Often the items involved also belong to the same language class and the speaker has some knowledge of the target form or expression.
One other factor which has been argued to trigger instances of CLI from distant languages is source language proficiency. Schmidt and Frota (1986) note the influence of Arabic on Portuguese word order and on the rate of use of indefinite articles. It may be recalled that the subject in question was a fluent speaker of Arabic as a non-native language. Schmidt and Frota maintain that for CLI to occur at the level of sentence structure, the speaker must be highly fluent in the source language. Similarly, Ringbom (2001) claims that transfer of meaning can only occur from the L1 or from non-native languages the speaker knows well. This is additionally confirmed in Alcantarini (2005), who examined learners of English as an L3 with different L1s. These learners were living and studying in Italy at the time the data was collected, and had good knowledge of Italian. Their production showed clear influence from the Italian non-native language when coining new terms in the English target language. For instance, they used the word can meaning to say dog (Italian for dog: cane), they used the word rest meaning to say to stay/remain (Italian to stay/remain: restare); or they used the expression was senting meaning to say was hearing (Italian: stava sentendo).

As previously noted, phonetic similarity between the source and the target seems to ease the path of non-native language influence on the target language.

At the beginning of this section I emphasized the difference between formal similarity and perceived language distance as I believe the first is suitable to explain individual instances of transfer like the ones we have just seen, and the other is more suitable to explain learners’ general tendency to rely on one, or sometimes more than one, of their languages for information.

As we have seen, languages that are perceived to be close to the target language, or closer to it with respect to other languages also in the mind, are generally favoured as sources of information and they also seem to have a general facilitative effect on learning processes. In contrast, formal similarity, and phonetic similarity in particular, seems to have a major role in triggering individual instances in CLI from close as well as distant language. Most scholars (Cenoz, 2003b; De Angelis, 2005a, 2005b; De Angelis and Selinker, 2001; Dewaele, 1998; Ecke, 2001; Herwig, 2001; Möhle, 1989; Wei, 2003a, 2003b; Williams and Hammarberg, 1998) explain the latter phenomenon using the notion of activation, which describes a process by which a language, or some elements of a language, is stimulated and accessed during the execution of task.

The meaning of activation and how it operates varies substantially depending on the framework used (for an overview, see Chapter 3). With reference to the phonetic similarity so frequently observed between source
and target items, the activation explanation essentially proposes that, during on-line processing, activation can spread from a target word or its components to phonologically/phonetically and sometimes semantically similar non-target words and their components. These words or components can belong to the target language or to another language in the mind. Non-native language influence is thus argued to be the result of semantic or phonetic/phonological activation across languages.

Proficiency in the Target Language and Proficiency in the Source Language

In CLI literature the proficiency factor is discussed in relation to proficiency level in the target language, and proficiency level in the source language. With respect to proficiency level in the target language, most researchers maintain that CLI is more likely to occur at the early stages of acquisition, when learners’ knowledge of the target language is still weak and fragmentary and the need to fill knowledge gaps in the target language is more pressing (Navés et al., 2005; Odlin, 1989; Ringbom, 1986; Sikogukira 1993; Singleton 1987; Taylor, 1975; Williams and Hammarberg, 1998). This, nonetheless, does not mean that transfer does not occur at more advanced stages of acquisition.

Odlin (1989) expresses some words of caution with respect to associating transfer and proficiency level in the target language. He argues that while some types of transfer indeed occur at the early stages of acquisition, some others do not. For instance, the transfer of resumptive pronouns in relative clauses requires that a learner is familiar with relative clauses, and therefore that he or she has an advanced knowledge of the target language. Odlin (1989) additionally notes that, at the early stages of acquisition, transfer is often negative as it is the result of a general strategy to fill knowledge gaps in the target language. In comprehension, on the other hand, the effects of positive transfer are most typically found at the advanced stages of acquisition, when learners are more likely to benefit from their knowledge of other languages, and of cognate vocabulary in particular. Clearly, the types of transfer that can occur at early or advanced stages of acquisition are likely to differ as learners’ needs are different and their underlying competence is different. Transfer cannot then be safely assumed to decline as proficiency in the target language grows, not at least until an individual has reached a very high level of proficiency and automaticity in the target language.

With respect to proficiency level of the source language, we have very limited understanding of how it affects the CLI process because there are
virtually no experimental studies that analyse proficiency level in the source language as a central variable. Some data relevant to a discussion on proficiency level can however be inferred, as most studies provide details of learners' proficiency levels in the non-native languages.

From a methodological perspective, information on proficiency level in previously acquired non-native languages is central to be able to establish a distinction between the L2 learner and the multilingual learner, and consequently between Second Language Acquisition and Third or Additional Language Acquisition. In the previous chapter I raised the question of how learners can be classified effectively using language background information. The difficulty relates to whether learners with little knowledge of a non-native language – for example one or two years of formal instruction – should be classified as L2 learners or as multilingual learners, and consequently pooled with L2 learners in experimental research. In order to answer this question, we first need to address the question of threshold levels, in other words how proficient learners need to be before their prior knowledge begins to affect the production and development of a target language to a significant extent.

So far, transfer has been shown to equally occur from non-native languages a speaker knows well (Ahukanna et al., 1981; Chandrasekhar, 1978, Clyne, 1997; Clyne and Cassia, 1999; Ringbom, 1987; Schmidt and Frota, 1986; Singleton, 1987; Williams and Hammarberg, 1998) and from non-native languages the speaker does not know well (De Angelis 1999, 2005a, 2005b; Rivers, 1979; Selinker and Baumgartner-Cohen, 1995; Vildomec, 1963). This then suggests that proficiency threshold levels are relatively low, i.e. one or two years of formal instruction are sufficient to affect target language production and development in some meaningful ways.

Ringbom (1987) claims that proficiency in the source languages determines the type of transfer that is likely to occur in the target language. He believes that transfer of form is a relatively superficial type of transfer which can equally concern the L1 or the L2 since proficiency in the non-native language does not need to be very high for this type of transfer to occur. In contrast, he maintains transfer of meaning can only take place from languages the speaker knows well, therefore from the L1 or from an L2 in which the speaker is highly fluent. From these premises, evidence of transfer from languages a speaker does not know well which go beyond transfer of form would provide further support for the view that L2 learners must be distinguished from multilingual learners, regardless of proficiency attained in the prior non-native languages.

A clear example of learners being influenced to a significant extent by a language they did not know well is reported in De Angelis (2005a).
carried out a within-group comparison with two groups of learners with the same native language (English L1 or Spanish L1), the same target language (Italian L3 or L4) and different non-native languages. Those in the English L1 group had prior knowledge of French or Spanish; those in the Spanish L1 group had prior knowledge of English, or of English and French. All subjects were asked to read a text in their respective native languages and provide a written summary in the Italian target language. The summaries of learners with and without prior knowledge of French were compared, and some significant differences were found with respect to the rate of subject insertion and omission. Those who had studied French prior to taking up the study of Italian used overt subjects significantly more than those who had no prior knowledge of French. Of most relevance to this discussion is the fact that learners’ proficiency level in the French non-native language was extremely low. None of the Spanish L1 speakers with knowledge of French had formally studied French for more than 1.5 years. Within the English L1 group, none of the participants who had prior knowledge of French was able to translate more than ten words into basic French in a 30-item translation task.

As discussed in Chapter 1, evidence of this kind raises considerable concern about the widespread assumption in SLA research that the non-native languages a speaker does not know well can be safely ignored in research. The evidence also leads us to wonder how many of the SLA studies currently available have in fact followed proper subject selection procedures providing unbiased results.

**Recency of Use**

Discussions on multilingualism and the recency factor appeared as early as in the 1960s. Vildomec (1963) in particular was the first to note that non-native language influence is more likely to occur from ‘vivid’ languages rather than from languages gone unused for a long time.

The notion of recency of use or of a recency effect during the acquisition process refers to how recently a language was last used. Some assume that recent use facilitates the occurrence of some kinds of influences due to easier access to linguistic information stored in the mind (cf. Poulisse, 1997; Poulisse and Bongaerts, 1994). Among those who believe that a language recently used is likely to influence target language production are Williams and Hammarberg (1998), who list recency of use among the four factors likely to determine whether a language will take on the main supplier role during the production process. The other three factors are typology, proficiency and L1/L2 status. Shanon (1991) goes even further proposing
the existence of a last language or recency effect, according to which learners rely upon the language that was learned last. This prediction, however, does not find much confirmation in the literature. There are a number of studies that show instances of transfer from languages which were not learned last, and that had even gone unused for decades (De Angelis, 1999; De Angelis and Selinker, 2001; Rivers, 1979). Schmidt and Frota (1986) further associate the notion of recency of use with proficiency level and specifically claim that their subject – an English L1 learner of Portuguese – was most influenced by his most fluent non-native language (Arabic), and not by the least fluent but most recent one.

Sometimes it is learners themselves who believe that the languages they have not used for a long time will not influence them in the production of a target language – a belief which we now know to be incorrect. Rivers (1979), for instance, comments on her reliance on German saying it is ‘ridiculous since I am so unfluent in German and rarely, rarely use it’ (Rivers, 1979: 70). Möhle (1989), who interviewed her German L1 learners of Spanish as an L3 or L4 after finding traces of French in their speech, reports on how learners claimed they did not expect any influence from French because they had not used it for several years. Möhle (1989), however, found ample evidence of French influence in learner’s Spanish, ranging from lexical choices to idiomatic expression and surface syntactic structures. Herwig (2001) also reports that one of the participants to her study, an Irish L1 learner of German, claimed some difficulty in controlling the influence from one of her non-native languages (Dutch). Interestingly, the subject’s knowledge of Dutch was quite weak in comparison to her knowledge of other languages, and Dutch had not been used recently.

While these studies suggest that languages not used for a while can still influence a target language, there is also evidence that significant differences can arise in performance depending on whether learners have active or passive knowledge of their languages. Mágiste (1984, 1986) is typically associated with this claim. Mágiste’s work does not specifically focus on crosslinguistic influence phenomena, it nonetheless provides valuable information on prior knowledge in general. Using a nationwide investigation conducted by Balke-Aurell and Lindblad in 1982 in Sweden, she compared the English language proficiency of immigrant students (N = 2,736) with that of monolingual Swedish students (N = 67,162) and examined test results in word comprehension, reading and listening comprehension and grammar. Results initially indicated that bilinguals do not perform differently from monolinguals, but some difference emerged when the bilingual immigrants of Finnish L1 were divided into two groups: those who used Swedish at home and had only passive knowledge of their
first language, and those who actively used their first language at home. Bilinguals with passive knowledge of the Finnish L1 were found to perform better than Swedish monolingual students, but bilinguals who actively use their L1 did not perform better than monolinguals. Mägiste thus suggested that passive bilingualism facilitates third language learning, while active bilingualism might delay the acquisition process.

Length of Residence and Exposure to a Non-native Language Environment

Vildomec (1963) believed that a long period of residence in a non-native language environment could influence the amount and type of influence on a third or additional language. His claim was further explored in several other studies, and more evidence in its support is now available.

Stedje (1977, as reported in Williams and Hammarberg, 1998) examined the German production of Finnish L1 learners of German during a period of residence in Sweden, and compared it to the German production of Finnish L1 learners who spent only a short period of time in Sweden. She found extensive Swedish influence in the production of those who had spent considerably more time in Sweden, concluding that these learners’ production was influenced by the longer exposure to the Swedish environment.

Fouser (2001) examined two English L1 learners of Korean as a third or fifth language who had lived in Japan for a long time prior to taking up the study of Korean. Both learners had acquired Japanese as a non-native language and both were more fluent in Japanese than in Korean. Fouser (2001) raises several points of discussion, including whether the period of residence in Korea was having any impact on these learners’ Japanese. One subject reported frequent unintentional switching to Korean while speaking Japanese, and the other reported often thinking in Japanese while speaking Korean.

With reference to Elwert’s (1973) work, Hoffmann (2001) discusses how the psychological attachment individuals develop with each of their languages has the potential to affect language maintenance. Elwert remained deeply affected by a change of residence from Italy to Germany, which he claims affected his ability to maintain the three languages he was familiar with at the time of his departure (German, Italian and English). Elwert had been raised in Italy by an English mother and a German father, and had moved to Germany with his parents at the age of nine. Hoffman points out that trilinguals assign a relative importance to the languages they speak at any given time, and a gradual loss of dominance can arise for the
language(s) used the least, presumably because they become less important for the individual. Elwert identifies time and place in particular as decisive for the maintenance of both fluency and dominance. He notes that the most dominant language was for him the language of his immediate environment, while for abstract thinking dominance seemed to be determined by factors such as ‘where he was, who he was with and what he was thinking of’ (Hoffmann 2001: 4).

This leads us to consider one other aspect associated with exposure to a non-native language environment. As we have seen, exposure to a non-native language environment may have an immediate effect, as was the case for Stedje’s (1977) learners. On the other hand, exposure can also influence the language of thought at a later time. Cohen (1995) explains that memory of a non-native language can be triggered by factors such as when the language was spoken, with whom, and in what situation. He gives the example of an English L1 trilingual who stated (Cohen, 1995: 102): ‘sometimes when something triggers a memory of being abroad where I spoke an L2 (i.e. Guatemala, Poland, etc.), I think in the language I used at the time, especially if the memory involves conversations or encounters with native speaker of those places.’ Similarly, an English L1 quadrilingual claimed the following: ‘I think in Hebrew, French or German when I’m thinking about people who speak those languages or situations in which I used those languages’ (ibid.).

During a period of residence in a non-native language environment, many personal experiences are bound to be memorized, but when learners leave the non-native language environment, they may face some difficulty in recalling those experiences if in the meantime fluency in the non-native language has decreased. This is the experience of an English L1 learner of Spanish, who had lived in Italy prior to moving to Spain. The learner makes several interesting remarks about his learning experience (De Angelis, 2005b). For example, he explains how sometimes he would recall conversations with foreign friends, but when the friend was Italian, he found remembering was very difficult as his Italian was no longer as strong as it used to be. Not knowing which language to use, he writes ‘I can’t talk in English to them so sometimes the conversation proceeds in Spanish. Since I’ve been trying to get my Italian back I have stopped doing this as I think it important to separate the two different worlds. (It also feels unpleasant to talk in Spanish.)’ (De Angelis, 2005b).

Order of Acquisition

Order of acquisition has been argued to be connected to the type of associations that can be established between two or more languages in the
mind, and consequently the amount of crosslinguistic influence that can occur. The best-known study on order of acquisition was carried out by Dewaele (1998), who examined 218 lexical inventions in the French oral production of 39 Dutch L1 speakers with English as an L2 or an L3. The term lexical invention refers to items which are ‘morpho-phonologically adapted to the target language but which are never used by native speakers’ (Dewaele 1998: 475).

In this study, 32 participants had knowledge of French as a second language and English as a third language, while seven participants had French as a third language and English as a second language. Dewaele categorised learners’ lexical inventions according to intralingual and interlingual sources and generally argued that the items listed under intralingual sources were the result of slips of the tongue or of strategies such as overgeneralization and simplification, while the items listed under interlingual sources were the result of activation of a non-target lemma, resulting in non-target information being passed on to the target form. Following this initial categorization, Dewaele used a chi-square test of interaction to associate the type and amount of lexical inventions with order of acquisition. French L2 and L3 speakers were found to differ significantly in the amount of lexical inventions produced (DF = 6, Chi = 20.1; p = 0.002). French L2 speakers were also found to rely more extensively on intralingual strategies and French L3 speakers on interlingual strategies. Dewaele then looked at the intralingual sources and found that speakers of French as an L2 were more reliant on their Dutch L1 (15.2% versus 9.2% for the French L3 group), while speakers of French as an L3 were more reliant on their English L2 (21.8% versus 6.9% for the French L2 group). Since these speakers had the same language combination, Dewaele concluded that the order in which a language is acquired can determine the type and amount of CLI that occurs in the target language.

Formality of Context

As all teachers are aware, formal situations such as tests or class presentations generate a great deal of performance anxiety in students, even more so when these are to be carried out in a non-native language. As Hamers and Blanc (1989) have discussed, the stressful situations that can negatively impact bilingual behaviour are several, the most common being environmental noise and mental tiredness. To these we can add peer pressure and fear of failure, which can be more commonly associated with the classroom environment. With respect to language learning, while the stress of a formal situation is known to generate performance anxiety, a
healthy dose of anxiety can also improve students’ performance, and by healthy dose of anxiety I mean students being in performance mode during a test or class presentation.

So far, only one study has examined how the formality of context affects multilinguals’ performance. The study was conducted by Dewaele (2001), who compared students’ performance in formal and informal situations. He wanted to assess whether the formality of the situation led to more effective monitoring of the speech output. He examined the proportion of mixed utterances produced in formal and informal contexts in the French oral production of 25 speakers of Dutch L1 and English L2 or L3. With a series of t-tests he showed morpholexical errors to be more frequent in French L3 speakers, regardless of the condition of formality in which they were tested. Further analysis, however, showed a significant difference ($t = 3.773$, df = 24, $p < 0.001$) in the proportion of mixed utterances in the informal situation (Mean = 9%, S.D. = 8.8) and the formal situation (Mean = 3%, S.D. = 3.9). In other words, students in the formal situation produced less mixed utterances in the French non-native language than those learners who were interviewed informally, presumably because of increased monitoring activity during the formal situation.
Chapter 3

What Can be Transferred from One or More Non-native Language to Another

In the previous chapter we examined the factors that influence the amount and type of transfer in third or additional language production. In this chapter we shift the focus to the type of linguistic information that can be transferred from one or more non-native language to another, with special reference to lexis, phonetics and phonology, morphology and syntax.

Lexis

Non-native linguistic influence is particularly visible in the area of lexis, where traces of non-target information are mostly overt and therefore easily recognizable. One of the most comprehensive studies on non-native linguistic influence and lexical choices was conducted by Ringbom (1987) in Finland, a country with two official languages: Finnish, a Finno-Ugric language, and Swedish, a Germanic language. Finland is widely considered an ideal location for research on non-native language influence due to the sociocultural and educational homogeneity of its people and the language combination that it offers. According to a 1982 survey, 93.3% of the population was estimated to be of Finnish L1 while only 6.3% was estimated to be of Swedish L1. Swedish L1 speakers are generally competent speakers of Finnish as an L2, and Finnish L1 speakers are formally taught Swedish in school (Ringbom, 1987). Even though several years have gone by, Finland has maintained a similar proportion of Swedish-speaking Finns in the country.

Ringbom (1987) examined about 11,000 essays written in English (L3) by Finnish students of Finnish L1 and of Swedish L1 enrolled in an English national exam. He identified several instances of non-native linguistic influence which he broadly categorized as instances of borrowing or instances of lexical transfer (see Table 3.1). Ringbom explains that borrowing and lexical transfer are not clear-cut categories, 'but [are] rather
Ringbom’s (1987) distinction between form and meaning can help us identify the type of information that can be transferred from a native and a non-native language. We already know that semantic transfer is possible from an L1 to an L2 (cf. Odlin, 1989), but the same is not necessarily true with respect to non-native languages. Ringbom (1987, 2001) believes that transfer of meaning can only occur from languages the speaker knows well. When no transfer of meaning is involved, transfer becomes a more superficial phenomenon and learners’ errors are best viewed as forms of borrowing.

In the essays he analysed, Finnish L1 speakers were found to draw extensively on the Swedish L2, but their errors hardly ever involved transfer

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**Table 3.1** Overt crosslinguistic lexical influence in production (modified from Figure 12, Ringbom, 1987: 117)

<table>
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<th><strong>Lexical transfer</strong></th>
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<tbody>
<tr>
<td><strong>Loan translations:</strong></td>
<td>Semantic properties of one item transferred in a combination of lexical items. E.g. ‘child wagon’ for ‘pram’ (Swedish <em>barnvagn</em>)</td>
</tr>
<tr>
<td><strong>Semantic extension:</strong></td>
<td>Semantic properties extended to L2-word. E.g. ‘He bit himself in the language’ (Finnish <em>kieli</em> = both ‘tongue’ and ‘language’)</td>
</tr>
<tr>
<td><strong>Cognates (as seen in false friends):</strong></td>
<td>Formal crosslinguistic similarity between items with varying systematic relationships: (a) wholly different meaning: ‘at the time he works in a fabric’ (Swedish <em>fabrik</em> = ‘factory’); (b) Similar, but in no context-identical meaning: ‘The next day we grounded a club’ (Swedish <em>grunda</em> = ‘found’); (c) In some, but not all context-identical or near-identical meaning: ‘The hound is the best friend of man’ (Swedish <em>hund</em> = ‘dog’, occasionally also ‘hound’)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Borrowings</strong></th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Hybrids, blends and relexifications:</strong></td>
<td>Morphological or phonological modification of item according to L2-norms. E.g. ‘In the morning I was tired and in the evening I was piggy’ (Swedish <em>pigg</em> = ‘refreshed’);</td>
</tr>
<tr>
<td><strong>Complete language shifts:</strong></td>
<td>No modification of item according to L2-norm. E.g. ‘I’m usually very pigg after the diet’ (Swedish <em>pigg</em> = ‘refreshed’)</td>
</tr>
</tbody>
</table>

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*a continuum, since the learner rarely relies on form alone or on meaning alone. The distinction rather establishes which of the two is the dominant factor in individual instances* (Ringbom 1986: 158).

Ringbom’s (1987) distinction between form and meaning can help us identify the type of information that can be transferred from a native and a non-native language. We already know that semantic transfer is possible from an L1 to an L2 (cf. Odlin, 1989), but the same is not necessarily true with respect to non-native languages. Ringbom (1987, 2001) believes that transfer of meaning can only occur from languages the speaker knows well. When no transfer of meaning is involved, transfer becomes a more superficial phenomenon and learners’ errors are best viewed as forms of borrowing.

In the essays he analysed, Finnish L1 speakers were found to draw extensively on the Swedish L2, but their errors hardly ever involved transfer
of meaning and were principally categorized as forms of borrowing. Conversely, Swedish L1 speakers did not seem to rely as much on their Finnish L2 and the Swedish L1 remained their preferred source of lexical information. Most importantly, transfer of meaning occurred only from the Swedish L1. This comparison led Ringbom (1987) to argue that transfer of meaning is mainly restricted to the most fluent language, hence the L1 or the non-native languages the speaker knows well.

The linguistic distance between Finnish and Swedish is clearly a major factor involved in the instances of CLI that Ringbom (1987) has identified. It is in fact the language that bears the closest relationship to the target language which becomes the preferred source of non-target lexical information, particularly when the language involved is the speaker’s native language (Swedish L1). When Swedish is the second language, learners appear to be more ‘selective’ in the choices, in that the influence of Swedish is mostly limited to false friends and borrowings.

Ringbom’s (1987, 2001) hypothesis that transfer of meaning is restricted to the L1 and the non-native languages a speaker knows well finds some confirmation in the literature (Chandrasekhar, 1978; Clyne, 1997; Clyne and Cassia, 1999; Möhle, 1989; Schmidt and Frota, 1986; Singleton, 1987; Wei, 2003a). Wei (2003a), for instance, discusses some overt instances of semantic transfer from Japanese, a non-native language his Chinese L1 informant knew quite well. He examined the informant’s English production and argued that some semantic patterns found in the English L3 were the result of Japanese influence, as in ‘when I’m sick, when I’ve cold I eat medicine, cold medicine’ (Wei, 2003a: 65), where the word ‘eat’ is presumably taken from Japanese. Wei, however, does not specify how the same sentence would be expressed in Chinese, the subject’s L1.

Other interesting examples are described in Möhle (1989). The author describes the production of German L1 speakers who used one of their non-native languages (French) to invent new terms in the target language (Spanish). These learners did not have advanced knowledge of French and, as predicted, mostly produced false friends or borrowings. The following are some of the words they created: *remarcar (French: remarque, English: to remark); *recolta (French: récolte, English: act of picking or crop); *groso (French: gros, English: big). Möhle (1989) also notes the influence of the French L2 in some phrases, as in *no hace atención instead of no presta atención for ‘to pay attention’. Hace (to do) in this case is argued to be modelled upon the French verb ‘faire’ (to do).

More of a puzzling issue relates to how learners make use of content and function words from their non-native languages. Some studies have suggested that transfer phenomena can vary depending on the semantic
weight of the words concerned. More specifically, researchers have found that content words (nouns, verbs, numerals, adjectives and most adverbs) and function words (prepositions, determiners, conjunctions and pronouns) from the L1 and the non-native languages are not equally relied upon during the production process.

Garrett (1975) first noted that the speech errors of monolingual speakers hardly ever involved function words. The phenomenon was later confirmed by other researchers also working in the field of speech processing (see discussion in Dell, 1995). The finding that function words appeared to be invulnerable to speech errors raised the question of whether the mind processes content and function words in the same way or if different mechanisms underlie the selection of these elements of speech. Bock notes that the question generated a considerable debate in the literature, with some authors arguing that content and function words are retrieved in a similar manner (Stemberg, 1984) and others (Garrett, 1982) arguing that function words ‘are specified in a manner that, in effect, bypasses the need for lexical retrieval.’ (Bock, 1995: 187)

From a multilingual perspective, the concern relates not only to how content and function words are processed in the mind, but also to how they are processed in different languages. In L2 speech production research, the use of L1 content or function words is generally viewed as a form of borrowing, the assumption being that the second language system is not as highly developed and automatized as the native language one, so learners resort to L1 content and function words as a compensatory mechanism (Poulisse, 1997; Poulisse and Bongaerts, 1994).

In a study with 45 Dutch learners of English as a second language, Poulisse and Bongaerts (1994) examined the rate of use of L1 content and function words in oral speech. They examined 771 unintentional language switches, divided into non-adapted language switches and morphologically or phonologically adapted language switches. The distinction between these two types of switches was based on ‘hesitation phenomena and intonation’ (Poulisse and Bongaerts 1994: 43). The items pronounced without hesitation and without a strong intonation were regarded as unintentional language switches. The study found that Dutch learners of English in grade 11 and in grade 9 used more L1 function words than L1 content words in their L2 speech.

Poulisse and Bongaerts (1994) accounted for these results by proposing that in L2 production L1 function words are more likely to be used than content words because function words occur more frequently in speech and are therefore accessed more easily. The authors base their argument on the word-frequency effect, which is a well-known phenomenon in the
psycholinguistic literature. According to the word-frequency effect, it is easier to access a word which is used frequently such as 'table', for instance, than a word used less frequently such as 'tank' (see Levelt and Meyer, 2000; Levelt \textit{et al.}, 1999). Poulisse and Bongaerts also elaborate on Giesbers' (1989) claim that content words carry more meaning than function words do. Learners devote more attention to the most meaningful parts of speech, hence content words are more likely to be selected correctly in L2 speech.

When the languages are more than two, it seems that function words are no longer drawn from the L1, but are instead drawn from one of the speakers’ non-native languages. Vildomec (1963) initially claimed that multilinguals tend to use words from their non-native languages even when the source and the target items are dissimilar in sound. Several other authors have examined this claim reaching very similar conclusions. Stedje (1977, as reported in Williams and Hammarberg 1998), for instance, claimed that her 55 Finnish L1 learners of German as an L3 with prior knowledge of Swedish as an L2 preferred to use content words from the Swedish non-native language rather than the Finnish native language. As was the case with Ringbom's (1987) work, relatedness may have been the key discriminating factor here.

Ringbom (1987) found complete shifts from the Finnish L1 to be rare for both content and function words. With respect to function words, in a total of 11,000 English L3 essays he found only five function words from the Finnish L1, and three of these words consisted of the Finnish conjunction \( \text{ja} \) (and), which was used exclusively between proper names. Ringbom traced many of learners’ errors to the Swedish L2, and function words made up 18% of the total number identified. Among these errors, learners produced 13 instances of the word \( \text{fast} \) (although), 10 instances of \( \text{men} \) (but) and 8 instances of \( \text{och} \) (and). Ringbom (1987) explains this data by drawing a distinction between knowledge and control, claiming that ‘with function words (…) the attention given to control procedures tends to slacken, since the learner gives only peripheral attention to them, normally focusing on those other words in his utterance which are communicatively the weightiest’ (Ringbom, 1987: 128). With respect to the words \( \text{fast} \) and \( \text{men} \), he also argues that the actual existence of these words in English may have influenced learners’ production, even if these words have an entirely different meaning in Swedish and in English.

Williams and Hammarberg (1998) also examined the use of content and function words in L3 oral speech. They examined the Swedish production of an English L1 speaker with fluent German as an L2 and categorized the data according to a pragmatic-based distinction between words with an intended pragmatic purpose, and words without any intended purpose,
accordingly labelled as WIPP switches (Without an Identified Pragmatic Purpose). The following is an example of WIPP switch where the speaker uses the German preposition mit: ‘en tjuv % <mit>/ med en nyckel; GLOSS: a thief % <with>/ with a key’ (Williams and Hammarberg 1998: 308; italics in the original).

Williams and Hammarberg (1998) found that 92% of the WIPP switches were from the German L2, 4% were from the English L1, and 4% were from other L2s. In the presence of three related languages, the learner then favoured the German L2 over the English L1 for function words.

While multilinguals have been found to be influenced by function words from non-native languages, there is also evidence that L3 production is influenced by L1 prepositions. Jarvis and Odlin (2000), for instance, compared Finnish L1 speaker with English and Swedish as non-native languages with Swedish L1 speakers with English and Finnish as non-native languages and found that these learners were indeed influenced by their respective native languages in the use of prepositions in the third language.

A more recent study claims that not all function words are perceived as equally transferable to the target language. De Angelis (2005a) gave a summary task to two groups of learners with English or Spanish as their native language, the same target language (Italian L3 or L4), and different non-native languages. Among the English L1 speakers, some had French and some had Spanish as their L2. Most of the non-target function words these learners used were from the French L2 (90.91%) or the Spanish L2 (81.40%) respectively. Among the Spanish L1 speakers, some had English as their L2, and some had English and French as non-native languages. The non-target function words these learners used were from the Spanish L1 (97.06%) when no French was known, but were from both the Spanish L1 (36.67%) and the French L2 (60%) when French was known. Of interest is the type of function words used from the French L2. In both groups, learners used several instances of the French subject pronoun il (he), more specifically 7 out of 10 (English L1 group) and 12 out of 18 (Spanish L1 group). This result then raised the question of whether the frequent use of the French subject pronoun il was a chance occurrence or a surface manifestation of CLI. The rate of subject insertion and omission was thus analysed using a one-way ANOVA. The 17 English L1 speakers with French as an L2 used significantly more subject insertion (Mean = 78.36%, SD = 28.32) than the 37 English L1 speakers with Spanish as an L2 (Mean = 36.55%, SD = 37.58). Similarly, the 45 Spanish L1 speakers with English as an L2 used significantly less subject insertion (Mean = 30.95%, SD = 26.32) than the 9 Spanish L1 speakers with English and French as non-native
languages (Mean = 57.83%, SD = 39.70). These results then led the author to conclude that the use of French function word *il* was the surface manifestation of CLI rather than a chance occurrence.

With respect to integrating function words into written or oral production, these results also suggest that function words are not perceived as being equally transferable by the learner and therefore that the general claim that function words tend to be drawn from non-native languages is not entirely tenable. Function words are indeed drawn from non-native languages but, as far as we can see, this applies to some type of function words (e.g. pronouns) and not others. Further research would need to use different language combinations and clarify the extent to which other types of function words, such as determiners, prepositions and conjunctions, are also used in third or additional language production.

Let us now turn to a study (Odlin and Jarvis, 2004) that focused on whether learners with knowledge of Swedish as an L1 or as an L2 display any differences in their use of Swedish as a source language. The authors examined the written production of 140 Finnish L1 speakers and 70 Swedish L1 speakers, all learners of English as a non-native language. Thirty-five of the Finnish L1 speakers had no knowledge of Swedish as an L2, while the remaining participants had studied Swedish from 1 to 7 years. The 70 Swedish subjects had formally studied Finnish as an L2 for a period that ranged from 5 to 7 years. In addition to these two main groups, three control groups were also used, consisting of 66 Finnish L1 speakers, 44 Swedish L1 and 66 English L1 speakers.

Odlin and Jarvis (2004) showed their participants a silent Charlie Chaplin movie and asked them to provide a written summary of what they saw. They then proceeded to analyse learners’ use of four English lexical items: *instead*, *for*, *some* and *what*. These four items were chosen because of their cognate status in English.

*Instead*, and *instead of* are similar to the Swedish expressions *i stället* and *i stället för*, while the equivalent expression in Finnish are the adverb *sen* *sijaan* and the postposition *sijaan/sijasta*, both more distant from English. Odlin and Jarvis first asked whether learners with knowledge of Swedish would readily identify the similarity between the Swedish and the English forms, and second whether Swedish L1 speakers made a different use of Swedish than those who had knowledge of Swedish as a second language. Results indicated some differences in behaviour between the Finns and the Swedes. Only 1 (0.7%) out of 140 Finnish L1 speakers made use of the word *instead* in English, while 18 (25.7%) out of 70 Swedish L1 speakers used the word *instead* in their writing. The same pattern of use was found in the
writings of the Swedish and Finnish control groups. The Finns never used *sen sijaan* or *sijaan/sijasta*, while the Swedes used *i stället* and *i stället för* 18 times. In the use of *instead* then, Swedish as an L1 seems to inform learners’ decisions more markedly than Swedish as an L2.

The English preposition *for* is similar in form and function to the Swedish preposition *för*. There are several equivalents of *for* in Finnish. The authors do not list them all but discuss some of their properties throughout the article. They generally argue that Finns and Swedes show some differences in their use of *for* in that Finns seem to be more prone to overgeneralize and use the preposition with verbs of saying such as *say for* and *ask for*. Eight cases of overgeneralizations of this kind were found.

For the English word *what*, distance is generally argued to influence learners’ decisions as in the other examples above. The other interesting example concerns the use of the word *some*. In Swedish, *som* is a relative pronoun, while in English *some* is a determiner or an indefinite pronoun. This is a case in which the spelling and pronunciation in Swedish and English are similar, but the function is not. Jarvis and Odlin found three instances where the Swedes used the word *some* in English with the relative pronoun function, and two of these instances were produced by the same person. By contrast, Finns never used the word *some* as a relative pronoun in English. In terms of non-native linguistic influence, then, what we see once again is that learners make a different use of the Swedish L1 and the Swedish L2. It must be noted, however, that in most cases the data available is so little that conclusions are difficult to reach. In the last example, for instance, the authors found only three instances of *some* as a relative pronoun, two of which were produced by the same individual.

In a totally unrelated study, Gibson and Hufeisen (2003) also comment on the Swedish word *som*. In this study, the authors examined whether learners of German (GFL group) and learners of English as a non-native language (EFL group) would be able to take advantage of the number of cognate relations that exist between Swedish, German and English and translate a short Swedish text into their respective foreign languages. None of the participants had been previously exposed to Swedish. The authors found several differences in learners’ accuracy rates, and similarly to Odlin and Jarvis (2004), they also singled out the Swedish word *som*. Learners of both groups found *som* to be one of the most difficult words to translate, with a reported error rate of 69% for the GFL group, and of 80% for the EFL group. Gibson and Hufeisen’s learners did not easily identify the Swedish word *som* with an English relative pronoun and when they did so, they seemed to be helped by the context in which the word was used.
Before I conclude this section on CLI and lexis, I would also like to mention some instances of combined CLI. It may be recalled that combined CLI is a type of transfer that occurs when two or more languages interact with one another and concur in influencing the target language, or whenever one language influences another, and the already influenced language in turn influences another language in the process of being acquired.

As is usually the case, Vildomec was the first to note that: ‘if two or more tongues which a subject has mastered are similar (both linguistically and psychologically) they may “co-operate” in interfering with other tongues’ (1963: 212). Several decades have gone by since this remark, yet combined CLI has remained one of the least investigated forms of influence on the target language to the present day. The small amount of evidence that is indeed available amounts to brief descriptions and remarks (Chamot, 1973; Chandrasekhar, 1978; Clyne, 1997; Clyne and Cassia, 1999; De Angelis, 2005c; Dewaele, 1998; Möhle, 1989; Odlin and Jarvis, 2004; Ringbom, 1987). This said, so little research is available that other manifestations of combined CLI will no doubt be identified in the future.

Among the first to discuss instances of combined CLI was Chandrasekhar (1978), who found some cases of it in the German L3 production of a Hindi L1 speaker with prior knowledge of English. He claimed that the learner’s source language included information from two languages, the Hindi L1 and the English L2 combined, as the following statement indicates:

the mother tongue (Hindi) construction has influenced the English of the learner, and it is this Hindi-influenced English which forms the base language when German is being learned: *Ich treffe mit meinem Bruder instead of Ich treffe meinen Bruder. The erroneous German construction is the result of the wrong English of the learner I meet with my brother, the with my brother here being the equivalent of Hindi bhai se. (Chandrasekhar 1978: 64, italic and bold in the original)

More recently, Clyne (1997) noted that formal similarity between two languages can have a reinforcement effect leading to a lexical substitution in production (see also discussion in De Angelis, 2005c). He accordingly proposed that ‘if two languages share a feature, the informants tend to extend it to the third language (Clyne 1997: 110–111). He gives the example of an Italian/Spanish/English trilingual who produced the following sentence in Italian: ‘eccio diceva che no che c’affettava un po’ alla scuola il bambino allora piu’ per questo (English: here (the teacher) said that it affected him a little at school – more for that reason). Clyne argues
that the word 'affettava' is the result of the influence of Spanish 'afectar' and English 'affect'. Similarity, in this case, is implied to lead to the persistence of interlanguage-based lexicon in speech.

Some more evidence of combined CLI is mentioned in Möhle (1989), who examined German L1 learners of Spanish with prior knowledge of French. As may be expected, the author noted extensive interaction between French and Spanish. She also found several words that appeared to be the result of combined influences. For example, the use of the word *emplear* instead of *llenar* (to fill) in Spanish, which is argued to be the result of the combined influence of French *remplir*, Latin *plerus*, and of course Spanish *emplear*, a word that means to employ rather than to fill.

### Phonetics and Phonology

Foreign language speakers typically retain some phonetic features of their native language when speaking in the target language. This gives that special accent to someone's speech which can often reveal the person’s place of origin and language background. Non-native languages are not usually regarded as significant sources of influence on the target language, but some forms of influence are however possible (Chamot, 1973; Hammarberg, 2001; Hammarberg and Hammarberg, 1993; Rivers, 1979), as this section will discuss.

Hammarberg and Hammarberg (1993) provide a detailed account of non-native phonetic influence on the acquisition of Swedish as a third language. Their subject – an English L1 speaker with excellent knowledge of German as an L2 – was asked to complete a story narration task in the Swedish target language. Two samples of the subject’s Swedish speech were tape-recorded and played back to Swedish native speakers on two separate occasions. The first recording was made soon after the subject had moved to Sweden, and the second about a year later. The Swedish native speakers were not told they would be hearing speech from the same person, they were simply instructed to listen to the recordings and identify the speakers’ native language. Results were quite clear with respect to non-native phonetic influence. The speaker of the first recording was judged to be a native speaker of German, when German was in fact the subject’s second language, while the speaker of the second recording was mostly judged to be a native speaker of English, which was indeed correct. Box 3.1 shows some of the sound segments from the English L1 (E) and the German L2 (G) observed in the first and the second recordings (Hammarberg and Hammarberg, 1993: 63):
The same subject was also asked to read two short texts from a Swedish language textbook and carry out two tasks. The first was to listen to a native speaker read a Swedish text and then read the same text aloud (read-after-me condition). The second was to read the text without listening to a native speaker first (read-on-your-own condition). Results showed that the subject displayed a more pronounced German accent in the second condition. Box 3.2 shows the German settings that were observed (ibid.):

<table>
<thead>
<tr>
<th>Box 3.1</th>
<th>First recording:</th>
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</thead>
<tbody>
<tr>
<td>G</td>
<td>German labial (u: ])</td>
</tr>
<tr>
<td>G/E</td>
<td>Very lax short /i/</td>
</tr>
<tr>
<td>G</td>
<td>Less retracted long /a: /</td>
</tr>
<tr>
<td>G</td>
<td>Voiced intervocalic /s/ ([z])</td>
</tr>
<tr>
<td>G</td>
<td>Postvocalic /r/; uvular approximant or vocalized (Prevocalic /r/ is an apical trill or weak approximant)</td>
</tr>
<tr>
<td>G</td>
<td>Syllabic nasal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Box 3.1</th>
<th>Second recording:</th>
</tr>
</thead>
<tbody>
<tr>
<td>G/E</td>
<td>Very lax short /i/</td>
</tr>
<tr>
<td>E</td>
<td>Occasional reduction of unstressed vowel to shwa</td>
</tr>
<tr>
<td>E</td>
<td>Retracted, alveolar /t,d/</td>
</tr>
<tr>
<td>E</td>
<td>Slightly velarized /l/</td>
</tr>
<tr>
<td>non-G</td>
<td>No longer [z] for /s/</td>
</tr>
<tr>
<td>E</td>
<td>Postvocalic /r/: a somewhat too prominent apical approximant, like the type used pre-vocally</td>
</tr>
</tbody>
</table>

The same subject was also asked to read two short texts from a Swedish language textbook and carry out two tasks. The first was to listen to a native speaker read a Swedish text and then read the same text aloud (read-after-me condition). The second was to read the text without listening to a native speaker first (read-on-your-own condition). Results showed that the subject displayed a more pronounced German accent in the second condition. Box 3.2 shows the German settings that were observed (ibid.).
Hammarberg and Hammarberg (1993) make several remarks as to why an English L1 speaker would rely so extensively on the phonetic settings of the German second language while producing speech in the Swedish target language. While they argue that the German L2 appears to be a stronger influence in the early stages of acquisition, they also note that the reliance on the English L1 or the German L2 seems to be triggered by different needs. They believe that the reliance on the L1 ‘is a basic constraint in language learning and tends to be persistent, whereas the reliance on L2 is a coping strategy which the learner resorts to at an initial stage when the phonetic form of L3 is too unfamiliar to master, and abandons when proficiency in L3 increases’ (Hammarberg and Hammarberg, 1993: 65; italics as in original).

The authors additionally suggest that, in some cases, the German articulatory settings turned out to be of great help to the learner because they allowed her to avoid unwanted L1 phonetic features such as diphthongal vowel qualities in her speech. The speaker clearly claimed consciously suppressing the English L1 phonetic settings in favour of the German ones because she did not want to sound like an English native speaker when speaking Swedish.

While a speaker can consciously decide to select some phonetic features at will, Hammarberg and Hammarberg (1993) also maintain that the subject’s reliance on the German phonetic settings was partly due to the complexity of the task she was given. In fact, she showed a strong German accent when doing the most complex reading task, which is when she was asked to read a Swedish text without being able to hear the same text read by a native speaker first.

Some evidence of non-native phonetic influence can also be found in Rivers’ (1979) diary of a sixth-language learner. The informant is an English L1 learner of Spanish as a non-native language, with good knowledge of

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<table>
<thead>
<tr>
<th>Long /a:/</th>
<th>Relatively fronted quality, like German [a:] laga, mat</th>
</tr>
</thead>
<tbody>
<tr>
<td>/t/</td>
<td>Uvular/vocalized throughout: rum, draperi, dörren, vård, mattor, framför etc.</td>
</tr>
<tr>
<td>Prevocalic /s/</td>
<td>[z]: sätt, sång, sången, [s]: sang, så</td>
</tr>
<tr>
<td>Syllable-final obstruents</td>
<td>Devoiced: bord, vård, bred, tarvlor</td>
</tr>
</tbody>
</table>
French and very little knowledge of German and Italian. Rivers provides a fairly detailed report of various types of influences, including phonetic influences. Given the combination of languages, it is perhaps not surprising that language distance plays a crucial role in instances of CLI and therefore that the Romance languages (French and Italian) surface more strongly in pronunciation. Rivers discusses the use of French vowels and consonants as well as French stress patterns. For instance, French /y/ is often used instead of /u/, and a French stress is placed on the words' last syllables, as in habló instead of háblo. Also, she reports on the occasional use of the French uvular /ʁ/. Perhaps more of a surprise is the influence from Italian, a language the learner believed mostly forgotten. The Italian influence seems, however, confined to the pronunciation of words that are phonetically similar in the two languages, such as Italian cento for chiento, or Italian buon giorno for buenos días (Rivers 1979: 70). As noted in the section on language distance, phonetic resemblance seems to facilitate instances of transfer from native as well as non-native languages, and from distant as well as close languages.

Chamot (1973) also discusses some evidence of phonetic influences on the target language. Her evidence is from a French-Spanish bilingual boy who was raised speaking two languages: French at home and Spanish at school. The boy had moved to the United States with his family at the age of ten and had been learning English since. French and Spanish were maintained as his home languages. The child was tape-recorded twice a month for nine consecutive months for approximately 15 to 30 minutes at dinner time. Chamot focused on various aspects of acquisition, including the child’s difficulties at mastering phonetic features that were either absent or present in the two languages he knew, French and Spanish. One of the problems she identifies, and that she defines as a case of ‘double interference’, is the child’s difficulty in acquiring vowels that are nearly-identical in French and in Spanish, but are different in English. For example, the child often replaced the English vowels /y/ /ɛ/ /ow/ and /vw/ with the cardinal vowels /i/ /e/ /o/ and /u/, which are all very similar in Spanish and French. The prior knowledge of two languages which share some phonetic features with one another then seems to influence the acquisition of the third language. Would the same have occurred had the child been familiar with either Spanish or French but not both? The instances of ‘double interference’ Chamot (1973) describes are a form of combined CLI, whereby two languages interact with one another and concur in influencing a target language. In this case, the presence of similar features in Spanish and French seems to have had a negative impact on the
acquisition process, reinforcing the use of the source pattern while delaying the acquisition of the new one.

Singh and Carroll (1979) also examined learners of different language backgrounds finding some evidence of non-native transfer. The authors observed that those learners whose mother tongue was a non-European language, but who had prior knowledge of English, produced French L3 speech that seemed ‘suspiciously anglophonic’ (Singh and Carroll, 1979: 58). For example, a Turkish L1 speaker was found to use /w/ for French /v/. Since Turkish does not have the phoneme /w/, but has the phoneme /v/, the authors argue that the informant must have overgeneralized the difference between /w/ and /v/ in English, creating an indirect form of phonetic influence from English to the French L3. The assumption here is that when the informant initially learned English, he first used his knowledge of Turkish /v/ and then learned the allophonic distinction between English /w/ and /v/, which was subsequently extended to French. Among the explanations Singh and Carroll provide is the suggestion that these informants were ‘working with an extended notion of cognates across European language boundaries’ (Singh and Carroll, 1979: 58).

Morphology

In the CLI literature we find widespread scepticism about the transferability of bound morphology, and of inflectional morphology in particular. The evidence of inflectional and derivation morphological transfer from the L1 or the non-native language is most certainly quite sparse, but the growing empirical record is beginning to show that bound morphology does not seem as immune to transfer as is traditionally thought.

Long ago, Weinreich (1953: 44) pointed out that:

a statement of the form ‘Morphologies can(not) be mixed’ is premature at the present state of our knowledge. The transfer of a full grammatical paradigm, with its formant morphemes, from one language into another has apparently never been recorded. But the transfer of individual morphemes of all types is definitely possible under certain favourable structural conditions, such as a preexisting similarity in patterns or the relatively unbound and invariant form of the morpheme.

More than fifty years later, stating that bound morphology does not transfer continues to be premature, especially as we now have more evidence that certain types of bound morphemes can transfer under certain conditions.
Weinreich suggests that:

it stands very much to reason that the transfer of morphemes is facilitated between highly congruent structures; for a highly bound morpheme is so dependent on its grammatical function (as opposed to its designative value) that it is useless in an alien system unless there is a ready function for it. (Weinreich, 1953: 33)

Weinreich’s idea that transfer ‘is facilitated under congruent structures’ raises some concerns as to how this statement should be interpreted. First, as Odlin (1989) pointed out, it is problematic to establish what the necessary degree of congruence should be for transfer to take place. Second, the notion of congruence is vague, as it can be taken to refer to phonological patterns, semantics, grammatical functions and so on.

Weinreich (1953) reports only a few cases of morphological transfer, but in reading his work we can understand that he was not entirely sceptical about this type of transfer, even coming to argue that highly bound morphemes may be subject to transfer. For example, he writes:

‘Almost equally favourable conditions characterize the Romansch-Schwyzertütsch, where a case bordering on bound-morpheme transfer has occurred. Bilingual children have been replacing the Romansh feminine indefinite article in, an alternant of ina used before vowels, by ina-n (ina-n-ura ‘an hour’ for in’t’ura) on the model of Schwyzertütsch, where, just as in English, the article a has an extended alternant, an, before vowels (a p’luag ‘a plough’, an ap’al ‘an apple’). (Weinreich 1953: 32)

Odlin (1989) discusses the fact that morphological transfer is possible but quite rare, and emphasizes that only a few cases are reported in the literature. He mentions evidence from Fantini (1985), for instance, who showed that pluralization rules of one language can be employed in the production of another, as in the sentence too many cars produced by a Spanish-English bilingual child. In Spanish, nouns and adjectives agree in number and gender, while in English they do not. The pluralization of the English adjective many is taken as evidence of transfer of adjective pluralization from Spanish into English.

Evidence that morphological knowledge is exploited in the acquisition of a second language is also presented in Orr (1987), who found that speakers of Ngoni were clearly advantaged in the learning of prefixation of Chichewa, another Bantu language, when compared with L1 speakers of Gujarati, a language that does not make use of the same complex prefixation system (see discussion in Jarvis and Odlin, 2000).
Examples of morphological transfer from non-native languages are reported in Bouvy (2000), Clyne and Cassia (1999), De Angelis and Selinker (2001), Hammarberg (2001) and Jarvis and Odlin (2000). Let us examine some of these examples focusing on inflectional morphology, since this is the most debated type of transfer of all.

Bouvy (2000) gives some example of morpho-semantic code-mixing between two non-native languages, Dutch and English. She found cases in which Dutch pluralization rules and suffixes were being applied to English words, as in help-t for helped, where -t is a Dutch suffix; product-en and good-eren for the word goods, -en and -eren being Dutch inflectional suffixes.

Hammarberg (2001) also offers some clear examples of transfer of inflectional morphemes. One of these involves the use of a German infinitive ending. The subject was trying to say ‘to camp’ but used the word tälten in Swedish instead of using the correct form tälta. The influence in this case is argued to be from the German verb zelten. Most interesting is the sudden presence of the Italian verb morphology in the subject’s Swedish speech. The subject was an English L1 speaker with good knowledge of German and very little knowledge of Italian. She produced sentences using the Italian first conjugation infinite ending -are, as in skrivare (target form: att skriva; English: to write) or läfare (target form: att lära; English: to teach).

Some other convincing evidence of morphological transfer can be found in Jarvis and Odlin (2000), who compared the type and frequency of spatial expressions used by 140 Finnish L1 speakers and 70 Swedish L1 speakers, all learners of English as a second language. Finnish marks spatial relationship by agglutinative postverbal morphology, while Swedish marks spatial relations by way of preverbal prepositions, therefore by the use of free morphology as in English. The authors asked participants to describe a silent film and then examined how they used spatial prepositions after English verbs such as ‘sit’, ‘take’ and ‘put’. They found a clear difference in terms of the prepositions that were favoured depending on the participants’ L1 background. Finns, for instance, displayed a marked tendency to use the expression ‘sit on the grass’, while Swedes favoured ‘sit in the grass’. The same preference is reflected in the results obtained from the control groups. Finnish L1 speakers used 27 instances of -lle/-lla (on) and never used the bound morpheme -ssa/-Vn (in). Swedish L1 speakers used 11 instances of i (in) and 5 of på (on). The overall results, the authors claim:

indicate that the bound agglutinative morphology of the Finnish spatial system and the free prepositional morphology of Swedish constrain the type of options that learners pursue in their L2 English spatial reference. Whether the information is coded as a preposition, postposition, inflectional morpheme, the native language can inform the semantic choices learners make. (Jarvis and Odlin, 2000: 553)
Jarvis and Odlin’s (2000) results illustrate with clarity the existence of morphological transfer between a native and a non-native language. An issue the authors do not directly address, but that would have been important to address, relates to the role of learners’ prior linguistic knowledge since Finnish and Swedish L1 speakers also have knowledge of Swedish and Finnish as non-native languages. This is to say that in order to obtain a clear picture of the transferability of bound morphology with these speakers, it would have been important to evaluate how the same participants would have expressed spatial relations in their respective non-native languages as well. Nonetheless, the authors have provided us with some very convincing data on the transferability of bound-morphology.

Syntax

Research on the acquisition of third or additional languages from a generative perspective is scarce, but the few studies that have been published all overwhelmingly point to a difference between L2 and L3 acquisition.

One of the first to investigate multilingualism from a generative perspective was Zobl (1992), who tested whether prior linguistic knowledge leads to the creation of more or less conservative grammars in multilinguals, following the assumption that a preference for wide grammars suggests that hypotheses are being overgeneralized resulting in higher acceptance scores with respect to marked as well as ungrammatical sentences. Accordingly, Zobl (1992) investigated the hypotheses that ‘in judgements of grammaticality, Mls will more often than Uls accept sentences whose generation presupposes a more marked grammar. Similarly they will more often accept sentences which presuppose a grammar that overgenerates’ (Zobl, 1992: 179). Let us clarify this point with an actual example (adjacency of verbs and objects) and examine the acceptability scores that Zobl obtained.

With respect to adjacency of verbs and objects, Zobl explains that a grammar which allows V NP and NP in contiguity is more conservative than a grammar which allows the introduction of elements such as adverbs and prepositions in the sequence, as in the following three sentences (Zobl 1992: 183): 1) *A waitress brought the customer quickly a menu, 2) *Did the teacher explain patiently the answer?, 3) *The girl was sending to her boyfriend a letter.’ In (1) and (2), the adverbs ‘quickly’ and ‘patiently’ are introduced, while in (3) the Prepositional Phrase (PP) ‘to her boyfriend’ is introduced. Zobl’s results for this instance, and more broadly for the entire study, turned out not to be statistically significant, he nonetheless
notes the presence of a wide margin of difference between the scores of two groups, which understandably casts some doubts as to whether a complete rejection of the null hypothesis is appropriate. For instance, with respect to the first sentence (V NP Adv. NP), the margin of difference in question is 19.2%; for the second sentence is 10.0%, and for the third sentence is 5.5%. In addition to adjacency of verbs and objects, Zobl also tested the two groups of participants on several other structures, finding an overall ratio of wider to narrower grammars of 2:1 in favour of multilinguals which, he argues, provides some tentative support for the hypothesis originally outlined. Multilinguals, in a few words, seem to create less conservative hence more powerful grammars than monolinguals do.

Klein (1995) also asked whether multilinguals are in any way different from monolinguals with respect to language acquisition. She compared a group of 17 learners of English as an L2 with a group of 15 multilinguals of different language backgrounds, all learners of English as an L3 or L4. She also used 15 English L1 speakers as a control group. The investigation focused on the acquisition of English verbs and their prepositional complements, and on the acquisition of preposition stranding. Let’s examine the case of preposition stranding.

In brief, when a wh-element in a question involves a PP, English has two options. The first is that the PP is extracted and fronted, creating what is called pied-piping, as in ([For whom] are the girls waiting [pp for t]). The second, known as preposition stranding, entails that it is only the object that is extracted, as in ([Who] are the girls waiting [pp for t]).

All the participants to Klein’s study were familiar with languages that constructed wh-questions via wh-movement, but none of them allowed preposition stranding. Learners in each group then had an equal chance of acquiring preposition stranding in English. Using grammaticality judgments and corrections tasks, Klein (1995) tested a number of verbs with prepositions like wait for, work for, play with, dance with, talk about, worry about. Participants were given 18 sentences containing verbs with their prepositions omitted, like ‘The young girl waited the school bus yesterday’ or ‘which bus did the young girl wait yesterday?’

Klein (1995) had hypothesized that multilinguals would show an advantage over monolinguals in the acquisition of preposition stranding, a hypothesis which the results of the study indeed confirmed. Klein explains that ‘because none of the learners’ prior languages exhibit preposition stranding, former parameter settings could not have been the cause for this increased rate of acquisition among the Mls’ (Klein, 1995: 450–1). Accordingly, she maintains that all the added qualities previous studies had already observed in multilinguals, such as better metalinguistic skills
(Thomas, 1988, 1992) or less conservative learning processes (Zobl, 1992), contribute to triggering the settings of UG parameters in multilingual speakers. (Klein, 1995: 420)

More directly associated with the study of CLI and multilingualism is the debate on the L2 initial state, which has been extended to L3 acquisition. Before reviewing the study itself (Leung, 2005), some background information on what this debate entails may be helpful.

The task of defining the L2 initial state, which is commonly understood to be the grammar at the beginning of the acquisition of a second language, has attracted much attention in the literature as it is essential to explain what subsequent grammars start from (see Schwartz and Eubank, 1996). With respect to L1 transfer, two influential hypotheses can be mentioned: the ‘Minimal Trees’ hypothesis (Vainikka and Young-Scholten, 1996) and the ‘Full Transfer/Full Access’ hypothesis (Schwartz and Sprouse, 1996). These two hypotheses of L2 syntactic development differ in their assumptions of how grammars are built and in what they believe the L2 initial state contains.

Hawkins (2001) presents two major views of how grammars are built: the lexical array and the structural template views. According to a structural template view ‘the syntactic module constructs phrase markers independently of the lexicon, into which lexical items are subsequently inserted. In other words, the syntax provides a “structural template” and then fills it with morphemes drawn from the lexicon’ (Hawkins 2001: 330, inverted commas in the original). According to the lexical array view based on Chomsky (1995), ‘the syntax does not construct structural templates independently of the lexicon. Instead, the lexicon selects arrays of lexical items directly from the lexicon and “merges” them into an initial phrase marker’ (ibid.).

The Minimal Trees hypothesis and the Full Transfer/Full Access hypothesis differ in their view of the relationship between the syntax and the lexicon and therefore differ in how they assume L2 grammar development takes place. The first hypothesis subscribes to the lexical array view, the second to the structural template view (Hawkins, 2001).

These two hypotheses also substantially differ in what they believe the L2 initial state may contain. The Minimal Trees hypothesis makes use of the distinction between lexical and functional categories and claims that only the L1 properties of lexical categories (N, V, P and A) initially transfer. The L1 properties of functional categories such as IP or CP do not. These develop later in the acquisition process through exposure to input. In consonance with the lexical array view, functional categories are constructed only after the acquisition of morphemes belonging to IP or CP, but they are
not initially present in the L2 initial state. The ‘Full Transfer/Full Access’ hypothesis instead proposes that learners have full access to both lexical and functional categories which, in agreement with a structural template view, are already present at the initial stage of L2 acquisition. The hypothesis thus claims that the L2 initial state includes all the grammatical representations determined by the L1, the only exception being the surface realization of bound morphology. Learners subsequently restructure their grammar upon exposure to the L2 input. According to this hypothesis then ‘the initial state of L2 acquisition is the final state of L1 acquisition (excluding the phonetic matrices of lexical/morphological items) (Schwartz and Sprouse, 1996: 41).

The two hypotheses attempt to capture L1 transfer by latching on to a constant, i.e. the L2 input, which is viewed as the trigger of syntactic development. Vainikka and Young-Scholten (1996: 7) argue that ‘the development of functional projections is driven solely by the interaction of X′-Theory with the target-language input’. Schwartz and Sprouse (1996: 41) instead argue that ‘the initial state of the L2 system will have to change in light of TL input that cannot be generated by this grammar’; that is, failure to assign a representation to input data will force some sort of restructuring of the system (‘grammar’).

As anticipated, Leung (2005) extended the above arguments about the L2 initial state, and the theoretical developments that followed, to the acquisition of a third language. Aiming to compare the L2 with the L3 initial state, Leung (2005) tested two groups of French learners. One group (the L3 group) was formed by L1 speakers of Cantonese with prior knowledge of English, and another group (the L2 group) was formed by L1 speakers of Vietnamese with no knowledge of English. These subjects were tested on the following grammatical properties: Determiner (D), Number (Num), the feature strength of Num, and the formal feature [± definite]. The results obtained were then discussed within two currently competing models of acquisition: the Failed Functional Features Hypothesis (FFFH) and the Full Transfer Full Access Hypothesis (FTFA) reviewed above.

Leung explains that, with respect to L2 acquisition, the FFFH essentially claims that all those properties such as functional categories, formal features and feature strength which are not instantiated in the L1 grammar will not be acquired in the second language. The implication for L3 acquisition is that the same properties will not be acquired in the L3 either. In contrast, the FTFA, assumes that all properties, functional and lexical, will transfer. An important distinction Leung makes is that the FFFH entails the existence of failure due to the L1, while for the FTFA there are no failures. In fact, he says, in L3 acquisition ‘whether there is transfer from the L1 or the L2
initial state, parameterized properties are in principle always attainable’ (Leung, 2005: 41).

Focusing on the grammatical properties listed earlier (Determiner (D), Number (Num), the feature strength of Num, and the formal feature [± definite]), Leung carried out two experiments using a wide range of oral and written tasks, and overall results provided support for ‘the full transfer of L1 in the L2 initial state and partial transfer of L2 in the L3 initial state’ (Leung, 2005: 39). Leung also notes that learners in the L3 groups performed significantly better than learners in the L2 group. This, he argues, is not consistent with either the FFFH or the FTFA hypotheses and clearly point to the fact that L3 acquisition is not just an extension of L2 acquisition. In L2 acquisition, transfer can only come from the L1, while in L3 acquisition, the sources of transfer can be both the L1 and the L2.

Another valuable contribution which highlights the difference between L2 and L3 acquisition can be found in Flynn et al. (2004). The authors propose a Cumulative-Enhancement Model for Language Acquisition, which essentially entails that the learning process is cumulative and therefore that all the languages a speaker is familiar with can potentially influence the development of the target language. The influence is therefore no longer a prerogative of the L1, which is in fact argued not to have a privileged status in L3 acquisition.

The proposals stem from a series of studies on relative clauses with adults and children (Flynn 1983, 1987; Flynn and Lust, 1981) and the comparison of results for L1, L2 and L3 acquisition. With respect to the study on L1 acquisition, Flynn and Lust (1981) compared English L1 children’s developmental patterns of three types of relative clauses: (1) lexically headed, head with semantic content (Big Bird pushes the balloon [which bumps Ernie]); (2) lexically headed, head with no semantic content (Ernie pushes the thing [which touches Big Bird]); and (3) free relative (Cookie Monster hits [what pushes Big Bird]). Using an elicited imitation method, the author found that free relative clause structures were significantly more productive than the other two types of clause structures. This means that children who were asked to imitate these structures, correctly imitated the free relative clause structures more often than the remaining two other structures. The authors concluded in favour of the primacy of free relative structures with respect to the development of subordination in L1 acquisition.

The same types of structures were then tested with adult L2 learners of English with different L1s (Spanish and Japanese). These two native languages were chosen because of the structural contrast they offer. Spanish, like English, is a head-initial, right-branching language, while
Japanese is a head-final, left-branching language. Using elicited imitation, findings indicated that the free relative clause structure appears before the lexically headed structures in the production of Japanese L1 speakers but not in the production of Spanish L1 speakers. The authors explain these results with the argument that Japanese L1 speakers, as well as the monolingual English children, had no prior experience with head-initial, right-branching languages, so they all had to set the correct parametric value for the English L1 or L2. More specifically, they claim that the results indicate that ‘both “determining” and experience with the consequences of the parametric value of this grammatical principle is necessary in acquisition in terms of the development of a language-specific grammar’ (Flynn et al., 2004: 8).

Moving on to L3 acquisition, Flynn et al. (2004) matched the design of this study with the design used in the previous two studies just reported, hence three types of relative clause structures were tested: (1) lexical head with semantic content (The owner questioned the businessman [who greeted the worker]); (2) lexical head with no semantic content (The janitor criticized the person [who called the lawyer]); and (3) free relative (The professor introduced [whoever greeted]). A total of 33 Kazakh L1 adults and 30 children at three proficiency levels were tested. Proficiency was assessed with the Michigan Test and learners’ proficiency was accordingly classified as High, Medium or Low.

A major strength of this research design lies in the choice of languages. Kazakh is a Turkish language with a head-final, left-branching structure like Japanese, while Russian is a Slavic language with a head-initial, right-branching structure like English. It follows that, if learners draw on their prior knowledge with respect to relative clause structures in the English L3, evidence of use of a right-branching language would suggest the influence of the Russian L2, which in turn would provide support for a Cumulative-Enhancement Model of Acquisition. Results showed similar acquisition patterns for the Kazakh L1 speakers and the Spanish L1 speakers of the second study which, according to the authors, indicates that ‘prior CP development can influence development of CP structure in subsequent language acquisition’ (Flynn, et al., 2004: 13). Results obtained from children, however, showed something unexpected, in that their behaviour seemed more in line with the results obtained from English L1 children and Japanese L1 speakers. In the search for an explanation, the authors looked more closely at the time of acquisition, noting that some of the children were learning Kazakh and Russian simultaneously as L1s. They thus postulated a possible difference associated with when the L2 is acquired, that is if the acquisition of the L1 and the L2 is simultaneous or near-simultaneous, or if
it is sequential. They accordingly argued that ‘when the L2 is still “in progress”, its influence on L3 acquisition is not the same as it is when L2 and L3 are sequential.’ (Flynn et al., 2004: 14).

By showing that previously constructed grammars are relied upon during the acquisition process, Flynn et al. (2004) provide a highly valuable contribution to the field, as they show that previously known non-native languages can indeed influence target language development to a significant extent, even when proficiency in the second language is low or intermediate. Moreover, the authors highlight the possible difference between simultaneous and sequential acquisition. Given their results, the observation looks very promising for future progress and seems to warrant further investigation.
Chapter 4

Multilingual Speech Production

The primary objective of this chapter will be to examine the few models of multilingual speech production that are currently available. Since most of these models are based on proposals originally made in relation to monolingual and bilingual speakers, I shall first summarize two key models of monolingual speech production (Dell, 1986 and Levelt, 1989) before proceeding to examine those models of bilingual speech production which are argued to account for multilingual production as well.

Two Influential Monolingual Speech Production Models: Dell (1986) and Levelt (1989)

Among the most influential models of monolingual speech production are those proposed by Dell (1986) and Levelt (1989). These two models substantially differ in their assumptions of how feedback between levels of encoding operates, and in their views of how the speech production process takes place.

From an interactionist perspective, Dell (1986) believes that encoding occurs by way of activation spreading from node to node between levels of encoding. Activation is the driving force behind the production process, and the various levels of encoding interact with one another passing on feedback in two directions: from higher to lower levels of encoding (feedforward), and from lower to higher levels of encoding (feedback). In contrast, Levelt (1989) maintains that processing is strictly modular and no feedback between levels occurs. Due to this inflexibility with respect to the flow of information, models of this kind are sometimes called feedforward models, in that they only allow input to be passed on to the level of encoding that is next in line.

Dell’s (1986) model is based on the principle of spreading activation, which is a retrieval mechanism by which speakers are able to select the...
relevant information during the entire speech production process, from message conceptualization to the articulation of speech. If we take picture naming as an example, spreading activation would work as follows. In order to name a picture (e.g. strawberry), the speaker needs to access the relevant conceptual representation for strawberry. While the speaker is in the process of accessing this conceptual representation, other semantically-related conceptual representations become activated as well (e.g. banana, kiwi or blueberry) resulting in multiple representations being activated at the same time. Each activated conceptual representation spreads activation to the relevant lexical node, and the activated lexical node spreads activation to the corresponding phonological segments which in turn lead to the phonetic realization of the target word into speech.

The presumed activation of multiple representations entails the existence of a selection mechanism that allows the speaker to choose only the intended representation, or the speakers would inevitably produce mixed speech containing target and non-target words. This selection mechanism is believed to be dependent upon the level of activation raised for each lexical node. Specifically, Dell (1986) explains that spreading activation involves three core components – spreading, summation and decay. He describes the role of these components as follows:

- When a node has an activation level greater than zero, it sends some proportion of its activation level to all nodes connected to it (spreading). This proportion is not necessarily the same for each connection. When the activation that is sent out reaches its destination node, it adds to that node’s current activation level (summation). For the sake of simplicity I assume no thresholds, saturation points, or other nonlinearities in the spreading process. It is necessary, however, to include a passive decay of activation over time to keep levels down. Specifically activation is assumed to decay exponentially toward zero. (Dell, 1986: 287)

On the basis of these assumptions, Dell (1986) proposes that activation spreads from node to node between three different levels of encoding – the syntactic, morphological and phonological levels. At each of these levels, encoding occurs by way of production rules which generate frames with slots, and each slot is filled with a specific unit, which can be a word (syntactic level), a morpheme (morpheme level) or a phoneme (phonological level). A node is selected when its activation level is higher than that of other nodes, and once a node is activated, activation spreads to the nodes at the lower levels of encoding. This process continues until all the information necessary to produce the intended output has been encoded (see also Dell et al., 1993)
In contrast with Dell’s views is the second model of monolingual speech production proposed by Levelt (1989). Levelt maintains that a verbal message is processed in four separate stages. The initial conceptualization occurs during the first stage, called message generation. The second and the third stage, respectively called grammatical encoding and phonological encoding, are concerned with selecting semantic, syntactic, morphological and phonological information. The fourth and last stage, articulation, is where the message is realized into overt speech.

Levelt (1989) believes that each of these stages is completed in three distinct processing components: the conceptualiser, the formulator and the articulator (see Figure 4.1). Central to the model is the idea that processing in each component is incremental and parallel. It is incremental because each component starts working as soon as input is received, so the output

Figure 4.1 Levelt’s speech production model (Levelt, 1989)
of one component becomes the input of the next component, and it is parallel because each component is processing speech independently of what other components are processing at the same time.

**Conceptualizer:** Message generation occurs in the first processing component, the conceptualizer, where the speaker has access to a wide range of information via a knowledge store which is believed to contain the discourse model as well as situational and encyclopedic knowledge. The message generated at this point is called preverbal because, as the label indicates, it is still non-linguistic. Levelt believes this preverbal message is elaborated in two different stages, which he calls macro-planning and micro-planning. What the speaker intends to say, i.e. the communicative intention, is initially specified at the macro-planning stage, and then a set of information is assigned during micro-planning. The information assigned at this second stage is not used immediately within this first component, but will be used in the next processing component, the formulator, where it will be matched with the information already attached to the entries in the lexicon.

**Formulator:** When the preverbal message is ready, it is passed on to the next component, the formulator, where it is converted into meaning. The conversion occurs by activating semantic, syntactic, morphological and phonological information contained in the lexicon, a process which involves the retrieval of information at the lemma and the lexeme levels. Semantic and syntactic information is specified at the lemma level while phonological and morphological information is specified at the lexeme level. Lemma activation is argued to be the first to occur.

**Articulator:** When the output of the formulator (phonetic plan) is ready, it is passed on to the articulator where it is converted into overt speech. Here the phonetic plan (internal speech) is further checked via the speech-comprehension system so that any errors can be detected and rectified before overt speech is produced.

**Bilingual and Multilingual Speech Production**

The psycholinguistic process that underlies the production of speech in multilinguals is perhaps one of the least studied areas of inquiry in the field of multilingualism. As anticipated at the beginning of the chapter, all models of multilingual speech production are essentially extended or revised versions of models of bilingual speech production. In actual fact, it is more accurate to say there are no models specifically formulated to account for multilingual speech production, there are only models of bilingual speech production which are argued to account for multilingual production as well.
The practice of using a model devised for one type of speaker (the bilingual) to account for another type of speaker (the multilingual) does not come without its problems. First, models of bilingual and multilingual speech production must be able to account for different amounts of knowledge in the mind. Multilinguals clearly have more knowledge that can be selected during the speaking process, and this additional knowledge is likely to generate an increase in the type and amount of crosslinguistic associations and interactions that take place in the mind. Since current multilingual speech production models do not systematically acknowledge the distinction between bilingual and multilingual speakers, they do not attempt to account for this presumed additional activity and, more broadly, for the presence of additional knowledge in the mind. Second, the almost exclusive focus on bilinguals leads to proposals which seem feasible for bilinguals but turn out to be unfeasible, or at least of difficult application, for multilinguals. We will see some of these proposals later on in the chapter. Third, accepting that models of bilingual speech production can predict how multilinguals also produce speech perpetuate the practice of developing theory by relying on empirical evidence from bilingual rather than multilingual speakers. As a result, phenomena specific to multilingualism continues not to be properly examined and accounted for.

Models of speech production generally seek to provide a step-by-step explanation as to how linguistic knowledge is used. To describe the speaking process, a model must be able to satisfy two core requirements: (1) it must be able to specify how the production system works; and (2) it must be able to define what knowledge speakers possess (Bock, 1995). Most models of speech production focus on the first requirement and therefore predict the path of production from conception to articulation. The second requirement is instead far more difficult to satisfy because of the individual variation of non-native knowledge in the mind.

Any model of multilingual speech production must meet the general condition of comparability, i.e. it must explain how the speech of any multilingual speaker is produced, regardless of differences in the proficiency levels attained in the various languages. In order to meet this condition and bypass the variability problem, researchers widely adopt the working assumption that all knowledge in the mind is native-like or, with respect to non-native knowledge, an incomplete version of it (see discussions in Poulisse, 1997; Poulisse and Bongaerts, 1994; Poulisse, 1999; Green, 1986; Wei, 2003a, 2003b). This implies that non-native speech is viewed as an imperfect product at all times (because it is incomplete), and instances of borrowing or crosslinguistic influence are errors that
result from a production system not functioning properly, or from lack of knowledge in the target language.

The assumption that all knowledge is native-like is a useful stance that allows researchers to identify and control what knowledge speakers possess and therefore satisfy the second of Bock’s (1995) requirements. Following the rationale of this assumption, an infinite number of languages can be added to the mind, and the need to define their content is by implication effectively bypassed. Moreover, the assumption is useful to avoid dealing with issues of individual variation and changes in proficiency over time. From a language acquisition perspective, however, there is one essential problem with this assumption. It conflicts with the widely held view that a non-native language is a language with its own internal coherence governed by its own internal rules, hence not an incomplete or defective product in any way.

If we accept the hypothesis that non-native knowledge is incomplete, it would be counterintuitive to presume that two different speakers would have the same incomplete knowledge in their mind and end up producing the same item. Let us clarify with an example. De Angelis (2005b) comments on the production of a non-existent Italian word – *abbastante* – which is a combination of an Italian prefix (*ab*), a Spanish or Italian stem (*basta*) and a Spanish suffix (*-ante*). The Italian target word in question was *abbastanza* (enough). The incorrect word *abbastante* was produced by two different speakers of different language backgrounds. One was a French-Canadian L1 speaker with prior knowledge of Spanish and English; the other was an English L1 speaker with prior knowledge of Spanish. Since the word *abbastante* does not exist in the Italian target language, one would have to wonder whether it is truly feasible that two different speakers, with different language backgrounds, might produce the same non-existent word by accessing the same wrong lemmas during the production process. While such coincidences may be possible, one can also explore the possibility that linguistic knowledge belonging to different languages is associated and organized according to features of similarity which ease the path of lexical retrieval in production.

When these two multilingual speakers first stored the components of the Italian target word *abbastanza*, what kind of associations did they establish between the morphological and phonological components of this word and the linguistic knowledge that was already in their mind? Did these associations in any way facilitate the selection and retrieval of the same non-target elements during the production process? We already know the mind to be equipped with the capability of comparing incoming input with existing knowledge and establishing associations based on the formal
characteristics of the input. How does this process work when someone has knowledge of several languages in the mind? Research on speech production has hardly focused on how multilinguals may store, select and retrieve linguistic information. There are, however, some theoretical frameworks that seem promising, for instance those that utilize the principle of activation to explain the production process.

The concept of activation has already been mentioned in relation to Dell’s (1986) model of monolingual speech production. I now return to this concept as it is also widely employed in models of multilingual speech production. In linguistics, activation describes a process by which an entire language – or some elements of it – are stimulated and accessed during the execution of a receptive or productive task. Activation can then assume a very general meaning, as in the activation of an entire language, or a very specific meaning, as in the activation of a lemma or a morphosyntactic node. Harley (1995: 23) says that activation ‘can be thought of as a property like heat’, which spreads and expands from node to node within the confines of a neural network.

The idea of activation is mostly associated with connectionism or parallel-distributed processing, even though the notion was used in the literature well before connectionist approaches came into existence (Mitchell and Myles, 1998; Singleton, 1999). The connectionist approach is based on the assumption that the mind or brain processes linguistic information through a complex network of interconnected nodes. Parallel-distributed processing more specifically refers to the claim that information is processed in parallel at different levels. According to connectionism, the mind creates links or connections between information nodes, and the creation of new links when new input is received implies that the network becomes progressively larger and more complex. Links can, however, become progressively weaker if they are not activated with some frequency. Mitchell and Myles (1998) explain that from this perspective, learning is viewed as a process by which links are either strengthened through activation, or weakened by lack of activation. The development as well as the maintenance of the network is thus dependent upon the repeated activation of the associative links.

The arguments connectionists put forward reflect the belief that learning processes must be uncovered from within the brain structure itself. Mitchell and Myles (1998: 84) point out that one of the distinctive features of connectionism lies precisely in its attempt to establish a link between language, neurology and neurobiology. The authors also express some words of caution about relying on connectionist approaches to explain L2 learning. They maintain that connectionism is too far removed from real
L2 learning situations to be able to offer adequate explanations because it is too reliant on controlled laboratory research and mostly use artificial data.

Dijkstra and van Hell (2003) also comment on the meaning of activation with reference to how the notion is used to refer to an entire language. They specifically ask what the word ‘active’ means, and argue that if we say that a language is active, we also imply that the words of that language are active without being used. The observation is insightful but also reflects a word recognition perspective, whereby activation entails that frequency or recency of use determine the word’s level of activation and therefore the possibility that the information is selected and retrieved. The models we will see in this chapter do not adhere to the same premise and utilize the notion of activation in a much broader sense.

One further issue of concern relates to the sources of data bilingual and multilingual speech production models are based upon. Bilingual speech production models are empirically based on evidence from healthy bilingual individuals or from aphasic patients. With respect to the latter, evidence is mostly about patterns of language recovery following injury and the subsequent ability or inability to perform certain tasks such as speaking, translating or comprehending speech in the two languages. Bilingual speech production models additionally make use of evidence of code-switching, borrowing or crosslinguistic influence. With respect to multilinguals, since there are only a handful of studies that specifically examine theories of (bilingual) speech production with multilingual subjects, it is difficult to assess how the multilingual production system may work and whether the various proposals advanced are accurate and feasible. Evidence from bilinguals is usually assumed to be representative of multilingual behaviour as well, even though there is no clear evidence that the assumption is warranted. De Bot (2002: 288) points out that a ‘model should be able to explain not just the typical but also the atypical, which is often most revealing.’ This seems particularly true with regards to multilinguals who may well be producing a sentence mixing three or four languages at a time. While these instances cannot be truly classified as being ‘unusual’, they form combinations that bilingual production models do not consider and, consequently, do not explain.

In the following sections, I shall focus the discussion on three major models of multilingual speech production (de Bot, 1992; Green, 1986; Grosjean, 1992). These models address issues related to the architecture of the production system, for instance how many separate levels of processing can be distinguished, and issues related to how information is passed on between the various levels of representation.
Green (1986)

Focusing on issues of control, activation and resources, Green (1986) proposed a speaking model which, he argues, can accommodate the speech production of healthy as well as brain-damaged individuals. Green makes a point of including evidence from brain-damaged patients in his discussions, as he believes this type of evidence shows more than any other type that languages can be selectively impaired and selectively recovered. For instance, he discusses the case of 48-year-old French nun who spoke fluent French and Arabic before suffering a moped accident. After the injury, the nun displayed very peculiar language recovery patterns. She shifted from being able to speak French or Arabic, to not being able to speak these languages at all – a pattern of recovery known as ‘alternate antagonism’. These languages did not appear and disappear in their entirety. One day she could not speak French, but could speak Arabic and name objects in Arabic; the following day she could speak French but could no longer speak fluent Arabic. At the same time, the nun was also showing evidence of a phenomenon known as ‘paradoxical translation’. On the day she could speak fluent Arabic, she could translate from Arabic into French, even though she could not produce spontaneous speech in French, but on the day she could speak French but had poor Arabic, she could translate from French into Arabic, but not from Arabic into French. Phenomena of alternate antagonism and paradoxical translation are taken to be evidence of functional separation of these languages. Green (1986) also takes into account the work of Albert and Obler (1978) who wrote one of the most comprehensive reports on recovery patterns in bilingual and polyglot aphasic patients to date. Albert and Obler offer additional evidence of separation with regard to the comprehension and the production system. Specifically, Green refers to the the case of a brain-damaged individual who could either understand speech but not produce it, or could produce it with extreme difficulty.

Green (1986) introduces all these cases with a theoretical argument in mind. He believes the ways aphasic patients behave essentially indicate an underlying problem associated with the control of ‘intact language systems’ (Green, 1986: 210). He believes languages cannot be lost following injury, they simply become less accessible during the production or comprehension process. The two key words of Green’s claim are ‘control’ and ‘intact systems’. If evidence from aphasic patients reflects poor control of an intact system, as he maintains, it follows that the errors found in the speech of healthy individuals also result from a lack of control of an intact system. Green, in fact, defines as errors blends such as ‘strying’, a mixture of ‘trying’
Green's model is constructed around the notion of intact systems and any deviation from the norm is viewed as an error and a failure to exercise control over the system. He does not define what an intact system is, but from what he writes we can infer an intact system is a system which contains native-like knowledge. As discussed earlier in the chapter, assuming that language knowledge is native-like is a common (and convenient) approach in bilingual speech production which allows one to predict the path of production without having to define the type of knowledge that is in the mind. A trilingual would simply have three intact (native-like) systems, a quadrilingual four intact systems and so forth. From this perspective, any language in the mind is an intact system, so any system can be essentially added bypassing the need to define its content. It is from these premises that Green extends his model to multilingual speakers.

In order to explain how control is executed, Greens' (1986) combines the notion of activation with that of inhibition, proposing that activation and inhibition operate concurrently during the production process. The selection of a target item takes place by the activation of the item itself and the simultaneous inhibition of all its competitors. Inhibition occurs by raising the activation level of all potential competitors, which reduces the possibility that the incorrect item will be selected in place of the target one.

The speaker controls the activation and inhibition process by using a certain amount of resources, which are constantly replenished by a 'resource generator'. Resources are argued to be the fuel or energy of the production system, but since only a limited amount of resources can be used at any given time, there are situations in which the speaker will not have sufficient resources to control the system, for instance when the speaker is tired or distracted. Second language learners in particular need a lot of energy to control the system because their L2 system is not as automatized as the L1 system. When the speaker does not have sufficient resources to use, the type of errors described earlier (strying, and springling) can arise in production.

A proposal based on the use of a certain amount of resources to control the speech output is problematic for multilinguals, as the hypothesized increase in number of languages entails the use of supplementary control and therefore of additional resources. Green solves the problem by stating that there is a limit to the number of languages that can be activated at any one time, hence by implication the need for supplementary control is automatically reduced.
With respect to how a speaker effectively controls multiple languages in the mind, Green (1986) proposes that languages can be activated to various degrees and are always in one of the following three states. They can be ‘selected, (and hence controlling speech output), active, (i.e., playing a role in ongoing processing), and dormant, (i.e., residing in long-term memory but exerting non effects on ongoing processing).’ (Green 1986: 215). Frequency of use determines whether a language is in an active or a dormant state. The languages used more frequently can remain active in the background during online processing and the parallel activity that occurs can result in some form of influence on the target language. Languages which are not used for a long time are instead in a dormant state and do not influence ongoing processing directly. Speakers also select the language they want to speak by way of ‘tags’, which are attached to words, structures, or even registers within one language. Since a person can switch from speaking to translating, Green also postulates the existence of a ‘specifier’, whose function is precisely to specify the type of control needed in order to execute a given task.

Green’s proposal is useful to explain the interaction between more than two languages in a general sense, but the proposal is also based on assumptions that raise a number of concerns. A first concern already outlined is that the model is based on the notion of intact systems, and this notion introduces a clear monolingual bias in research that several scholars have already argued against (see Chapter 1). Second, the argument that languages become active or dormant depending on frequency of use can be partly questioned as there is evidence in the literature that crosslinguistic influence can also occur from languages a speaker has not used for a long time (see Chapter 2). Besides frequency or recency of use, crosslinguistic influence is also known to be influenced by a long list of other factors, for example proficiency, L2 status or typology, and these are not taken into account in a clear way. Finally, the question of how many parallel plans a multilingual speaker can formulate at any one time remains far from settled. While it is proposed that there may be a limit as to the number of languages that can be activated at any one time, Green does not define what these limits may be or how they would operate. In a later article, Green (1998a; 1998b) talks about the role of activation and inhibition further. He does not, however, substantially elaborate on the issues of direct relevance to multilingual speech production just mentioned.

A study that uses Green (1998a, b) as a main framework of discussion is Festman (2004), who applies Green’s inhibitory control model to trilingual processing arguing that proficiency in the target language can affect the lexical retrieval process and the ability to inhibit potential competitors. To
test the hypothesis, Festman gave a production task to ten trilinguals (German, English and French) and found that processing difficulties varied according to proficiency in the target language. She accordingly claimed that speakers can execute better control in the stronger languages, while in the case of weaker languages more cases of interference are likely to arise.

**De Bot (1992)**

De Bot (1992) proposed a model of bilingual and multilingual speech production based on Levelt (1989). The model accounts for the speech of healthy individuals and is not specifically concerned with language disorders, language learning processes or language skills other than speaking.

De Bot justifies the initial adaptation (from a monolingual to a bilingual version) by emphasizing that Levelt’s model (1989) is based on ‘several decades of psycholinguistic research and is based on a wealth of empirical data, obtained through experimental research and the observation of speech errors’ (de Bot 1992: 2). Accordingly, he maintains that the bilingual version of the model only needs some minor modifications to work effectively. De Bot, however, also extends his model to multilingual speakers, which means that he effectively accounts for multilingual speech production using a framework empirically based on monolingual data. In spite of the huge leap, de Bot’s (1992) model remains one of the most comprehensive and detailed proposals available to us today.

Trying to understand and predict multilinguals’ speech processes by relying on what we know about bilingualism is not always the most productive approach, as this stance inevitably holds us back in the identification of principles and constraints that may govern the mind’s operations. For instance, let us consider a speaker of ten languages. We know that our hypothetical speaker has a lot more information stored in the mind than a bilingual person, and that this knowledge is stored, selected and retrieved at the various levels of conceptualization, formulation and articulation. All this additional knowledge the bilingual does not have is likely to be managed according to principles which bilinguals may never need to use and rely upon during the production process simply because they have a lesser amount of information to deal with. I will return to illustrate this point later in this section when discussing de Bot’s position on the number of speech plans a speaker can generate during the production process.

De Bot (1992) believes a model of bilingual production should satisfy five conditions: (1) it should be able to account for the speakers’ ability to use
languages separately or mix them during speech, as is the case with code-switching; (2) it should be able to account for instances of crosslinguistic influence; (3) it should not be concerned with the speed of production as the use of several languages should not slow down the entire production process; (4) it should be able to account for the different levels of proficiency of the bilinguals’ languages; and (5) it ‘should be able to cope with a potentially unlimited number of languages, and must be able to represent interactions between these different languages’ (de Bot 1992: 6). In order to satisfy these requirements, de Bot proposes the following changes to Levelt’s (1989) original model.

**Conceptualizer:** Levelt (1989) assumes the activities of the conceptualizer to be language-specific while De Bot believes that only the microplanning stage is language-specific. De Bot’s rationale is born out of two considerations: Levelt’s discussion on registers, and the knowledge of how concepts are lexicalized in different languages. With respect to Levelt’s discussions on registers, Levelt proposes that information on language registers are added to the preverbal message in the conceptualizer, as it is at this stage that the speaker has access to this type of information through the knowledge store. De Bot agrees with this principle and extends it to the bilingual version. De Bot additionally takes into consideration the difference in the way concepts are lexicalized in different languages and argues that language-specific information must necessarily be added to the preverbal message in the conceptualizer. He gives the example of spatial reference in Spanish and English. In Spanish, special reference is expressed as being proximal, median and distal (aquí/ahí/allí) whereas in English only two options are available, i.e. the proximal and distal distinction (here/there). Since this difference entails that the preverbal message must contain some information which allows the speaker to make the distinction early on in the process, decisions must be made during the microplanning phase, when the speaker has access to information such as discourse model, situational knowledge and so forth. The macroplanning stage is argued to be too basic to be language specific as at this stage it is only the communicative intention/goal that is specified, and bilingual speakers do not yet have sufficient information to allow them to specify which language they are going to speak.

From a feedback perspective, one interesting point de Bot raises relates to the ability of non-balanced bilinguals to predict potential lexical problems during the production process. Let us imagine a speaker who needs to express the concept of ‘castle’ but does not have the lexical information that corresponds to this concept. In the absence of the necessary knowledge, the speaker may resort to paraphrasing or may decide to use other strategies.
to solve the communication difficulty. De Bot (1992) does not provide a solution for this problem, but he points out that bilinguals must already know at the conceptual level that a word cannot be realized later on in the production process. This observation, however, raises the additional question of how this can be achieved within an incremental process which does not allow a lower level of processing to pass feedback on to a higher level.

**Formulator:** De Bot (1992) initially proposes two scenarios. The first proposes the existence of one common lexicon for both languages where information is distinguished through a labelling system. The second proposes there are entirely separate formulators and lexicons for each of the speakers’ languages. De Bot then goes on to offer a solution somewhat in the middle of these two extremes, i.e. that some elements of the two languages are stored together and some others are stored separately, depending on factors such as linguistic distance and proficiency level. This, he maintains, ‘places languages along a continuum based on formal characteristics such as the number of cognates in languages or sets of shared syntactic characteristics’ (de Bot 1992: 9). In accordance with Green’s (1986) proposal that two languages can be processed in parallel to one another until they reach the articulatory stage, de Bot (1992) then proceeds to argue that the formulator has different processing components for each language which produce different speech plans, one for each language. The two speech plans can account for some of the differences that exist between different languages, for instance agglutinative languages such as Turkish and Finnish, and an inflectional language like English. Agglutinative languages have morphological characteristics which increase lexical productivity and form words by combining morphemes together. The encoding process necessary to form speech in these languages is by necessity different from the encoding process for inflectional languages. With respect to the organization of the mental lexicon, de Bot (1992) adopts Paradis’s (1987) Subset Hypothesis and argues for the existence of one large lexicon which contains language-specific subsets that can be activated independently.

Since de Bot (1992) specifically claims that one of the requirements of a bilingual production model is that it should be able to account for an unlimited number of languages, one has to wonder how many parallel speech plans a multilingual will actually be able to produce, or be constrained to produce, during the speaking process. If we imagine our hypothetical speaker of ten languages again, the options would be that ten speech plans are produced, or that only two or three speech plans are produced. Since the first seems too illogical to be feasible, we can only
assume the second to be possible. This last possibility, however, entails the presence of a mechanism that allows the speaker to select some language-specific speech plans but not others, and also entails the existence of some principles that guide the speaker to select the relevant speech plans. De Bot’s does not postulate the existence of such a mechanism hence does not elaborate on these issues.

A proposal that partly deals with this hypothesized mechanism is discussed in Williams and Hammarberg (1998). In line with de Bot (1992), the authors also believe that more than one speech plan can be produced, and attempt to identify the factors that may guide the selection process. They believe one of the speaker’s languages is selected as a main supplier of information during production. This language is selected through a competition process that involves four conditioning factors: linguistic distance and proficiency, which de Bot (1992) also mentions, and recency of use and L2 status. The language that scores the highest on these four factors in relation to the target language is the language that is most likely to be assigned the function of main supplier during production.

Poulisse and Bongaerts (1994) further note that de Bot’s (1992) two speech plans proposal is in contradiction with the statement that the preverbal message contains language-specific information. If language-specific information is specified in the preverbal message, why would a speaker need to produce two speech plans? Poulisse and Bongaerts offer an alternative proposal, which they believe is more economical and efficient. The proposal entails that the language membership information added to the preverbal message is attached in the form of a language feature. This feature is subsequently used to find the lemmas tagged for language in the mental lexicon. The process is illustrated in more detail in the section on language choice in this chapter.

Articulator: The idea of separate formulators for each language is abandoned at the phonological encoding stage. Levelt (1989) believes that speakers store a large number of syllables and articulatory patterns, and that the units of speech planning are syllables rather than sounds. The phonetic plan is argued to consist of strings of such syllables. De Bot (1992) proposes that bilinguals have a common store for the syllables of both languages, and patterns are stored only once if they are identical in the two languages, or individually if no matching pattern is present. The idea that syllables belonging to different languages are all grouped in a common store raises some questions with respect to the language selection mechanisms involved for storage and retrieval. De Bot’s suggestion entails the existence of a mechanism that allows L2 patterns or norms to be added to the existing ones already in the syllable store. In order to add the
information, or not add it if already present, some language-specific labelling mechanism must necessarily be in place or the learner would not be able to match incoming information with the syllables and their articulatory patterns already in the mind. Once stored, the information must also be retrieved and learners would need to distinguish what information applies to which language by way of some language-specific mechanism. There is also the added question of why the articulator would receive a language-specific plan from the formulator, and then match it with information that is presumably not labelled for language.

De Bot explains that speakers have all sounds and patterns in the mind, but he is quite unclear as to how these sounds are distinguished during the production process. He believes learners start off by applying L1 norms to L2 sounds until their proficiency in the second language allows them to become independent of the L1, and argues that this mechanism explains the widely attested phenomena of phonological crosslinguistic influence from an L1 to an L2. De Bot does not go on to explain what would happen when more than two languages are in the mind. On the whole, his proposal seems logical when information from two languages is concerned, but the same explanation seems far less able to account for phonological influence from non-native languages, for instance, or cases of combined CLI. If we hypothesize that learners start off with all the knowledge they have, that is L1 and the non-native norms, then it is hard to explain how a multilingual can be influenced by only some of the information contained in the common store, for instance the L2, and not the L1, if the information at this level is not language-specific.

**Grosjean (1992)**

Grosjean (1992, 1997, 1998, 2001, 2004) proposes that the speech of bilinguals (and multilinguals) is regulated by different modes in which the speaker can be set during speaking. He explains his Language Mode Hypothesis and the factors that influence the speech output as follows:

A mode is a state of activation of the bilinguals’ languages and language processing mechanisms. This state is controlled by such variables as who the bilingual is speaking or listening to, the situation, the topic, the purpose of the interaction, and so on. At one end of the continuum, bilinguals are in a totally monolingual language mode in that they are interacting only with (or listening to) monolinguals of one – or the other – of the languages they know. One language is active and the other is
deactivated. At the other end of the continuum, bilinguals find themselves in a bilingual language mode in that they are communicating with (or listening to) bilinguals who share their two (or more) languages and where language mixing may take place (i.e. code-switching and borrowing). In this case, both languages are active but the one that is used as the main language of processing (the base of the matrix language) is more active than the other. These are end points, and bilinguals also find themselves at intermediary points depending on the factors mentioned above. (Grosjean 1998: 136)

In support of this proposal, Grosjean (2001) mentions evidence from studies conducted with healthy adults or children and aphasic patients.

With respect to multilingualism, Grosjean (2001) claims that the language mode hypothesis can be applied to speakers of several languages as well, as languages can be activated to varying degrees during the speaking process and influence the target language output. The hypothesis has not been widely tested with multilinguals and its validity remains to be empirically assessed. There are, however, a few studies which offer some useful feedback in this regard.

One of these studies was conducted by Cenoz (2003b). The author examined the speech production of 18 children of Spanish (L1), Basque (L2) and English (L3). All these children were learners of English as a non-native language and were enrolled in a Basque-speaking school. Most importantly for the present discussion, all children were aware of interacting with an interlocutor who could speak both Basque and Spanish. According to Grosjean, the awareness of the interlocutor’s bilingualism should have set these children in a bilingual mode from the start. Cenoz (2003b) indeed found that both Spanish and Basque were relied upon in production, but rather differently, however, depending on learners’ communicative needs. Spanish was mostly used for what Cenoz called ‘transfer lapses’, which include borrowings, words morphologically or phonologically adapted to the target language, and any other form that did not carry any noticeable hesitation or marked intonation. Basque was instead mostly used to ask for help when children did not know a word they wanted to use. Cenoz (2003b) traced 19% of the transfer lapses to Basque, and 78.6% to Spanish. In contrast, Basque was identified as the main source language for interactional strategies in 89% of the cases, while Spanish was used only 2.6% of the time. With respect to Grosjean’s model, these results indicate a clear difference in learners’ reliance on Basque or Spanish which depends on pragmatic function rather than the external factors Grosjean postulates, i.e. the interlocutors’ knowledge of Spanish and Basque. Assuming that
both Basque and Spanish were activated in the background during production, we should not find a major difference in the way these languages were used. One could argue that the language mode hypothesis accounts for interactional strategies only, but Grosjean’s (1992) proposal specifically includes instances of borrowings and morphologically or phonologically adapted words as well (Grosjean, 1992: 59), a claim which the results reported in Cenoz (2003b) do not seem to support.

Grosjean (1992) briefly touches upon crosslinguistic influence in his writing, saying that some of the evidence in the literature could be explained by the presence of a bilingual interlocutor. He specifically states that ‘what might appear to be an interference could also be a guest element or structure produced by the speaker who is aware that his or her interlocutor can understand mixed language’ (Grosjean, 2001: 14). This and other statements Grosjean makes suggest that he is referring to overt influences of crosslinguistic influence rather than to the range of possible manifestations of CLI. As Jarvis has pointed out, CLI is often understood as a ‘you-know-it-when-you-see-it phenomenon’ (Jarvis, 2000: 246), while transfer can also be covert (Schachter, 1974) and sometimes ‘does not involve the outright transfer of elements at all’ (Weinreich 1953: 7). As we have seen in the previous chapter, there are strong constraints on what information can and cannot be transferred from one language to another, and the external factors Grosjean has proposed can perhaps account for some isolated instances of transfer, but not for most of the evidence that has been gathered in the field to date.

To my knowledge, only two studies (Dewaele, 2001; Dijkstra and van Hell, 2003) specifically tested the language mode hypothesis with multilingual speakers. Dewaele (2001) tested whether multilingual learners of French are closer to the monolingual or the bilingual end of the language mode continuum when interviewed in formal and informal situations. With a series of t-tests, he measured the proportion of mixed utterances in the French L2 or L3 speech of Dutch L1 speakers with prior knowledge of English as an L2 or as an L3. In terms of frequency of occurrence, he found morpholexical errors to be produced more frequently by those with French as an L3, regardless of the formality of the situation. Upon analysing the data further, he however found a significant difference (t = 3.773, df = 24, p < 0.001) in the proportion of mixed utterances in the informal (Mean = 9%, S.D. = 8.8) and in the formal situation (Mean = 3%, S.D. = 3.9). With respect to the language mode hypothesis, Dewaele argues that his results provide further support for Grosjean’s (1992) proposal as they indicate the effect of the situation on the speech output. Speakers interviewed in an informal
situation are closer to the bilingual end of the language mode continuum, while those interviewed in a formal situation monitor their speech more carefully and are closer to the monolingual end of the continuum.

Dewaele (2001) also proceeds to explain the process that underlies speakers’ selections in production. He argues that when speakers are in a monolingual mode, the selection of non-target linguistic forms is the least preferred option, but when speakers are in a bilingual mode the opposite occurs, that is the speaker is more likely to choose to code-switch and therefore include non-target forms into speech. But how does this occur? Dewaele proposes that speakers make use of a set of production rules during speaking, which are hierarchically organized. Whenever ‘the production rule at the top produces no satisfactory result, the speaker will opt for an alternative one lower in the hierarchy and repeat this if necessary’ (Dewaele 2001: 85) This process, he argues, entails that ‘the difference between the multilingual and monolingual modes would [. . .] be the explicit interdiction in the latter case to select a lemma with the wrong language-tag’ (ibid.).

The second study that specifically focused on the language mode hypothesis was conducted by Dijkstra and van Hell (2003). The authors tested the language mode hypothesis with trilingual subjects of Dutch L1, English L2 and French L3. To ensure that no participants would be set in a bilingual mode throughout the experiment, the authors did not notify participants that the study intended to examine their foreign language knowledge. The objective was to show that a language can be activated in the background even if the speaker is intentionally set in a monolingual mode. To this end, the authors examined whether participants set in a monolingual mode would process cognate words differently from non-cognate words, as evidence of parallel activation would indicate that languages are activated in parallel regardless of mode. They indeed found that cognate words activate parallel linguistic information in other languages even if the speaker is intentionally set in a monolingual mode. They argued that the finding does not provide support for Grosjean’s language mode hypothesis and in fact suggests that the ‘multilingual’s processing system is strongly non-selective with respect to language’ (Dijkstra and van Hell, 2003). It must be noted, however, that Grosjean (1992) partly accounts for this type of evidence in his writing, saying that a speaker in a monolingual mode can still have some ‘residual activation’ in the background as ‘bilinguals rarely deactivate the other language totally’ (Grosjean, 1992: 59).

Clearly, the language mode hypothesis still needs to be examined more systematically with multilingual speakers. The evidence we have to date
is too sparse for us to be able to draw firm conclusions on the effectiveness of Grosjean’s proposal and the extent to which it can help us explain multilingual production phenomena. The line of research seems nonetheless promising and worth pursuing further.

Language Choice

How do multilinguals select and retrieve language-specific information during the production process? And when do they commit to speaking one of their languages?

Language-specific information is widely believed to be retrieved by way of language tags, which are labels attached to each entry in the lexicon that specify language membership information. Given the important role of tags in the production process, it is somewhat surprising that the tags’ properties, roles and functions are hardly ever a topic of debate in the literature. Very little is in fact known about the way tags operate or even come into existence.

Several scholars use the notion of language tags to explain how the intended language is selected during the speech production process, or how the selection of the wrong tag can lead to errors in production. Green (1986), for instance, believes that language tags are used to activate or deactivate the speaker’s languages at any one time. Poulisse and Bongaerts (1994) believe that language choice initially occurs at the conceptualization stage, and therefore that language-specific information is first attached to the preverbal message. As Figure 4.2 illustrates, the information specified at the conceptualization stage defines semantic features (+human, +male, –adult) as well as language membership (+English). All this information is used to activate the lemma that corresponds to the specified meaning and the specified language. Sometimes errors can occur, and these errors can concern semantic features or language membership. For example, when all the features of the target word are selected, with the exception of one, the error is likely to be semantically related. If instead the error involves a substitution from another language, it is the information on language membership that is matched incorrectly at the lemma level.

Poulisse and Bongaerts believe in the existence of a large multilingual lexical network. This position by necessity entails that language tags must be part of the network or the speaker would be unable to identify what information belongs to which language during the speech production process. From these premises, Poulisse and Bongaerts (1994) propose that L2 lexical items contain the specification [+L2] and that lemma selection occurs by way of activation spreading to the relevant node. They explain
that the specification \([+L2]\) allows learners to establish a distinction between the lexical items of two different languages because, as a result of the tag guiding the process, the ‘L2 lexical items [. . .] receive more activation than the corresponding L1 lexical item’ (Poulisse and Bongaerts 1994: 42). Poulisse and Bongaerts (1994) additionally argue in favour of de Bot’s (1992) suggestion that sounds and articulatory patterns are contained in one single store. They believe that this would explain why a bilingual can pronounce Dutch words such as *stuk* (piece) and *rok* (skirt) using English phonemes (Poulisse, 1999) instead of Dutch phonemes.

De Bot and Schreuder (1993) also believe that language information is specified at the conceptualization stage, but suggest that language membership is not associated with tags but with cues of different strength values. They argue that this solution can explain a range of phenomena, including why immigrants that often switch from one language to another produce speech that carries non-target information. Cues may be weak, they say, and therefore easier to ignore during the production process.

Costa (2004) also maintains that the language in which the message is going to be produced is specified in the preverbal message. He argues that this is the only possible explanation because it is at this stage that the speaker has access to language-sensitive information such as the context of the conversation, who the interlocutor is, the topic of discussion and so forth. This position entails that language choice occurs at the conceptualization level before any lexical access activity is initiated.

With respect to accessing the correct language-specific item later on in the production process, Costa (2004) presents two possible scenarios. The first
would have activation spread from the conceptual to the lexical system, activating only the words of the target language; the second would have activation spread from the conceptual to the lexical system, activating words in both languages. This second option, which Costa indicates as the most likely as it finds empirical support in the speech production literature, in turn raises the question of how the correct target words are selected, and the extent to which the activation of non-target information will affect the overall selection process.

Costa (2004) explains that two main proposals can be distinguished in this regard. The first predicts that the non-target words will be suppressed via a mechanism of inhibition (Green, 1986, 1998a, b). The second, which the author defends in his own work (Costa and Caramazza 1999; Costa et al. 2000), ‘assumes the existence of a suppression mechanism that considers only the level of activation of the lexical nodes belonging to the response language, neglecting the activation of the words belonging to the non-response language’ (Costa, 2004: 207). In brief, these two proposals essentially view lexical access as either occurring by inhibiting potential competitors in the lexical system, or by neglecting the potential competitors altogether. What seems logical to assume is that in order to carry out the process just described some language-specific marker must necessarily be attached to the relevant information in the lexicon. The question of how language choice occurs remains nonetheless open.

Li (1998) explicitly questions the role and even the existence of language tags, but he seems to be a fairly isolated voice in this regard. He points out that if tags indeed guide the production process, they are likely to play a central role in the production process. There is, however:

overwhelming empirical evidence for the existence of both priming and interference effects in a variety of inter-lingual experimental tasks. Thus it is difficult to see that the language tags can play a significant role in differentiating the two lexicons, or that language tags can be easily identified, or that even there are language tags. (Li, 1998: 93)

One other question can be raised in relation to the properties of language tags over time, as some evidence in the literature indicates that language membership information is not as stable as may be assumed. De Angelis (2005b) discusses several instances of CLI where learners do not seem to be aware of producing non-target words in their speech. For example, a French-Canadian learner of Italian with prior knowledge of Spanish introduced the Spanish word ‘mesa’ (English: table) in her Italian speech in place of the Italian target word ‘tavolo’. De Angelis argues that researchers would normally classify this instance as a form of borrowing necessary in
order to compensate for lack of knowledge in the target language, but that this may not be a form of borrowing for the learner. Further testing showed that the learner believed the word ‘mesa’ to be an Italian word, and not a Spanish one, which means that from her point of view there was nothing that needed compensating as the word was already an entry in her Italian lexicon. With respect to the retrieval process, we can then ask how this specific word was retrieved if the (original) language tag was supposedly Spanish.

De Angelis (2005b) believes a word can be initially stored as belonging to one language, and can then be later associated with another language. She labels this phenomenon ‘system shift’, which defines a shift in lexical knowledge from a source to a guest system. She points out that, while it is reasonable that language membership information is used at some point during the production process, we do not know how language tags are attached to the entries in the lexicon during the acquisition process, if tags can weaken or change over time, or if language dominance and proficiency can affect their status.

De Angelis (2005b) further discusses the issue presenting the case of an English L1 learner of Spanish with prior knowledge of Italian. The speaker claimed to be familiar with words such as *dinero* (Spanish) and *soldi* (Italian), both meaning ‘money’ in English, but to be unable to say which word belonged to which language. A similar case is reported in Bardel and Lindqvist (2006). One of their participants provided the following: ‘I think that I mix up Spanish and Italian sometimes, become unsure whether a word is Spanish although I think it is Italian [. . .] When I said *ahora* I was really unsure whether it was Italian or Spanish.’

With reference to the first example – but the comment applies to the Bardel and Lindqvist example as well – De Angelis notes that:

> if language tags or cues are essential features of the selection process and are added to the preverbal message, one has to wonder what language tag or cue may have been added to this speaker’s preverbal message since he seems to be able to fully retrieve both words without being fully aware of language membership. (De Angelis, 2005b: 13)

She then proposes that language tags or cues may have different strength values at different stages of the acquisition process, and strengths may vary depending on changes in language proficiency over time.

This takes us to the next chapter on the multilingual lexicon, which examines what is now known about the way information is stored, associated, organized and retrieved in the multilingual mind.
Chapter 5

The Multilingual Lexicon

In the previous chapter I reviewed existing models of multilingual speech production focusing on how multilinguals produce overt speech in one language and at the same time control the additional knowledge that is also in the mind. Discussions focused on the various stages of processing and the selection and retrieval mechanisms that guide the overall production process. In this chapter the focus is shifted to the multilingual lexicon and what we know about the way multilinguals organize, store and associate linguistic knowledge in the mind.

As was the case with models on multilingual speech production, models of lexical representation that specifically focus on the multilingual lexicon and its processing operations are mostly extended versions of models of bilingual lexical representation. As noted in the previous chapter, adaptations of this kind generate advantages as well as disadvantages. On the one hand, hypotheses of bilingual lexical representation are based on a wealth of empirical data and therefore provide a firm base on which theoretical extensions can be made. On the other, a sound empirical base about the bilingual lexicon cannot adequately inform hypotheses about multilingual lexical organization as questions of direct relevance to multilingualism have not been specifically addressed. In this chapter we will see that only a few studies have addressed questions of direct relevance to multilingualism, and all of these are based on previous research on bilingual memory and bilingual lexical representation. Some review of research on bilingualism is therefore essential to understand the type of questions which have been raised about the multilingual lexicon over time.

The chapter is organized in five sections. The first provides an overview of research on bilingual and multilingual memory and discusses some implications and areas of future research of relevance to multilingualism. The second examines research on the relationship between proficiency level and lexico-semantic organization. The third introduces issues associated
with storage capacity and the amount of information that is held in the mind. The fourth examines the evidence available in support of the separation or the integration hypotheses. The fifth and last section discusses the notion of activation and its role in language processing.

**From Bilingual to Multilingual Memory**

Bilingual memory research has been mostly concerned with defining how the bilinguals’ languages are stored in the mind and the relationship between the lexicon of the first and the second language (for a review, see Heredia and Brown, 2004). This section examines the major developments in bilingual memory research that most influenced work on multilingualism lexical organization, beginning with Weinreich’s (1953) influential proposal on bilingualism.

Based on the Saussurian distinction between the signifier and the signified, which refer to the concept and the expression of a word respectively, Weinreich (1953) proposed that the relationship between the bilinguals’ languages can vary according to how word meanings and word expressions are linked to each other. The bilinguals’ languages can establish a coordinate, compound or subordinate relationship with one another. In coordinate bilingualism, signified and signifier are kept separate so two expressions are linked to two separate concepts. In compound bilingualism, two expressions are merged and linked to a single concept. In subordinate bilingualism one language is subordinate to the other, which results in one language being dominant over the other. The expression of the less dominant language is linked to its corresponding concept via the most dominant language, which is usually the bilinguals’ first language. According to Weinreich (1953), these types of associations are not to be regarded as mutually exclusive since different types of bilingualism may coexist within an individual. Some words may form a compound relation with one other, while others may establish a coordinate or subordinate relationship.

While Weinreich’s (1953) proposal is specifically concerned with bilingualism, traces of the coordinate, compound and subordinate distinction can be found in most of the proposals about bilingualism and multilingualism that followed. In fact, Weinreich’s distinction is the antecedent to what later models called lexical and conceptual levels of representation (Kroll, 1993; Kroll and Sholl, 1992; Kroll and Stewart, 1994) and to the word association, concept mediation and intermediate hypotheses (Potter et al., 1984).
Singleton (2003) notes how Weinreich (1953) did not provide any information about the type of relationship that languages already in the mind may come to establish with languages that are acquired at a later stage. He considers the hypothetical case of a co-ordinate bilingual learning a third language and asks: If the new language initially develops a subordinate relationship with one of the existing languages, which language would it be subordinate to? He then outlines the following two possibilities. The first is that the closest languages develop a coordinate relationship with one another, and the second that the lexicon of the new language develops variable interconnections of different strengths with the existing lexicons, which is the position Singleton seems to favour.

Later in this section I will discuss how recent research on bilingual memory has indeed come to highlight that the interconnections between the words of two languages may vary in degrees of strength. Before moving on to examine these studies in more detail, I would like to briefly outline some of the major developments in bilingual memory research, as these developments are fundamental to understanding the frameworks now used in more recent work on the multilingual lexicon.

During the early stages of bilingual memory research, scholars were largely concerned with issues of lexical storage, mostly in relation to whether linguistic information of two different languages is stored in a single memory store (interdependence hypothesis), or in separate memory stores for each language (independence hypothesis). The issue of language storage was initially investigated by way of experimental paradigms that involved word association, word recognition and recall tasks. These research techniques were later argued to cause inaccurate and contradictory findings, and were replaced with experimental paradigms which involved more reliable techniques such as, for instance, reaction times experiments (French and Jacquet, 2004).

By the mid-1980s, the data on bilingual memory storage had already begun to appear rather mixed as researchers had been finding evidence in support of language specific memory stores (e.g. Scarborough et al., 1984) as well as single memory stores (e.g. Mägiste, 1979). Mixed results are usually suggestive that both of the hypotheses examined are to some extent correct, which is the conclusion that scholars in the field eventually reached. Several questions helped researchers reach this intermediate position, starting from how concepts and lexical forms are associated in the mind during the language acquisition process, to whether the associations developed in early acquisition may change over time as proficiency in the second language develops.
Based on the assumption that concepts and lexical forms have distinct representations in the mind, as Weinreich (1953) had suggested, three main hypotheses were explored. The first, known as the word association hypothesis, predicted that the words of a first and a second language are associated by way of a direct connection with each other. The second, known as the concept mediation hypothesis, predicted that the words of the second language are associated to the words of the first language by way of a common conceptual store. The third, known as the developmental or intermediate hypothesis, hypothesizes a shift from word association to concept mediation as fluency in the second language develops. Within this third hypothesis, word association is believed to be the type of association typically established in early acquisition which gradually evolves into concept mediation as proficiency in the second language progressively develops (see also review in Kroll, 1993).

The word association and the concept mediation hypotheses were initially proposed by Potter et al. (1984), even though Weinreich’s (1953) work was clearly the primary inspiration of this proposal. The word association and the concept mediation hypotheses predicted different reaction times for the completion of picture naming and translation tasks as picture naming requires access to the conceptual store, while translating requires access to the conceptual store only in the case in which the concept mediation hypothesis were correct. Similar reaction times in the two tasks would indicate that the conceptual store was accessed during the execution of these tasks, while longer reaction times in picture naming would provide evidence in support of the word association hypothesis. On the basis of these assumptions, Potter et al. (1984) asked the participants in their study to complete picture naming and translation tasks and compared the reaction times obtained for both tasks. Results provided clear support for the concept mediation hypothesis, and were also argued to support a hierarchical structure of representation for form and meaning, where word forms are represented independently in each language and word meanings are represented in a single conceptual system. In other words, both word association and concept mediation were argued to be partly accurate hypotheses, the former for word forms, and the latter for word meanings.

Later studies then asked whether subjects at different proficiency levels in the second language also display a conceptually mediated structural organization. Chen and Leung (1989) and Kroll and Curley (1988), for instance, compared the performance of subjects at different proficiency levels and indeed showed that changes in proficiency level affect lexical organization, as the developmental or intermediate hypothesis would predict.
Evidence that proficiency level affects lexical organization in bilingual memory allows us to raise a number of questions about the multilingual lexicon as well. Frequency of use is widely acknowledged to affect proficiency level in a non-native language, and when individuals are familiar with several languages, only some of these languages are likely to be used on a daily basis. As is well known, lack of use can cause a rapid decrease in proficiency level, but the level reached can also be maintained or even increased if the language is studied further or kept active. What is the effect of these ‘fluctuating’ proficiency levels over multilingual lexical organization? To what extent do changes in proficiency level affect multilingual lexical organization? And what changes in terms of structural organization can feasibly be predicted for multilingual speakers who have used their languages variably over time? Some of these questions are partly addressed in a study with multilingual subjects (de Groot and Hoecks, 1995) reviewed later on in this section.

Returning to the distinction between lexical and conceptual representation, a clear attempt to deal with the hypothesized shift is the revised hierarchical model that Kroll and Stewart (1994) have proposed. A shift from lexical to conceptual representation entails that the L2 words, which are initially linked to L1 words via lexical links, develop direct conceptual links. The original lexical links, however, do not disappear in their entirety, and continue to influence how the L1 and L2 remain connected, and the presence of these former lexical links causes the connection between the L1 and L2 to be stronger than the connection between the L2 and the L1. This is the hypothesis that Kroll and Stewart have tested in a study involving three separate experiments. The study used a variety of tasks and materials, from picture naming and bilingual translations, to randomized and semantically categorized word lists. The overall objective of this study was to compare the speed of translation in two opposite directions: from the L1 to the L2, and from the L2 to the L1. As predicted, translating from the L1 and into the L1 was found not to occur at equal speed. More specifically it was found that translating from the L1 into the L2 is much faster than translating from the L2 into the L1. On the basis of these results, the authors argued that the interconnections between the two languages do not seem to be equally strong, and also that translating from the L1 into the L2 is conceptually mediated while from the L2 into the L1 is lexically mediated (see also Sholl et al., 1995). The revised hierarchical model they proposed was aimed to account for these observed asymmetries (see Figure 5.1) (see also Dufour and Kroll, 1995; Kroll, 1993).

To my knowledge, Kroll and Stewart’s (1994) model has not been specifically extended to multilingual speakers. Given what we know about
multilingualism today, one can easily foresee the potential to test this model with multilingual speakers. For instance, if translating from the L1 into the L2 is conceptually mediated while translating from the L2 into the L1 is lexically mediated, would translating from an L2 into L3 be lexically mediated as well? And would the type of mediation change as proficiency in the non-native languages increase or decrease over time? How would speed of translation be affected by factors such as typological closeness and language similarity, which are already known to ease the path of crosslinguistic influence between non-native languages? As an example we consider the hypothetical case of a trilingual speaker with German as mother tongue and Spanish and Italian as non-native languages. One could formulate the hypothesis that, by virtue of the similarity between the two Romance languages, translating from and to the non-native languages may be faster than translating from and to the native and a non-native language. I clearly cannot provide any informed answers without empirical data at hand; this is just an example meant to illustrate how the complex make-up of multilinguals’ linguistic backgrounds may provide some valuable input about the dynamic interplay that govern the interactions between the lexicons of several different languages.
Proficiency and Lexico-semantic Organization

De Groot (1993) proposed a developmental perspective based on the distinction between abstract and concrete words, which were argued to develop connections of different strengths in the bilingual lexicon. The underlying assumption is that concrete words across languages share a common node in memory while abstract words have language-specific conceptual representations (see also Van Hell and de Groot, 1998). The hypothesis was extended to multilinguals and tested with two sets of unbalanced trilinguals (Dutch-English-French). De Groot and Hoecks (1995) hypothesized that the lexical structure between the native language (Dutch) and a weak foreign language (French) would be of a word association type, while the lexical structure between the native language and a strong foreign language (English) would be of a concept mediation type.

De Groot and Hoecks (1995) conducted two separate experiments with two types of translation tasks which they called ‘translation production’ and ‘translation recognition’. In the translation production task, participants were asked to translate 40 Dutch words, 20 concrete and 20 abstract, into both of their foreign languages (French and English). In the translation recognition task, participants were given 80 word pairs, i.e. the Dutch word and its equivalent translation either in French or in English, and were asked to judge whether the words given were correct or incorrect translations. With respect to the concrete and abstract distinction mentioned earlier, the study predicted that if the organisation of the participants’ languages was of a concept-mediation type, results would show a difference in the translation of concrete and abstract words into both languages, a prediction which was indeed confirmed. A concreteness effect was identified with respect to the translation from the L1 to the strongest non-native language, which indicated an underlying concept mediation structural organization as predicted. In contrast, no concreteness effect was identified in the translation from the L1 to the weakest non-native language, which was argued to reflect a word association type of structure. Since similar conclusions were also reached with the data from the translation recognition task, the authors generally argued that the results of their study indicate a clear association between non-native language proficiency and lexico-semantic organization. The authors, nonetheless, emphasize that the concept mediation and word association structures can sometimes coexist within the same individual, a remark which reminds us of Weinreich’s (1953) claim that different types of bilingualism can coexist within the same person. Clearly, a lexical structure does not change overnight but does so progressively over time. De Groot and Hoecks note that:
one should not construe these processes of learning and forgetting as the actual replacement of one type of memory by another, but as the strengthening and weakening of connections between memory units. Links that are not used for some time become dormant, to be revived again under the appropriate circumstances. (1995: 717–718)

De Groot and Hoecks (1995) also believe that frequency of use can affect lexical organization in the opposite direction. They note that while their participants had studied French for six years, they had not used the language for months prior to being tested, and this period of time may have been sufficient to cause a reversal from a concept mediation to a word association type of structure in their lexicons. The question was therefore raised of whether it is at all possible that an individual’s lexical organisation can revert to a word association type of structure once the language is unused for some time. The authors consider a number of studies which provide evidence in favour of a concept-mediated lexical structure after a short period of instruction and argue that the participants to these studies were probably using, or had recently used, the second language at the time they were being tested. In contrast, the authors’ participants did not show a concept-mediated type of structure because, as mentioned, had not used French for several months.

To go over the main points of these views on proficiency and lexical organization, proficiency in the non-native language seems to determine lexico-semantic organization in at least two ways. First, words in the second language seem to develop a word association type of structure in early acquisition, which turns into a concept mediation structure as proficiency in the second language develops. Since the word association structure refers to associations between words of the first and the second language, one has to raise the additional question of what type of connection may link the words of a second and a third language, or a third and a fifth language. The word association hypothesis does not specifically contemplate the existence of a direct connection between non-native languages. Second, when proficiency in a non-native language decreases, a concept mediation structure may revert to a word association structure which is more typical of early acquisition.

Abunuwar (1992) looked more closely at the relationship between a second and a third language, asking whether there is any difference in the relationship between the native language and a weak or strong foreign language, and between two non-native languages. With a within-subject design, Abunuwar measured interference effects among Arabic L1 speakers with Hebrew and English as second and third languages. A
Trilingual Stroop colour-naming test, a trilingual picture-naming task and a translation task were used. The relationship between the two non-native languages was found to be independent, the relationship between the Arabic L1 and the weakest non-native language was found to be interdependent, and the relationship between the Arabic L1 and the strongest non-native language was found to be intermediate. These results then highlight once again a proficiency-related effect, which provides further support for the hypothesis that multilinguals’ lexical organisation can change over time, and that language proficiency is a key factor in generating such change.

A further question is whether the relationship between two or more non-native languages can also change over time. To the best of my knowledge, no studies have examined this question so far. Technically, the relationship between non-native languages could (1) maintain an independent relationship; (2) develop an intermediate relationship over time as proficiency in one or in both non-native languages grows; (3) ultimately develop an interdependent relationship; or (4) develop different types of relations in different linguistic subsystems. From a crosslinguistic influence perspective, we have little understanding of how lexico-semantic organisation may be related to the ease or difficulty of selecting non-target lexical information during the production process. It seems logical to assume that the stronger the association between memory stores, the higher the chance of non-native lexical influence to occur as its path may be consequently eased. However, if lexico-semantic organisation between non-native languages is indeed found to develop into an interdependent relation, this will raise the question as to why a stronger connection between memory stores does not ease the path of non-native language influence. On the basis of our current knowledge, interlanguage proficiency seems to be negatively correlated with non-native language influence, a phenomenon which seems counterintuitive when viewed within a lexico-semantic organisation framework.

**Storage Capacity and Processing Load**

Two other questions of relevance to multilingualism relate to whether an increase in processing load can worsen an individual’s performance in the target language, and whether a large amount of linguistic information stored in the mind can slow down production or comprehension processes to a significant extent. Festman (2004) examined the first question with 17 trilingual subjects (German, English and French) who were asked to name pictures in the three languages in two different conditions – single language and mixed blocks. She measured the speed and accuracy of retrieval in each
language in both conditions and found that the frequent switching of
languages in the mixed blocks condition affected speakers’ control in
several ways: lexical retrieval was slowed down, the error rate increased
and performance was less accurate.

With regard to the second question, several researchers have discussed
the possible relationship between storage capacity and comprehension or
production processes. Mägiste (1979) raised the issue of quantity of storage
in relation to possible interference effects, arguing that ‘the greater the
amount of verbal storage that an individual has for a given concept, the
greater will be the interference provided that the stored verbal material is
actively used by the individual’ (Mägiste 1979: 87). Tulving and Colotla
(1970) instead associate the storage of language tags (language membership)
with slower production processes. They argue that psychology research
has already shown that the act of remembering additional information
during a recall task reduces someone’s ability to recall information. An
individual who is asked to remember additional information such as
language membership is therefore more likely to be slowed down by the
additional information to be remembered.

A more recent study (Schönpflug, 2003) provides some support for these
early claims, in that the amount of information stored in the mind seems to
affect an individual’s ability to complete word fragment tasks. The author
hypothesized that speakers with a high level of competence in a non-native
language would display later uniqueness point in the completion of word
fragment tasks than those with a lower level of competence. Uniqueness
point refers to the number of letters that an individual needs to see in order
to identify a target word. For instance, in order to identify the word
‘banana’, one may need to see ‘ba’ or ‘ban’ or ‘bana’ and so forth. According
to decision theory, later uniqueness point occurs because a large number of
alternatives slow down the decision-making process. This hypothesis was
tested with 21 Polish L1 speakers with knowledge of German as an L2 and
English as an L3. Results supported the hypothesis formulated showing
that those with a higher level of competence require more information to
complete a word fragment than those with a lower level of competence.

One factor which does not seem to affect uniqueness points (Schönpflug,
2003) but that nonetheless seems to affect performance on other types of
tasks is passive or active knowledge of a non-native language. Mägiste
(1984, 1986) compared the performance of Swedish monolingual students
(N = 67,162) in English grammar, word comprehension, reading and
listening, with the performance of Finnish-Swedish bilingual immigrant
students (N = 2,376). Initial results did not identify any major difference
between bilinguals’ and monolinguals’ performance. When, however,
Mägiste subdivided the informants into two different groups – those who used Swedish at home and had only passive knowledge of their first language, and those who actively used their first language at home – some clear differences were identified. Bilinguals with passive knowledge of the Finnish L1 were found to perform significantly better than Swedish monolingual students, but bilinguals who actively used the L1 were found not to perform significantly better than monolinguals. On the basis of these results, Mägiste (1984, 1986) then argued that passive bilingualism facilitates third language learning while active bilingualism slows down the acquisition process. With reference to storage capacity, these results also seem to provide additional support to the idea that linguistic information must be actively used in order to affect production processes in some meaningful ways.

Separation or Integration of Knowledge in the Multilingual Lexicon

In the previous sections I discussed the issue of storage by focusing on the relationship between words in different languages. I examined the distinction between the representation of form and meaning in the mind, and how word forms and word meaning are believed to be connected to each other across languages at a single point in time. In this section I consider the issue of storage more broadly, focusing on the separation/integration debate, which relates to the degree to which linguistic knowledge is integrated into a single lexicon, or separated into two or more lexicons in the mind.

An integrated lexicon is a lexicon which contains linguistic information from all the languages known to the speaker. Information from additional languages is assumed to be added to the existing entries so the lexicon grows in size as new information is added. In this large integrated lexicon, the speaker is able to discriminate between languages by way of language tags or nodes that hold information on language membership, and the use of language tags vary depending on whether the speaker is engaged in production or comprehension processes. The opposing view holds that speakers have several discrete separate lexicons for each of their languages. Since linguistic information is already assumed to be divided according to language membership, language tags are not believed to have such a central function in guiding the comprehension or production process.

The studies reviewed in this section will show that researchers have found evidence of separation as well as integration, and therefore that a rigid either-or position cannot adequately explain the structure of the
multilingual lexicon. Singleton (2003) notes that most of the scholars who support the integration position do so on the basis of evidence of strong cross-lexical connectivity between languages rather than evidence of complete integration. Likewise, one generally finds that separation is not typically discussed in terms of an either-or distinction, as may have been the case in the early literature on bilingualism.

Recent proposals seem to point to separation of functions rather than to the complete separation of information in the mind. Paradis (1997) for instance, argues in favour of modularity and claims that while languages are neurofunctionally independent they are not anatomically separate. In an article on the previous 20 years of research in cognitive neuropsychology, Caramazza and Coltheart review the evidence from brain damaged patients and conclude that ‘it is because cognitive systems are composed of relatively autonomous processing components that “local” brain damage can result in dissociation of functions’ (Caramazza and Coltheart, 2006: 7, inverted commas in the original). As we shall see, brain damage is included among the most important form of evidence of separation that we have today.

The separation/integration debate has been traditionally associated with the bilingual lexicon and it is only in recent years that the debate was extended to the multilingual lexicon as well. From a purely multilingual perspective, if we wish to understand how the multilingual lexicon is organized and we want to isolate its various functions, it is crucial that we are able to examine research carried out with multilinguals. At present the empirical evidence with multilingual speakers is scarce, and the few studies that are indeed available hardly ever go beyond trilingualism. We therefore have very little information on an entire range of properties of the multilingual lexicon. Part of the problem is that multilinguals are too often conceived as bilinguals with additional languages rather than as speakers of several languages. As pointed out in the discussion on the bilingual bias in multilingualism research (see Chapter 1), the way we conceptualize multilinguals can greatly influence the questions we ask and the explanations we offer.

In Chapter 1 I introduced the case of Harold Williams, the multilingual speaker who allegedly spoke 58 languages in his life. I would like to return to reconsider this case from a separation/integration perspective as I believe it can help us see how important and helpful it is to conceive multilinguals as speakers of several languages in their own right. Let us first consider the separation position, which predicts that speakers have several discrete separate lexicons for each of their languages. The proposal seems perfectly logical for a bilingual or a trilingual person, and we can easily imagine the existence of two or three separate lexicons or two or three sets of language-
specific lexica in the mind. The total separation position does not however seem a feasible proposal for Harold Williams’ lexicon, as it seems improbable that 58 separate lexicons would coexist in a single mind. Moreover, if some of these languages were agglutinative languages like Turkish, with a large number of languages the number of possible morphological combinations in memory would be simply immense. If we think of the amount of knowledge that must be stored, it seems more reasonable to presume that the mind is equipped with some sort of mechanism that allows the speaker not to duplicate linguistic information in memory. From an integration perspective, on the other hand, Harold Williams would have such a large lexicon in his mind that we have to ask whether language tags alone would be able to separate information efficiently and at the speed with which speech is decoded and encoded in healthy individuals. Also, it does not seem reasonable and economical that a word in one language should be searched in a lexicon containing information belong to 57 other languages.

As anticipated, a review of the evidence of separation and integration for the multilingual lexicon shows that we do not have unambiguous data in favour of either position. We have some evidence in favour of integration and some evidence in favour of separation, and mixed evidence is suggestive that both hypotheses are to some extent correct and therefore that the lexicon may be partly integrated and partly separated. But let us examine the evidence more closely.

The evidence in support of the separation hypothesis is quite abundant in the literature, starting from the wealth of data on selected recovery patterns in aphasic patients. Albert and Obler (1978) completed an extensive review of the recovery patterns of bilingual and multilingual aphasic patients and discussed the case of several individuals who recovered their languages selectively following neurological damage. The fact that languages can be recovered selectively generally indicates that they are not ‘held’ or organized in an integrated fashion, or neurological damage would lead to the loss of all the languages previously spoken, or maybe to the loss of a specific language function for all the languages known to the speaker. Instead, multilingual aphasic patients seem to be able to recover some languages but not others in a selective manner.

Paradis (1997) argues in favour of neurophysiological modularity, whereby a module is conceived as being an internal structure which can either feed another module, or function in parallel to another module. The module itself is autonomous and independent and this accounts for evidence of selective impairment. He maintains that:
this does not imply that the language systems are neuroanatomically
separated, at least not at the gross anatomical level, but the well-
documented double dissociations between the languages of polyglot
aphasics can be interpreted as evidence that each language is
represented as an independent neurofunctional system. (Paradis
1997: 332)

He further argues that the same would apply to monolinguals who manage
several sociolinguistic registers.

A fascinating part of Albert and Obler’s (1978) review relates to the
comparison they make between the recovery patterns of bilingual and
multilingual aphasic patients. They comment on some essential differences
between the two speaker groups. Polyglot aphasic patients, for instance,
seem to display regression and nonparallel recovery patterns more
frequently than their bilingual counterpart, whereby regression defines the
process by which one language improves as another one deteriorates, and
nonparallel recovery refers to the selective recovery of previously spoken
languages. The authors also note that multilinguals are more likely to follow
Pitre’s rule than Ribot’s rule. Pitre’s rule predicts that the language used
more frequently prior to the injury will be the first to be recovered, while
Ribot’s rule predicts that the language which was acquired first is the first
one that will be recovered.

Perhaps even more revealing is the clinical evidence of separation from
invasive brain procedures. Some patients were asked to name objects while
undergoing electrical stimulation of the cortex and the stimulation of
different cortical areas led to different types of interferences (for a review
of these studies, see Zatorre, 1989). In some cases, the stimulation of
one area interfered with the ability to name in both languages, while in
other cases the stimulation of another area interfered with the ability to
name in only one of the patient’s languages. This second instance is clearly
suggestive that the bilinguals’ languages are not organized in the same
manner. Moreover, second languages were found to be represented more
widely within the brain than the native language, which further supports
the idea of separation or at least of a different organization.

In the literature there are also discussions of healthy multilinguals who
experienced some temporary comprehension difficulties when expecting to
hear speech in a different language (see Singleton, 2003). Comprehension
appears to be blocked by the speaker’s expectation, a phenomenon which
would suggest that we can tune in to one specific language while simulta-
neously blocking all other languages in the mind.
Singleton (1999) also discusses the process by which an individual identifies the morphological structure of unfamiliar words. Multilinguals identify the morphological structure of an unfamiliar word by referring to the phonological elements of familiar words and using the information to analogize. He gives the example of the French word *brocanteur* (second-hand art dealer). A speaker who encounters the word and does not know what it means, identifies -eur (/œR/) as an end morpheme by referring to other French words which have the same morpheme, such as *vendeur* (salesman) or *serveur* (waiter). Singleton argues that since a syllable like -eur /œR/ is only possible in some languages but not others, the speaker must conduct a search within a language-specific lexicon rather than a unified one. A similar position is taken by Ecke (2001) in his work on TOT (tip-of-the-tongue) states with multilingual learners of German. He found that the L3, the target language itself, was the most frequent source of lexical influence for the learners he examined. This concerned the associations made in TOT states (75% of the time) as well as wrong responses (95% of the time). Ecke argues that these result indicate that speakers in TOT states search interlingually first, and an interlingual search necessarily implies the existence of a language-specific lexicon in the mind rather than a unified one that contains information from all languages.

Additional evidence in support of the separation hypothesis comes from research on crosslinguistic influence. Crosslinguistic influence has been shown to occur at all levels, in an overt or covert form (see Odlin, 1989). The manifestation of crosslinguistic influence does not seem to be compatible with the idea of a totally integrated lexicon since the lexicon of one language cannot easily influence the lexicon of another if the two lexicons coexist in an integrated manner. The fact that languages can influence one another so pervasively and as frequently as reported in the literature implies a certain degree of separation between them which allows for the selection of language-specific information during online processing. Singleton (2003) correctly notes that the notion of psychotypology (Kellerman, 1977, 1979, 1983) in particular ‘runs counter to the notion of straightforward total integration within the mental lexicon, because, precisely, it implies a degree of selectivity in relation to consultation of the languages represented.’ (Singleton, 2003: 169).

Some interesting evidence of deliberate crosslinguistic consultation can be found in Herwig’s (2001) work on multilingual lexical processing. She examined the production of four multilingual speakers, one native Norwegian, and three English native speakers, all students of Germanic languages (Dutch, German and Swedish). Two of these students had good knowledge of German, advanced knowledge of Dutch, and basic
knowledge of Swedish. The other two students were described as being fluent in two foreign languages, with a good knowledge of the third one. Herwig asked these participants to describe a picture story in their mother tongue and then translate the same story into their respective second languages. A think-aloud procedure was also used during the translation task to identify the path of lexical associations. Among the most interesting results are these associative chains she identifies, which ‘reveal that lexical selection in situations of non-accessibility of an item in demand involves both automatic and deliberate consultation of several languages’ (Herwig, 2001: 128).

She argues that some of the associative chains indicate activation spreading at the semantic level, as well as crosslinguistic consultation. For instance, one of her subjects (English L1) was trying to translate the English word ‘comb’ into German and produced the following chain of words in German (G), English (E) and Dutch (D): *kommen (G) – brush (E) – bürsten (G) – brush (E) – saubermachen (G) – clean (E) – tidy (E) – opruimen (D). Herwig argues that the semantic environment of the English word ‘comb’ includes words such as ‘brush’, ‘clean’ and ‘tidy’, and their translations in Dutch and German. Similarly, another subject (English L1) was trying to translate the expression ‘he colours’ into Dutch and produced the following expressions: to place (E) – stellen (G) – hij stellt (G_D) – place (E) – put (E) – stellen (G) – draw (E) – mark (E) – create (E) – scheppen (E) – hij schept (E_D). As in the previous example, Herwig argues that the words ‘to place’, ‘put’, ‘mark’ and ‘create’ all belong to the semantic space of ‘to colour’.

In the literature we also find evidence in support of the view that the lexicons of two or more languages are represented in an integrated manner. One of the best known supporters of this position is Cook (1991) with his notion of multicompetence. To contrast the notion of monocompetence, Cook coined the term multicompetence to describe ‘the compound state of a mind with two grammars’ (Cook, 1991: 112). Believing that the mind of an L2 speaker is different from the mind of an L1 speaker, Cook raised a number of questions, including whether the bilingual’s languages form two separate systems or only one system. Evidence that ‘the two dictionaries are combined or that they depend on a language-neutral system’ (Cook 1992: 567), would provide support for the notion of multicompetence he proposed.

Cook’s proposal is based on several studies such as Caramazza and Brones (1979), who showed that the reaction times to a word in one language depends on the frequency of cognates in the other language, or Cristofanini et al. (1986), who showed that morphological similarity between two languages affect translation performance. With respect to the processing of
interlingual homographs, the work of Beauvillain and Grainger (1987) showed that bilinguals can access meaning in both languages. In addition to this type of evidence, Cook also points out that phenomena like ‘codeswitching would be impossible if the languages were not intimately related rather than two compartmentalized systems’ (Cook, 1992: 570). All the evidence in support of the multicompetence hypothesis that Cook cites surely shows a strong interrelationship between the lexicons of the bilinguals’ languages, but can this be argued to reflect total integration?

Cook himself is critical in this regard, mostly because he does not agree with the way the lexicon is generally conceived. He says that the literature views the lexicon as a list of words to which meaning is attached rather than as lexical entries with ‘syntactic and semantic subcategorization, lexical systems and relationships between words, componential analysis, or prototype theory, and so on’ (Cook, 1992: 569). Even though some empirical evidence in support of the notion of multicompetence is available, he argues that the restricted view of what the lexicon is substantially weakens the overall support for the notion he has proposed.

Further evidence in support of the view that the lexicons of two or more languages are represented in an integrated manner comes from word recognition research on selective versus non-selective lexical access. Kroll and Dijkstra (2000) express some words of caution with respect to making categorical association between representation and manner of access. Specifically they state that ‘it is not logically necessary to identify selective access with segregated lexical representations and nonselective access with an integrated lexicon; the form of representation and the manner of access can be treated as independent dimension’ (Kroll and Dijkstra, 2000: 301). Nonetheless, much of the work reviewed below advances some claims with respect to the relationship between representation and access.

In brief, the selective lexical access view holds that words can be accessed individually within a language-specific lexical network and that the correct language is selected by way of an ‘input switch’ which guides the selection process (Dijkstra, 2003). The opposing view holds that words from different languages are activated in parallel until a certain point in the selection process, as I will now explain.

Dijkstra (2003) argues that several studies already provide support for the non-selective access position. He maintains that if parallel activation across languages occurs, reaction times (RTs) for interlingual homographs, i.e. words that share the same orthographic form across languages but do not share the same meaning, would be slower than RTs for monolingual items. An example of an interlingual homograph is the word burro which means ‘donkey’ in Spanish, and ‘butter’ in Italian.
Van Hell and Dijkstra (2002) conducted three experiments with Dutch L1 speakers who had knowledge of English as an L2 and of French as an L3. Subjects were asked to complete a Dutch word association task (Experiment 1) and a lexical decision task (Experiment 2 and Experiment 3). In these experiments, the authors used a list of Dutch words which were either distinctively Dutch, i.e. noncognates with respect to the other two languages, or had a cognate relationship with words in the English L2 or the French L3. In Experiments 1 and 2, the association times for cognate words were found to be slightly shorter than those for noncognates, but only in the case of Dutch-English cognates. Van Hell and Dijkstra (2002) explained this result by saying that the reduced mean association times for cognate words would indicate that cognate words are activated in parallel to one another and therefore that prior knowledge affects lexical processing in the L1 even if the speaker is not aware of it. The difference found, however, only concerned Dutch-English cognates, but not the Dutch-French cognates, and the inconsistency led the authors to investigate further. Grosjean offered a possible answer.

According to the Language Mode Hypothesis, ‘if one is interested in such issues as the independence or the interdependence of the bilingual’s language systems, selective versus non-selective processing, one versus two lexicons, etc., one should be careful not to activate the other language with the stimuli or the procedure used’ (Grosjean, 2001: 15). Through personal communication with one of the authors (see Dijkstra, 2003), Grosjean suggested that Dutch L1 speakers are in a bilingual mode most of the time as English is heard around them on a regular basis. The same cannot however be argued for French, as French is not used or heard in Holland as often as English is, so there is no reason to suspect that a Dutch L1 speaker is often in a bilingual Dutch-French mode.

In order to clarify the issue, Van Hell and Dijkstra (2002) decided to replicate their experiment with more proficient L3 speakers hoping to find a possible proficiency threshold level effect (Experiment 3). In this third experiment, participants were asked to decide as quickly as possible whether a word presented to them on a screen was a correct Dutch word or an incorrect one. Accordingly, they were instructed to press a ‘yes’ or a ‘no’ button to record their answers. This time, the mean association times for cognate words were shorter for Dutch and English cognates (489 ms for cognates versus 541 ms for noncognates) and was also shorter for Dutch and French cognates (520 ms for cognates versus 541 ms for noncognates). Van Hell and Dijkstra (2002) then advanced the claim that lexical access seems to be ‘profoundly nonselective with respect to language’ (2002: 786).
While Van Hell and Dijkstra’s (2002) study shows clear evidence of foreign language influence on L1 word recognition, two concerns about the study can be raised. The first relates to how the participants’ proficiency level in French was assessed, and the second to how recently the participants to the third experiment had used the French non-native language. With respect to proficiency level, Van Hell and Dijkstra (2002) used a lexical decision task containing 50 words and 40 pseudowords in the three languages. The difficulty of these words cannot be examined as the proficiency test is not included in the article. We know, however, that participants of Experiments 1 and 2 had studied French in secondary school for six years—a period of time which presumably allows a person to learn a fair amount of words. Nonetheless, in the study no significant differences between cognate and noncognate words were found. In Experiment 3, the authors tested 21 Dutch-English-French trilinguals recruited from the Department of French. From this information we infer that these participants were studying French language or literature around the time they were being tested. This raises the possibility that recency of use may have facilitated the activation of French words and therefore that these participants were not in a monolingual mode as Van Hell and Dijkstra claim.

As a major advocate of the non-selective access position, Dijkstra (2003) explains the word recognition process with the Multilingual Interactive Activation (MIA) model (see Figure 5.2). The MIA is a model of multilingual word recognition which assumes the existence of an integrated lexicon as well as parallel access and activation across languages. The MIA model is an extension of the Bilingual Interactive Activation model (BIA) (Dijkstra and Van Heuven, 1998), which in turn is the bilingual version of the Interactive Activation Model (IA) originally proposed by McClelland and Rumelhart (1981) for monolingual word recognition.

In brief, according to the IA model, monolingual visual word recognition occurs at three levels of representation which are hierarchically organized, namely the feature, letter and word levels. The BIA model variant includes a fourth level—called the language level—which contains information about language membership. According to this model, an integrated lexicon contains words from two languages (word level), and the added layer (language node level) contains language tags; the node of the language in use inhibits words of the language not in use by a mechanism of top-down inhibition (Kroll and Dijkstra, 2000). The process of visual word recognition then takes place at four distinct node levels (feature, letter, word and language node levels) and the process of selection occurs by way of activation by which competitors suppress each other out until one item
reaches activation threshold. The BIA model then proposes that the lexicon is integrated up to the word level, but it is no longer integrated at the language node level (French and Jacquet, 2004).

The MIA model varies from the bilingual version in that the integrated lexicon contains words from three (or more) languages (see Figure 5.2) at the word level, and the language node level contains the language tags of all the corresponding languages.

As was the case with the bilingual version of the model, selection occurs by way of activation and inhibition of potential competitors. From this perspective, one central question relates to how many neighbouring items can simultaneously compete for selection within the lexicon. Dijkstra (2003) addressed this question by simulating the possible neighbourhood effect whenever a new word is added to the lexicon. According to the calculations he made, the presentation of a Dutch word to a Dutch-English-French trilingual with a lexicon of 2628 words of three to five letters would activate three English neighbours and two French neighbours. The calculations did not include Dutch-English, Dutch-French and French-English interlingual homographs. The numbers obtained, Dijkstra says, are only an estimate as ‘the number of neighbours depends on the size of the lexicon used and on the representation of intralingual and interlingual homographs, diacritical markers, and morphologically complex words’ (Dijkstra, 2003: 18).

Estimates of this kind give us some indication of the number of neighbours that could potentially receive parallel activation in a trilingual lexicon. When we think of neighbouring effects and multilingualism, however, we must also consider the case of multilinguals with knowledge of more than three languages. As is often the case with proposals about multilingualism, hypotheses that seem perfectly logical for trilinguals or quadrilinguals vacillate when applied to speakers of five or ten languages. Multilinguals with knowledge of 58 languages like Harold Williams (see Chapter 1) are the exception and not the rule, nonetheless a theory of multilingual word recognition must necessarily be able to account for cases like Williams, as well as for speakers of more than three languages in general. We do not have calculations at hand to assess the possible neighbouring effect for an integrated lexicon of 58 languages, but we can only imagine how long it may take for this particular speaker to resolve the competition between activated items, particularly if these items belong to languages typologically close to each other (see also Schönpflug, 2000, 2003).

Dijkstra (2003) discusses briefly the issue of neighbouring density and language distance. He argues that non-L1 words occupy a more distant lexical space in the lexicon and therefore that ‘words from more distant languages having the same script will interfere less than words from closely
Figure 5.2 The Trilingual Interactive Activation model. The bold arrows between word and language mode levels reflect strong activation flows during Dutch word input.
related languages’ (Dijkstra, 2003: 20). In other words, the presence of
typologically similar languages is likely to generate a larger number of
competitors within the lexicon during the retrieval process.

In sum, the following remarks about the separation/integration debate
can be made. As pointed out at the beginning of the section, researchers
have found evidence in support of integration as well as in support of
separation, which suggests that the multilingual lexicon is likely to be partly
integrated and partly separated (see also discussion in Edwards, 1994). In
this regard it may be useful to note that a large proportion of the evidence
of separation seems to be connected with studies on production, while a
lot of the evidence of integration seems to be linked to studies on
comprehension. Without meaning to oversimplify the issue and provide
clear-cut boundaries, comprehension and production processes are
substantially different from one another and may consequently make use
of different subprocesses.

While Kroll and Dijkstra (2000) point out that the degree of similarity
between the two processes is still a controversial issue in the literature,
we can also say that the differences between these processes are clear.
Comprehension is triggered by external stimuli and recognition is neces-
sarily mapped from the bottom, starting from sound and letters up to the
complete utterance. In contrast, the production process takes the opposite
route. It is triggered by internal conceptual activity which guides the process
through its various stages up to the production of overt speech. It is
undoubtedly difficult to map where these processes overlap, and where
they diverge, particularly with reference to multilingualism. In this section
we examined some studies with multilingual speakers, but more data is
clearly necessary to clarify the issue and assess whether the difference
between comprehension and production processes may led us to formulate
some further useful hypotheses about the multilingual lexicon. The
separation/integration debate remains currently unsolved with respect to
the bilingual lexicon after decades of research, and it is even more so with
respect to the multilingual lexicon, where empirical research amounts to a
handful of studies, mostly involving trilinguals.
Chapter 6

Prior Language Knowledge, Cognitive Development and the Language Acquisition Process

The primary objective of this chapter will be to discuss the literature on third or additional languages that examines the question of whether the prior knowledge of two or more languages, as well as the learning experience gained in acquiring these languages, have a significant impact on cognitive development and on the language acquisition process.

It is a basic principle of human cognition that learners rely on whatever they perceive as relevant to the task at hand. In a discussion on relevance theory, Wilson and Sperber (2006: 612) explain that ‘the human cognitive system has developed in such a way that our perceptual mechanisms tend automatically to pick out potentially relevant stimuli, our memory retrieval mechanisms tend automatically to activate potentially relevant assumptions, and our inferential mechanisms tend spontaneously to process them in the most productive way.’ During the language acquisition process, the most relevant piece of information for the learning task is likely to be the knowledge of other languages already in the mind as well as the experience gained in acquiring such knowledge (see also Pennington, 1999; Ringbom, 1986).

Prior language knowledge and prior learning experience were not always regarded in a positive light. If we examine the literature of the past century, we find that scholars maintained very different positions about bilingualism over the course of time, and that trends of thoughts were particularly strong and influential in shaping research directions. A useful chronological dividing can be identified in 1962, when Peal and Lambert published their seminal paper on bilingualism entitled ‘The Relation of Bilingualism to Intelligence’. The paper is now known for having set in motion theoretical and methodological changes much needed at that time, and for having marked the beginning of new essential developments in research, as explained in this chapter.
Without meaning to simplify the issue I am about to discuss, it can be said that most of the studies published before the 1960s typically maintain that bilingualism has detrimental effects upon linguistic and cognitive development, while those published during or after the 1960s claim that bilingualism promotes linguistic and cognitive development and positively affects the language acquisition process. These two positions are reviewed here in some detail as research on the relationship between multilingualism and cognitive development inevitably evolved out of decades of discussions on bilingualism and intelligence.

Prior Language Knowledge: an Obstacle or an Asset?

An Historical Overview

The view that bilingualism has detrimental effects on cognitive development is chiefly associated with studies conducted during the first half of the twentieth century, when many scholars held the belief that bilingualism was associated with a number of problems in individuals, ranging from speech disorders to cognitive deficits, mental confusion and even mental retardation.

Hakuta (1986) provides a fascinating account of research on bilingualism and intelligence during this time, in which he explains that researchers did not really doubt whether bilingualism was detrimental to the mind or not, they simply accepted that it was. Researchers’ differences were rather linked to their views on the extent to which the language experience could modify the intelligence of an individual. Hereditarians were guided by the assumption that intelligence is innate and cannot be modified by experience, so individuals with low IQ scores were argued to be genetically inferior people. Environmentalists instead believed that having knowledge of more than one language was an impediment to cognitive development, and bilingualism was therefore at the origin of mental problems like mental confusion and mental retardation (Lee, 1996).

These early ideas about bilingualism seem odd, outdated, if not outright ridiculous to us today, but these were the views that prevailed at the time and that influenced educational practices in some meaningful ways. But where did such negative views of bilingualism come from? According to Edwards (2004), one of the possible explanations is that many of these studies were conducted in the United States at a time of great social tension between the flood of incoming immigrants from Europe and the local American population. He points to the intelligence testing movement in particular as an example of how research can be misused and twisted for the purpose of supporting racial discrimination. During the early part of the
twentieth century, Americans were dominated by feelings of intolerance towards immigrants, and these feelings created a fertile ground for negative views about bilingualism to find their way into research as well as society without much questioning from those who were in the position to question. The intelligence testing movement was largely driven by political and racial motivations, and instead of testing the actual intelligence of individuals, the movement provided reasons for US officials to restrict the inflow of immigrants to the United States. Deeply flawed and culturally biased tests were devised to test the intelligence of non-native speakers of English, and immigrants inevitably emerged as the least intelligent whenever compared to English monolingual speakers. Immigrants were asked to take these tests in the English language, and this inevitably placed them at a considerable disadvantage (Baker and Jones, 1998).

Edwards (2004) illustrates these extreme views about bilingualism citing several researchers such as Goodenough (1926: 393), for instance, who maintained that ‘the use of a foreign language in the home is one of the chief factors in producing mental retardation’. With a touch of irony, Edward explains that opinions of this kind easily found their way into the most respectable scientific journals of the time, and this, I may add, inevitably legitimized them and made them more acceptable within the community.

Similar comments about bilingualism are also reported by Baker and Jones (1998: 63), who write about Professor Laurie’s lecture at Cambridge University in 1890. During this event, Professor Laurie candidly stated that ‘intellectual growth would not be doubled by being bilingual. On the contrary, intelligence would be halved.’ Along the same line are Saer’s (1923) statements, who maintained that bilingualism led to lower IQ and to mental confusion in children.

In reading these comments and remarks – and many more are available in the literature – it is inevitable to wonder whether all researchers working during the first half of the twentieth century truly shared these extreme views on bilingualism, or if some of them had milder interpretations in mind but were pressured to conform to mainstream ideas. Whatever their true position may have been, time went by, and the widespread discrimination, coupled with the wealth of negative associations researchers were constantly making, inevitably led to some tangible consequences in educational practices. It didn’t take too long for bilingualism to begin to be identified as the source of potential learning difficulties and mental confusion in children, so much that many educators and administrators went to considerable lengths to discourage the use of home languages among pupils, if not to repress the use of home languages altogether (Cantoni, 1997).
The history of immigration as well as the social tensions that characterized it cannot be summarized in a few paragraphs and a brief overview cannot possibly do justice to the complexity of the issue. While there is little doubt that the overall perception of bilingualism was deeply rooted in existing social tensions and that early negative beliefs had found fertile ground in a society filled with prejudice and intolerance, other reasons may also have helped negative views of bilingualism to flourish. Several researchers have pointed to lack of rigour in research practices, for instance. Studies frequently lacked adequate controls, and it was not uncommon to find subjects of very different socioeconomic backgrounds, or of different proficiency levels, pooled together to form a supposedly homogenous group and compared with monolinguals (Baker and Jones, 1998; Barik and Swain, 1976; Diaz, 1985; Edwards, 2004). As a counter-argument, Cummins (1979) cautions us against the entire dismissal of the early studies on pure methodological grounds because some of the negative associations these studies established also emerged in the later research that used more rigorous research practices, such as Tsushima and Hogan (1975), who found bilinguals to have less-developed verbal skills than their monolingual counterparts, and Torrance et al. (1970) who found bilinguals’ performance on measures of fluency and flexibility to be inferior to those of monolinguals.

The shift from a negative to a positive view of bilingualism did not appear overnight. There was a period from the late 1950s to the early 1960s when the work of several researchers indicated that there were no substantial differences between the IQ scores of monolinguals and those of bilinguals. This period of time, which is usually referred to as the neutral period, had the effect of raising researchers’ awareness about the methodological shortcomings of previous research (Baker and Jones, 1998). During this time of transition, Peal and Lambert (1962) published their highly influential paper ‘The Relation of Bilingualism to Intelligence’.

According to Hakuta (1986), the criticism that Peal and Lambert offered with regard to subject selection procedures were very valuable in bringing about positive changes in research practices and in fact established ‘a criterion for sample selection that became standard for subsequent research’ (Hakuta, 1986: 34). Peal and Lambert (1962) provided some clear methodological arguments against the early studies, saying that they frequently used subjects whose socioeconomic status and type of bilingualism had not been properly controlled. Saer (1923), for instance, had reached some very negative conclusions about bilingualism and intelligence, but he had also compared children of low socioeconomic status (bilinguals) with children of more privileged backgrounds (monolinguals).
Peal and Lambert’s (1962) work was indeed highly influential at the time and is now regarded as one of the classic studies on bilingualism and intelligence. The study itself compared monolingual and balanced bilingual children attending school in Montreal, Canada. Children’s cognitive abilities were examined with a series of verbal and non-verbal tasks, and variables such as proficiency level and socioeconomic status were properly controlled. Using 18 measures of intelligence, bilinguals’ performance was found to be superior on most counts, and bilinguals were argued to be more flexible in their thinking and better at concept formation than monolinguals. Back in 1962, claims of this kind were uncommon, and in some cases probably unwelcome. Nonetheless, Peal and Lambert (1962) challenged the widespread negative associations between bilingualism and intelligence reaching some very positive results. Moreover, Peal and Lambert were not an isolated voice. Contemporary to their work is Vildomec’s (1963) book on multilingualism, for instance, where the beneficial effects of bilingualism are clearly noted, and it is openly argued that ‘multilingualism is not as harmful as it would appear to be’ (Vildomec, 1963: 202).

Starting from the late 1960s and the early 1970s, most researchers have shared the view that bilingualism fosters cognitive development and facilitates the acquisition of subsequent languages, especially in the case of additive bilingualism (for a review, see Cenoz, 2003a). Some negative association between bilingualism and linguistic development can still be found from time to time, for instance in relation to speech disorders. Bilingualism, however, is no longer viewed as the primary cause of speech disorders as may have been the case in the early studies, but as one of the many variables that can potentially affect speech disorders, together with social status, motivation, intelligence, age and so forth (see Au-Yeung et al., 2000).

In the most recent literature, the dominant belief among scholars is that bilingualism is an advantage rather than a disadvantage for individuals. Recently, bilingualism has been even argued to help our brains remain young and active during the old age (Bialystok, 2004). As we shall see in the remainder of the chapter, evidence in favour of bilingualism being an advantage for individuals is clear and abundant, but a closer look at these studies also shows that only a limited number of questions have been addressed to date. This is particularly true with respect to multilingual speakers who, as is usually the case, have been investigated to a lesser extent than monolinguals and L2 learners.

If knowledge of a second language enhances cognitive development and aids in the acquisition of languages beyond the L2, there are at least three hypotheses about multilingualism that can be formulated. First, it can be
hypothesized that the acquisition of languages beyond the L2 may further enhance cognitive development and progressively facilitate the language acquisition process. That is, the more languages an individual is familiar with, the more likely it is that his or her cognitive skills will be enhanced, and that the language acquisition process will increase in speed and efficiency. The alternative hypothesis may be that additional linguistic knowledge does not make any difference at all. Bilinguals and multilinguals are better and more efficient than monolinguals, but are essentially very similar to each other in terms of cognitive development and language acquisition processes. A third hypothesis can be that additional linguistic knowledge may lead to some kind of cost for the other languages the speaker is familiar with.

These hypotheses include two core elements which must be distinguished. One is the effect of prior language knowledge and prior learning experience on the development of cognitive skills, for instance problem-solving abilities or memorization skills. The ability to solve problems or memorize information does not necessarily imply that the acquisition process will be affected, even though it would be a logical consequence. The other relates to the effect of prior language knowledge and prior learning experience on the acquisition process itself, i.e. whether these factors affect the overall development of target language proficiency or the development of some aspect of grammar or the lexicon of the target language.

According to Cook (1997b), researchers’ own beliefs and assumptions about language and the human mind shape the way language learning is conceptualized, and therefore what we identify as an advantage or a disadvantage in research. He argues for the existence of two main positions, which he calls the monolingualist and the multilingualist positions.

In brief, monolingualists believe that it is essentially normal for humans to have knowledge of one language and the addition of other languages to the mind can generate a negative or a positive effect. The negative effect would consist in some kind of damage or loss to the individual’s linguistic knowledge and to the ability to process information, while the positive effect would entail an enhancement of the individual’s knowledge and of his cognitive or processing abilities. Researchers embracing a monolingualist position therefore either search for evidence of deficiency (negative effect), or for evidence of enhancement (positive effect). Evidence of deficiency and enhancement is traditionally measured in terms of speed, i.e. how fast or slow are monolinguals and bilinguals at completing cognitive and processing tasks in their languages. In contrast, multilingualists believe that the norm for humans is to have knowledge of more than one language.
From this perspective they ask whether the ‘lack of’ additional linguistic knowledge, i.e. of languages beyond the L1, make monolinguals more deficient in their cognitive or processing abilities than their bilingual counterpart. In essence they believe that depriving learners of additional linguistic knowledge will lessen their chances for intellectual growth, and they ask whether those who have knowledge of more than one language display some meaningful advantages in terms of cognitive development. One of the arguments is that individuals with two languages learn to see and perceive the world around them through two linguistic systems. They can encode in two languages, and they can express themselves with two languages, and this is a form of enrichment that monolinguals do not have at their disposal (Malakoff and Hakuta, 1991).

These two positions are outlined here as they can help us understand and place researchers’ views and questions in their right perspective.

**Prior Language Knowledge and Foreign Language Achievement**

There are two critical questions with regard to the effect of prior language knowledge on cognitive development and the language acquisition process. The first is how proficient in the non-native language one needs to be before bilingualism or multilingualism turns into an asset for the learner. The second is whether the linguistic development reached in one language can be transferred to another language and affect performance in that language. Cummins (1976, 1979) proposed two hypotheses in this regard, known as the Developmental Interdependence hypothesis and the Threshold hypothesis.

The Threshold hypothesis proposes the existence of two different threshold levels of linguistic competence. Learners must reach the first level in order to avoid the cognitive disadvantages associated with bilingualism, and must reach the second level to enjoy the benefits of improved cognitive functioning. The Developmental Interdependence hypothesis instead proposes that learners’ linguistic competence in the L2 is partly dependent upon the competence already achieved in the L1, as the skills developed in the first language can be transferred and used in the second language.

In his discussion of the Threshold hypothesis, Cummins (1979) takes into account Lambert’s (1975) distinction between additive and subtractive bilingualism, as well as of the concept of semilingualism credited to Hansegard (1968) and Skutnabb-Kangas and Toukomaa (1976). Subtractive bilingualism and semilingualism imply that learning a second language has a cost for the other language in the mind. More specifically, subtractive
bilingualism means that adding a second language causes some damage or loss to the L1. This would be the case for immigrants, for instance, who use the majority language at school at the expense of their L1, which becomes progressively weaker as a result of the L2 acquisition process. Semilingualism, instead, refers to speakers having weak knowledge of both of their languages. This is the case of children who frequently move from one country to another with their families and do not have sufficient time to develop adequate competence in their first or second language. The term semilingualism, which remains highly controversial in the literature, therefore implies low linguistic development in both of the speaker’s languages. Lambert (1975) also discusses the case of additive bilingualism, when learning a second language does not imply any cost to the L1.

Cummins proposed the Developmental Interdependence hypothesis and the Threshold hypothesis to account for the cognitive advantages and disadvantages associated with having knowledge of two languages. Although Cummins did not discuss these two hypotheses in relation to multilingual speakers, others have discussed them in relation to multilinguals. Lasagabaster (2001), for instance, says that if we assume L2 competence to depend upon the competence achieved in the L1, as the Developmental Interdependence hypothesis would predict, then we may consider the possibility that multilingual learners may transfer the skills developed in the L1 or in any other language to another non-native language. In other words, if two languages can have an interdependent relationship with each other, i.e. can influence each other, the same can occur between a second and third language, or a third and a fifth language and so forth. The higher the competence attained in the previous languages, the stronger the likelihood that some influence will occur. The same holds true for the Threshold Hypothesis, perhaps not as much for the existence of the first threshold level, but most certainly for the existence of the second threshold level. When we refer to the second level, the underlying assumption is that proficiency positively correlates with intellectual development. If a certain level of competence must be achieved for learners to cognitively benefit from their bilingualism, then we may consider the possibility that those who have attained a high level of competence in three or more languages may display superior cognitive functioning than those who have not attained a similar competence.

Barik and Swain (1976) tested Cummins’ threshold hypothesis in a five-year longitudinal study with children attending regular school programmes and French immersion programmes in Canada. The initial assessment involved establishing the relationship between children’s IQ and the type of school programme attended. With this initial analysis the authors did
not identify significant differences in terms of children’s cognitive abilities. In a second stage of the study, children in the French immersion programme were divided according to their achievement scores on various tests on mental ability. This created two groups, the high French achievers and the low French achievers, which were formed as follows. Those children whose scores were found to be in the top third of the entire group were included in the high French achievers group, while the children whose scores were found to be in the bottom third were included in the low French achievers group. The authors divided participants in this manner believing that, if the threshold hypothesis were true, the relationship between French achievement scores and scores on tests of cognitive functioning would emerge. Results provided some support for the existence of a second threshold level, as high achievers were found to score significantly higher on tests of mental ability over time. Nonetheless, evidence in favour of the first threshold level did not arise as the IQ tests of pupils in the low achievers group were consistent over time, with scores of 106.7 in Kindergarten, and scores of 107.2 in the period from Grade 1 to 3. The authors argued that this data indicates no cognitive disadvantage associated with language learning in French immersion programmes.

Ample criticism of Cummins’ Threshold hypothesis and some counter-evidence for it is found in Diaz (1985), who conducted a longitudinal study with 100 Spanish-English bilingual children. Diaz claims that bilingualism promotes the development of cognitive flexibility from the early stages of acquisition, and not after a threshold level has been reached as Cummins (1976, 1979) postulates. He proposes that it is the early effort put forward in acquiring a second language which promotes cognitive development in children, and not proficiency level in the second language. In Cummins’ (1979) defence, his work specifies that the effect of proficiency may not arise in studies which evaluate only early grades because ‘the children’s interaction with the environment and, consequently, cognitive development, is less dependent on the mediation of language than at later grades’ (Cummins, 1979: 230). In the same article, Diaz (1985) also raises some methodological concerns in relation to the use of the socioeconomic variable in this line of research. He takes his own data as an example. The data initially identified a positive effect between proficiency level and cognitive development, which would have provided support for the view that proficiency level positively affects cognitive development. When, however, the most fluent children in the sample were subdivided according to their socioeconomic status, results changed in some substantial ways, and the previous claim turned out to be no longer feasible.
This background literature on bilingualism offers important insights about the relationship between prior knowledge and learning processes. On the one hand, as Lasagabaster (2001) has pointed out, multilingual learners may transfer the skills developed in all of their prior languages to another non-native language and this may improve speed and rate of acquisition, and possibly affect the route of acquisition as well. On the other, the literature on bilingualism highlights a clear relationship between additive or subtractive environments and learning processes, which leads us to examine the role of these contexts more carefully when doing research with multilinguals.

Studies with multilingual learners generally establish a positive association between bilingualism and third or additional language achievement (Cenoz, 2001; Cenoz and Valencia, 1994; Lasagabaster, 2000; Sanz, 2000; Valencia and Cenoz, 1992), but several researchers have also pointed out that positive effects tend to emerge in additive learning contexts. Cenoz (2001), for instance, emphasizes that studies which involve bilingual subtractive learning environments (Jaspaert and Lemmens, 1990; Sanders and Meijers, 1995; Van Gelderen et al., 2003) do not identify significant differences between bi/multilinguals and monolingual learners. Similar arguments are found in Cenoz and Hoffman (2003) and Sanz (2000).

Swain et al. (1990) claim that it is not bilingualism per se that has an impact on third language learning, but it is bilingual literacy. The claim stems from a study with children studying in an English/French bilingual immersion programme in Canada. Some of these children had acquired a heritage language in the home while others, in addition to having learned the heritage language in the home environment, had also acquired literacy skills by attending heritage language programs. Learners’ proficiency level in French was measured with a test which included writing, reading, speaking and listening components. The authors found that bilingualism has a positive effect on third language learning, but only when coupled with the acquisition of literacy skills. They consequently claimed that bilingual literacy has a crucial role in bringing about positive effects in third language learning.

Studies with bilinguals literate in their two languages indeed seem to point to superiority in language learning (Cenoz and Valencia, 1994; Keshavarz and Astaneh, 2004; Sanz, 2000; Thomas, 1988; Valencia and Cenoz, 1992). Some of these studies offer clear evidence in support of Swain et al.’s (1990) claim as they directly compare learners with and without literacy, or with and without formal academic training, in the second language. Keshavarz and Astaneh (2004), for instance, compared three groups of EFL students: 30 Turkish-Persian bilinguals studying Persian
academically, 30 Armenian-Persian bilinguals studying both languages academically, and 30 Persian monolinguals. Bilinguals were generally found to perform better than monolinguals on English vocabulary tests. Armenian-Persian bilinguals were also found to perform better than Turkish-Persian bilinguals on measures of vocabulary production and achievement. Likewise, Thomas (1988) compared ten monolingual (English L1) with 16 bilingual (English L1 and Spanish L2) learners of French as a second and third language respectively. Bilinguals were generally found to perform better than monolinguals on various measures of foreign languages achievement. Most importantly, bilinguals were divided according to the amount of formal instruction received in the Spanish second language, and those who had received some formal training outperformed those who had never received any training and learned the language in the home environment.

Other studies that involve bilinguals who are literate in the two languages can also be argued to provide some indirect support for Swain et al.'s (1990) claim. Sanz (2000), for instance, compared Spanish monolingual learners of English as a second language with Spanish-Catalan bilingual learners of English as a third language. All these participants were asked to complete a vocabulary test and a structure test in the English non-native language containing 75 questions each, and fill out a questionnaire with questions on language background, prior exposure to English, motivation and attitude. Using a hierarchical multiple regression analysis, Sanz then examined the relationship between bilingualism and foreign language achievement, and indeed found bilinguals’ English language achievement to be superior to those of monolingual learners of English as a second language. As anticipated, these bilinguals were literate in the two languages. Similar results were also found in studies conducted in the Basque country (Cenoz and Valencia, 1994; Valencia and Cenoz, 1992).

While it can be said that the evidence seems to indicate that biliteracy positively affects foreign language achievement, there is also evidence that adding a third language to the curriculum can influence overall achievement in the second language. This is the claim we find in Griessler (2001), who compared three groups of German L1 students studying in three different Austrian schools. One group of students was attending classes at the LISA school (Linz International School Auhof), which is an English immersion school. The second group was attending classes at the Liceé Danube (LD), where English is studied according to a traditional curriculum, and the French non-native language is introduced early on in the programme. The third group of students was attending a regular Austrian secondary school, where English is studied according to the
traditional curriculum as in the previous school. The study focused on these learners' English proficiency level, which was tested with the oral narration of the picture story 'Frog, Where are You?' (Mayer, 1969). Focusing on vocabulary richness and grammatical accuracy, and verb morphology in particular, it is not surprising that Griessler found LISA students to be superior on all measures of foreign language proficiency. The interesting difference emerged when she compared the performance of students of the other two groups. Licée Danube (LD) students clearly outperformed students attending the regular secondary school and since the only difference between learners in these groups was French instruction, Griessler concluded that French L3 instruction positively affects learners' proficiency in the English second language.

Evidence that instead seems to depart from the idea that literacy has a major impact on performance in a third language is discussed in Mägiste (1984, 1986), who compared the English language proficiency of bilingual immigrant students (N = 2,736) with that of monolingual Swedish students (N = 67,162) using various measures of English language proficiency. Mägiste found that bilinguals with passive knowledge of the Finnish L1 performed better than Swedish monolingual students, while bilinguals who actively used their L1 did not perform better than monolinguals. According to these results, then, differences in performance are to be attributed to whether a language is used or not, rather than to the level of literacy achieved in the second language.

**Metalinguistic Awareness and Metalinguistic Thinking**

As we have seen in the previous section, among the possible explanations for bilinguals' apparent superiority in language learning are literacy in the two languages and the passive use of one of the languages. One other much accredited and debated explanation is that bilingual and multilingual speakers develop an increased awareness of language which aids them in the process of acquiring additional languages.

Metalinguistic awareness has been variably defined in the literature. Bialystok and Ryan (1985) view metalinguistic awareness as an ability that allows one to solve a range of different problems. Sagasta Errasti (2003: 28) says metalinguistic awareness involves ‘greater sensitivity towards language use’. Thomas (1988: 236) defines it as ‘student’s conscious knowledge of the rules and forms of language’, and Diaz and Klingler (1991: 173) say ‘it refers to a set of abilities involving an objective awareness and control of linguistic variables, such as understanding the arbitrariness of word-referent relations and the capacity to detect and correct syntactic
violations’. For the purpose of this discussion and in an effort to simplify the issue, I shall use the term metalinguistic awareness in a broad sense to refer to learners’ ability to think of language and of perceiving language, including the ability to separate meanings and forms, discriminate language components, identify ambiguity and understand the use of grammatical forms and structures.

Studies that compared the metalinguistic abilities of monolinguals and bilinguals have shown that bilinguals develop a heightened awareness of the forms, meanings and rules of language (Ben-Zeev, 1977; Bialystok, 1987, 1988, 1991, 2001a, 2001b, 2004; Eviatar and Ibrahim, 2000; Galambos and Goldin-Meadow, 1990; Ianco-Worrall, 1972; Ricciardelli, 1992a, 1992b; Yelland et al., 1993). Research with multilinguals seems to point in the same direction. Before we examine the empirical evidence available, I would like to touch on the use of language as a medium for metalinguistic thinking and reflection.

Additional knowledge in the mind provides further metalinguistic knowledge learners can rely upon during the learning process, particularly if the additional languages are studied in formal learning contexts. Additional knowledge also provides more languages in which metalinguistic thoughts can be held. Jessner (2005) points out that within the field of multilingualism, the use that learners make of metalanguage and of metalinguistic expressions has been mostly examined from a communication strategy perspective. Zimmermann (1992), for instance, proposed a taxonomy for learners’ lexical uncertainties, like asking questions (what does ‘foreign word’ mean?) or expressing doubts.

Cohen (1995: 103) emphasizes a distinction between thinking about language, and thinking through a language, and raises the important question of whether multilingual learners hold metalinguistic thoughts through the L1, the prior non-native languages, or the target language. He observes that in the early stages of acquisition, learners may not be able to deal with complex thoughts, and more specifically with metalinguistic thoughts, as they are too difficult to deal with at low levels of competence. We can presume that this situation may change in later stages of acquisition, when learners are more capable of articulating thoughts in their non-native languages. Cohen also maintains that multilinguals may rely on different languages for metalinguistic information, as the answers of some of the multilingual learners he surveyed would suggest:

Turkish-L1 trilingual: The grammar of my L3 (English) is more similar to my L2 (German) than my L1 (Turkish). When I was learning English I was comparing it to German rather than to Turkish.
English-L1 sextilingual: I guess when I learned Spanish I compared verb conjugations to French, which I had studied previously, because person, tense, and gender matched better than comparing to English.
(Cohen, 1995: 104; italic in the original)

In some cases, multilinguals consciously draw upon their non-native languages to devise memorization strategies. He gives the example of some of the strategies he used while learning Hebrew. He often generated easy to remember keywords from English or Spanish. When he wanted to remember how to say the Hebrew word \textit{arbolet} ‘whirlpool’, for instance, he made reference to the Spanish keyword \textit{árbol} (tree), and at the same time created the image of a tree in a whirlpool.

Multilinguals clearly have more information that can be used to devise learning strategies as well as generate hypotheses born out of comparison across languages. Jessner (1999) discusses metalinguistic thinking involving crosslinguistic consultation with reference to data from Italian/German bilingual learners of English as a third language. These learners were asked to think aloud while completing an English academic writing task and some of the remarks they made show unambiguously that multilinguals can complete a task by thinking it through in three different languages, as the following example indicates:

Ok, this is proved, no this is sustained, \#sostenere, sustained by the theory that all our 4000–6000 languages on earth, hmm, are expected to be all the same for an external, how do you call it, “Beobachter, observer (English \rightarrow Italian \rightarrow English \rightarrow German \rightarrow English). (Jessner, 1999: 204)

Jessner (1999) reports several examples of this kind and argues that ‘the search for similarities between the languages can be seen as part of the activities related to metalinguistic thinking in the learner. (Jessner, 1999: 205)’

Metalinguistic awareness is likely to be among the most important factors that contribute to increase multilinguals’ ability to learn languages. This is at least what many scholars believe. Thomas (1988) was one of the first to associate metalinguistic awareness and multilingualism with the claim that learners who received formal instruction in the second language are more effective learners of a third language.

As reviewed earlier in the chapter in the discussion on literacy, Thomas (1988) examined the French proficiency of ten monolingual (English L1) and 16 bilingual (English L1 and Spanish L2) learners of French as a second and third language respectively. Some of these bilinguals had received
formal instruction in the Spanish second language while others had not received any instruction at all. Bilinguals were generally found to be more accurate than monolinguals, but those who had received formal training in the second language were also found to outperform those who had never received any formal training in Spanish and used the language actively or passively in the home environment. In other words, formal instruction in the second language was found to have an impact on students’ performance. Thomas concluded that the different performance in the two groups was due to bilinguals’ heightened metalinguistic awareness, defined as the ‘conscious knowledge of the rules and forms of language’ (Thomas 1988: 236).

Fouser (2001) also calls upon the notion of metalinguistic awareness to explain the results of an introspective study of two English L1 learners of Korean as an L3 and an L5. Both learners had advanced knowledge of Japanese as a non-native language. The author explains that the genetic affiliation between Korean and Japanese has been questioned over the years, but it is mostly believed, at least intuitively, that Japanese is the closest language to Korean. The two languages are similar in their syntax and morphology, but are dissimilar in their phonology. In the early stages of acquisition, Fouser (2001) found that his two English L1 informants were drawing extensively on their knowledge of Japanese, particularly in the area of syntax, morphology and the lexicon. Most importantly, he found evidence that learners had a good understanding of their own learning processes and of the relationship between Korean and Japanese which helped them develop metalinguistic knowledge useful for the learning task.

The development and the use of metalinguistic awareness in language learning imply a degree of interaction among the learners’ prior languages. This interactive aspect of knowledge is especially emphasized in Jessner (2003). She believes the multilingual mind to be a complex system governed by its own parameters, an idea based on dynamic system theory, which assumes that ‘biological and many physical systems are irregular, discontinuous and inhomogenous’ (Jessner, 2003: 48). Accordingly, the multilingual system is a dynamic system subject to time-related changes and constantly evolving and readjusting within its own self. Learning within this system is a non-linear process, it is reversible and dependent upon the interaction with the existing knowledge (see also Herdina and Jessner, 2000, 2002). As anticipated, Jessner (2003) emphasizes the interactive aspect of knowledge in the mind and argues that such interactions are at the origin of the enhanced abilities and skills found in L3 learners, particularly in terms of metalinguistic awareness and metacognitive skills.
Sometimes, however, the interaction of knowledge does not seem to lead
to the positive effects one would expect to find. The next section examines
cases of this kind offering some alternative answers for the results.

Prior Language Knowledge and the Lack of Significant Effects

The ability to think of language and of perceiving language to a positive
effect does not seem to apply to all multilinguals. Several studies have found
evidence that bilingualism positively affects linguistic development in third
or additional languages, and that this occurs in different domains, such as
grammar (Thomas, 1988), syntax (Flynn et al., 2004; Klein, 1995; Zobl, 1992),
surface structures (Fouser, 2001); writing skills (Sagasta Errasti, 2003),
lexical learning (Keshavarz and Astaneh, 2004) and pragmatic competence
(Safont Jordà, 2005). Some other studies, however, have also found evidence
of the opposite, that is of a lack of a relationship between prior linguistic
knowledge and some aspects of acquisition, more specifically the ability
to discriminate phonetic contrasts (Werker, 1986) and the acquisition of
prepositional verbs (Gibson et al., 2001).

Gibson et al. (2001) examined the effect of previous linguistic knowledge
on the acquisition of prepositional verbs in German as a third or additional
language. Participants were 64 multilinguals who were divided into six
different groups, set up according to whether the languages they were
familiar with had prepositional verbs or not. All participants were given a
fill-in-the-blank task which included 33 German prepositional verbs like
talk to, listen to, consist of and so forth. Thirteen of these verbs had an
equivalent preposition in English, for instance gehören zu – belong to, while
the remaining 20 verbs did not have a direct equivalent in English, such
as sprechen über and talk about. Overall results indicated that (a) prior
knowledge of an L2 does not significantly affect task accuracy; (b) prior
knowledge of English as an L2 does not significantly affect accuracy
rates of German prepositional verbs; and (c) prior knowledge of an L1
structurally similar to the L3 does not significantly affect task accuracy. In
sum, the results of the study do not support the idea that multilingualism
is positively correlated with foreign language achievement and German
prepositional verbs in particular.

Another study which claims that multilinguals do not have superior
abilities with respect to discriminating phonetic contrast is reported in
Werker (1986). Werker compared the ability of monolinguals, bilinguals,
and trilinguals to perceive two place-of-articulation contrasts in a new
language. One contrast was from Hindi (retroflex versus dental) and second
was from the Thompson, a West Coast Indian language (glottalized velar versus glottalized uvular). Multilinguals were not found to have superior abilities in discriminating phonetic contrasts than bilinguals.

The results we find in Gibson et al. (2001) and Werker (1986) clearly diverge from the general claim that bi/multilinguals show some advantages in third or additional language learning. One plausible explanation for these results takes us back to consider Cummins' (1976, 1979) threshold hypothesis, according to which learners must reach a certain level of competence in order to benefit in improved cognitive functioning. It is possible that the threshold level required had not been reached. In the case of Werker's (1986) study, a methodological concern must also be raised. Werker states that his learners were divided into groups according to the number of languages they were familiar with. Seven out of the ten monolinguals, however, were described as having received some formal training in a foreign language, which means that most of these monolinguals were not true monolinguals. In Chapter 1 I discussed how even a little knowledge of a foreign language can affect learners' processes, and in this case it is quite possible that a bias was introduced due to the wrongful assumption that low proficiency in a non-native language does not lead to significant differences in performance.

The two studies just reviewed (Gibson et al., 2001; Werker, 1986) are not the only ones that do not provide evidence in support of multilinguals' superiority in language learning. There are also other studies developed within an information processing framework that reach similar conclusions.

Information processing is based on the notion of controlled and automatic processing. McLaughlin and Nayak (1989: 6) distinguish these processes saying that:

controlled processes require attention and time; they use relatively large amounts of processing energy but are easy to set up and alter.
Automatic processes require little attention and occur rapidly; they use little processing energy, but have the disadvantage of being difficult to suppress or alter.

Within this framework, learning is the result of controlled processes, and the expert, i.e. more experienced, language learner is assumed to use different information processing strategies and techniques than do more novice learners (McLaughlin and Nayak 1989).

From these premises, Nation and McLaughlin (1986) assessed whether expert and novice learners adopt different strategies when learning a new language. The new language was not a real language, however, but an artificial grammar, which was taught to multilingual, bilingual and
monolingual participants. Results showed that multilinguals tend to perform better than the less experienced learners, but only in the case in which learning is implicit, that is when they are not given specific instructions on how to learn the artificial language. In the case of explicit learning, that is when learners are asked to learn the rules of the artificial language, multilinguals do not seem to display superior abilities.

In a similar study, Nayak et al. (1990) also asked whether multilinguals’ learning strategies differed from those of monolinguals. To answer the question, Nayak and his colleagues taught an artificial grammar to a total 48 participants, who were asked to complete a series of memorisation and rule discovery tasks about the artificial grammar. The following is an example of the type of rule participants were asked to learn:

Rule 1: Every sentence must contain at least one A word.
   RUD TIZ JAX NEB [A-D-E-C]
   *LUM TIX JAX NEB [C-D-E-C]
(Nayak et al., 1990: 233)

The learning phase lasted about 25 minutes, after which all participants were given a syntax test and a vocabulary test that measured accuracy and speed of response. Participants were also asked to verbalize the strategies used in the learning process, and the following four main strategies were identified: (1) focus on structure; (2) focus on position; (3) use of visual cues; and (4) use of verbal cues. As in the previous study, multilinguals were found to perform better than monolinguals under some of the task conditions but, on the whole, it was concluded that multilinguals do not seem to have superior language learning abilities than monolinguals. All considered, overall results seem rather convincing, but there are also difficulties when the authors’ data is closely examined.

Two main reasons of concern can be raised. The first is how participants were divided into groups, and more specifically who was included in the monolingual group. Nayak et al. (1990) gave their participants a seven-point self-rating proficiency scale of language proficiency, where a mark of seven indicated complete fluency, and mark of one no fluency at all. The self-rating scores were then used to assign learners to the monolingual or the multilingual group. Those included in the monolingual group were described as being ‘native speakers of English, with very minimal or no proficiency (ratings of three or below) in any other natural language’ (Nayak et al. 1990: 226). Since no distinction is made between learners with a score of three (some fluency) and learners with a score of one (no fluency), it is then reasonable to wonder whether the results obtained are due to a faulty design rather than to learners’ actual abilities. As was the case in Werker’s
(1986) study, individuals with some prior knowledge of non-native languages were incorrectly classified as monolinguals.

The second concern relates to the use of artificial languages in general. In reading the rule reported above, the first impression is that one is not reading the rule of a language, but rather a sequence of letters or symbols which have some kind of internal structure that must be identified. Relevance theory tells us that learners make use of what they perceive as relevant to the learning task. Without meaning to simplify the issue, a sequence of letters may not be perceived as being sufficiently relevant to learn a real language and, as a result, prior learning experience may not be put to use as the authors’ may have hypothesized.

Let us now turn to examine one other important but much neglected factor for the study of multilingualism, that is whether the number of languages known to the speaker affects cognitive development and the language acquisition processes in some significant ways.

**Number of Language Known: Does it Make a Difference?**

In the preceding sections we examined whether the knowledge of prior languages exerts a positive or negative influence on learning processes, finding that positive effects overwhelmingly prevail over negative ones in most domains. Since prior language knowledge has already been associated with a number of benefits, the next question is whether having knowledge of more languages can also lead to some additional benefits. In other words, does the number of languages known make a difference?

There are only a few studies which examine the effect of the number of languages known to the speaker on learning processes. One of these studies dealt with the relationship between the number of languages known and the ability to provide accurate translations.

Gibson and Hufeisen (2003) examined multilingual learners of English (n = 10) or German (n = 26) as non-native languages, with the aim to assess whether prior knowledge of non-native languages positively or negatively affects accuracy rates in translation. Learners, who were not familiar with the same number of languages, were asked to complete a translation task which involved translating a text from an unknown language (Swedish) into their respective non-native languages (English or German). The text was taken from a beginner’s Swedish textbook and described the life of three children. The authors then analysed accuracy rates in translation using a chi-square test of interaction and found a significant progressive increase in accuracy rates with the increase in number of languages known. For
instance, learners of German as an L2 showed an accuracy rate of 59%, those with German as an L3 of 74%, and those with German as an L4 of 81%.

Although the number of participants was small, the progressively higher accuracy rates point to a possible association between the number of languages known and the ability to provide an accurate translation in an unknown language. Clearly, an individual with knowledge of several languages has access to more information that can aid in the task of translating from an unknown to a known language, as the task given required. The authors in fact conclude that the number of languages a person is familiar with can affect the ability to ‘overcome the lexical and syntactic traps in the [translation] task, as well as apply their metalinguistic strategies to figure out the correct translation (Gibson and Hufeisen, 2003: 99).

With respect to reading and listening comprehension, it is reasonable to expect similar results as prior knowledge is likely to be put to use when trying to understand the incoming written or oral message. To my knowledge, productive skills have not been examined directly; nonetheless there is some research which has found a clear association between speaking, number of languages known, and levels of communicative anxiety.

Dewaele (2002) conducted a study on the effect of several variables, including the number of languages known, on levels of communicative anxiety. He focused on oral communication as this is believed to be one of the most anxiety-provoking situations for non-native speakers. Participants to the study were 106 students of which 35 were bilinguals, 33 trilinguals and 38 quadrilinguals. These participants were asked to complete a sociodemographic questionnaire which contained questions related to age, language background, gender, and levels of communicative anxiety in each language in three different situations – when speaking with friends, to strangers and in public. A five-point Likert scale was used to measure levels of communicative anxiety. With respect to number of languages known, Dewaele (2002) found that the strongest difference in anxiety levels appears to be between the L1 and the L2. Speaking in the second language causes higher levels of anxiety than speaking in the first language, anxiety then lowers in subsequent languages. With respect to speaking in the L2, anxiety levels also lower the more languages are known to the speaker, i.e. multilinguals are less anxious when speaking the L2 than bilinguals. Dewaele explains these findings saying that multilinguals have learned to use more languages and, as a result, have become better communicators, have more self-confidence and have increased their self-perceived competence.
One other question is whether additional language knowledge and metalinguistic knowledge may also affect multilinguals’ acceptability of L1 sentences. That is to say, do multilinguals become more tolerant of contentious structures in their own native language? This is what Kemp (1999) asked in a study with 30 multilinguals, all native-speakers of English. These participants were divided into three groups: speakers with knowledge of 3–5 languages, 6–7 languages, and 8+ languages. They were given 20 English sentences and were asked to (1) express a judgement of acceptability; (2) indicate, on a scale from 1 to 10, how sure they were of the judgement expressed; and (3) underline any problem found and explain what the problem was. Using a non-parametric correlation test (Spearman’s rho) for analysis, Kemp found that acceptability rates for contentious sentences increased with the number of languages known to the speaker. She also found that those with a higher number of languages were better at explaining what was wrong with the sentences they were shown. In a later study (Kemp, 2001) additionally asked whether those with more languages are also better at learning a new language. The ability to learn Basque was tested with 30 English L1 multilingual speakers. As in the previous study, she found a positive effect, i.e. the more languages participants were familiar with, the better they were at learning Basque. She also found an association between explicit grammatical metalinguistic awareness and achievement.

In sum, even though the amount of research on the effect of the number of languages known is still limited, the few studies that are available already point to the importance of this variable for language acquisition research.
Chapter 7

Conclusion

At the beginning of this book I raised two main questions. The first was whether multilinguals should be considered as learners and speakers in their own right as opposed to L2 learners or bilinguals, and therefore whether a more explicit distinction between Second Language Acquisition and Third or Additional Language Acquisition is warranted. The second question was how proficient in a non-native language L2 learners are supposed to be before they can begin to be classified as L3 learners in empirical research.

The first question was raised because the language acquisition and the speech production literature treat multilingual phenomena according to two basic assumptions. On the one hand, we have scholars who assume there is no meaningful difference between bilinguals’ and multilinguals’ processes and accordingly classify all speakers of one or more non-native language as L2 learners or speakers, especially when proficiency in the previously learned non-native languages is low. On the other, we have scholars who argue that this position is not acceptable, as meaningful differences between these learners’ processes exist and must be accounted for. The book then set out to examine the empirical evidence in favour of both positions.

All considered, the end balance is in favour of the view that a difference between the two types of speakers exists, as prior linguistic knowledge has been repeatedly shown to affect multilinguals’ processes in a number of ways. Clearly, multilinguals have more knowledge that can be used and drawn upon during the acquisition and production process which bilinguals do not have at their disposal, and this additional knowledge seems to play more of a central role than was previously assumed. While the book has attempted to highlight why a difference between Second Language Acquisition and Third or Additional Language Acquisition is warranted, it must be noted that clear empirical evidence in support of the no-difference assumption was not found.
This takes us to the second question raised. When dividing the participants to a study into groups, how do we decide whether the subject is an L2 learner or a multilingual learner? It is still difficult to provide a truly useful answer to this question for two main reasons. On the one hand, hardly any studies have focused on this specific variable so we are not able to identify threshold levels with some accuracy. On the other, those studies that provide some information on non-native language proficiency usually indicate learners’ self-rated proficiency scores, or years of formal instruction, and this type of information should ideally be supplemented with other more rigorous measures of language proficiency. Despite this limitation, some studies have shown that as little as one year of formal instruction can affect third or additional language performance to a significant extent, hence the careful distinction between L2 learners and multilingual learners remains an essential step to avoid a significant bias in research.

The fact that we cannot yet provide some clear-cut answers about possible threshold levels also raises the additional question of what criteria have been followed up to now. The decision of whether an individual is an L2 learner or a multilingual learner has usually been left to the discretion of individual researchers who have been more or less conservative in their judgements, with the result that it is not uncommon to find studies where those who have ‘some’ knowledge of a prior foreign language are incorrectly classified as monolinguals, or those who speak several languages are classified as bilinguals.

From the discussions in the preceding chapters, it is clear that the amount of research on multilinguals’ processes is limited, especially when compared to the overwhelming amount of research available in SLA and Bilingualism. The opposite, however, is also true, i.e. what is now available is sufficiently abundant for us to be able to draw some conclusions about multilinguals and the distinctiveness of their processes.

Major Findings and Some Suggestions for Future Research

This section provides a synthesis of the major findings presented throughout the book, aiming to show how information on multilinguals’ processes can add to the current body of knowledge on second language acquisition and speech production. Some suggestions for further research are also included. Given that more thorough discussions are presented in each chapter, the summary below provides only a brief description of the conclusions reached, with an indication of the relevant chapters or paragraphs where further information can be found.
Multilingual learners are influenced by the L1 as well as the non-native languages

Crosslinguistic influence (CLI), although defined as a field of study concerned with native and non-native language influence, has traditionally focused on L1 influence and L2 learner behaviour. A comprehensive theory of CLI cannot, however, be based on L1 influence alone, as a wide range of phenomena would inevitably remain unexplored and unexplained. Multilinguals have knowledge of more than two languages by definition, so the possible sources of influence automatically increase with the number of languages the individual is familiar with. Empirical evidence indicates that transfer can occur from the L1 as well as the non-native languages, which means that, in the case of multilinguals, the native language does not always have a privileged status and must be looked at together with other possible sources of transfer, particularly with respect to how the competition between languages may be resolved. Moreover, non-native language influence has been found to occur in lexis, phonetics and phonology, morphology and syntax, and therefore seems to be quite pervasive. Transfer has also been found to occur from more than one language at the same time. This type of transfer, which I referred to as combined CLI, remains little explored to date (see Chapters 2 and 3).

Language distance affects crosslinguistic influence in multilinguals

Language distance has been repeatedly discussed as one of the crucial triggers of crosslinguistic influence in relation to L2 learners as well as multilingual learners. With multilinguals, however, the role of language distance is not as straightforward as it may be with L2 learners due to the possible combination of close and distant languages in the mind. Three different combinations were closely examined with respect to CLI: (1) when learners have knowledge of related and unrelated languages; (2) when learners have knowledge of languages that belong to the same language family, but not the same subgroup within the family; (3) when learners have knowledge of languages that belong to the same family, and to the same subgroup within the family.

When multilinguals have knowledge of related and unrelated languages, evidence suggests that they are overwhelmingly influenced by the language that is the closest to the target language, regardless of whether this is the native or a non-native language. On some occasions, learners are also influenced by the more distant languages, but instances of this kind are rare...
and tend to involve lexical items that are phonetically similar to the target language form. Moreover, the items involved tend to belong to the same language class, and the speaker usually has some knowledge of the target expression.

When languages belong to the same language family, but not to the same subgroup within the family, two general tendencies have been identified. First, learners continue to be influenced by the languages that are more closely related to the target language, irrespective of whether this is the native or a non-native language. Second, learners may be influenced by more than one language at the same time (combined CLI). The influence from more than one language becomes even more prominent when all languages belong to the same language family and to the same subgroup within the family. In this case, the native language does not seem to have a privileged status, and in fact the non-native languages seem to be learners’ favourite sources of information in most occasions (see Chapter 2).

Language proficiency determines amount and type of transfer in multilinguals, and affects the lexical retrieval process.

The effect of language proficiency on crosslinguistic influence was examined in relation to proficiency in the target language, and proficiency in the previously learned non-native languages. With respect to proficiency in the target language, CLI seems to occur more frequently at the early stages of acquisition, even though it can also occur at later stages, as the literature on L1 influence also found. With respect to the relationship between proficiency in the non-native languages and CLI, the influence was equally found to occur from non-native languages speakers know well than from non-native languages speakers do not know well. This is perhaps the most important result of all as it offers further evidence that those learners who have some knowledge of a non-native language, for instance one or two years of formal instruction, should not be regarded as L2 learners but as third or additional language learners in empirical research. Not doing so would most likely introduce a potential bias that could lead to unreliable and inconclusive results. This said, even though some knowledge of a non-native language may influence target language production and development, it was also found that different proficiency levels in the previously known non-native language(s) can lead to different types of transfer in production. For instance, transfer of meaning was found to be
mostly associated with high proficiency in the source language, while transfer of form was found to be mostly associated with low fluency in the source language (see Chapters 2 and 3).

Proficiency in the target language was also found to affect the lexical retrieval process and speakers’ ability to inhibit potential competitors. Research found varying processing difficulties according to learners’ proficiency levels in the target language. Multilingual speakers seem to be better able to execute control in the stronger and more fluent languages than in the less fluent languages, where instances of crosslinguistic influence are therefore more likely to arise (see Chapter 4).

**Recency of use affects crosslinguistic influence in multilinguals**

Recency of use was discussed in relation to psycholinguistic perspectives which view access to linguistic information to be hindered or facilitated by the frequency of access to the item itself. The frequency effect, which is a well documented phenomenon in the psycholinguistic literature, maintains that it is easier to access a word which is used frequently than a word that is used less frequently. According to this principle, learners are more likely to be influenced by those languages that are used often, and in the recent past. The empirical evidence partly confirms this claim. Recency of use has been found to variably affect the amount of influence from a source to a target language. On the one hand, evidence indicates that learners tend to transfer from those languages that were used in the recent past and are still relatively fresh in the mind. On the other, there is also evidence that transfer occurs from languages not used for as long as thirty years, even though these instances seem to be mostly restricted to lexical influence. These results would suggest that recency of use is not a key trigger of CLI, and that its role is determined by its interaction with other dominant factors like proficiency level or language distance. More research is needed to clarify the extent of the interaction between these factors and how the competition among them may be resolved. On the whole, while it can be said that our understanding of the role of the recency factor is still partial, the little we know adds to our current body of knowledge as this factor was never examined in relation to L1 influence, with the exception of cases of attrition. Research on recency of use seems to be highly promising for areas of inquiry such as language loss and language maintenance, particularly in relation to non-native languages (see Chapter 2).
Length of residence and exposure to a non-native language environment affects crosslinguistic influence in multilinguals

Length of residence and exposure to a non-native language environment is another factor which is mostly relevant to multilingualism. As far as we can see, length of residence and exposure to a non-native language environment seems to increase multilinguals’ reliance on a particular source language in production. This said, not much is known about the effect of this factor on the amount and type of instances of CLI, particularly over an extended period of time. For instance, we can hypothesize that the effect of residence will decrease with time, or we may want to examine whether transfer is more likely to increase from languages used recently in the non-native language environment as opposed to the native language environment, for example when the non-native language is studied at school in one’s home country. These are possible venues for future research, but many more angles can be easily tackled, particularly as hardly any research is currently available on this specific factor (see Chapter 2).

Order of acquisition determines the relationship between the multilingual’s languages

Order of acquisition is another factor that it makes sense to examine only in relation to multilinguals. While little research has focused on order of acquisition so far, results have shown some interesting associations with respect to the relationship that languages may establish with one another during the acquisition process. Given the same language combination, research has found that the second and the third language develop connections of different strengths with the native language, and that this connection may ease or obstruct the path of transfer in production. More specifically, the third language has been found to have a stronger connection with the second language than with the native language. On the basis of these initial findings, several questions in relation to the strength of association between languages can be raised. For instance, we may want to examine the relationship between strength of association and factors such as order of acquisition, typology and proficiency level. Moreover, if second and third languages are confirmed to be more closely connected with one other than with the first language, this type of evidence could provide further support for the separation hypothesis of the multilingual lexicon. As was the case with the previous factor, many other venues could be tackled, ranging from the relationship between the strength of interconnections and
the organization of knowledge in multilingual memory to the relationship between order of acquisition and CLI (see Chapter 2).

Multilinguals may be influenced by more than one language at the same time

A distinction was made between one-to-one and many-to-one type of associations in CLI. The first defines instances of transfer from one language to another, for example from the L1 to the L2, the L2 to the L3, the L2 to the L1 and so forth. The second refers to instances of combined CLI, a type of transfer that can occur when two or more languages interact with one another and concur in influencing the target language, or whenever one language influences another, and the already influenced language in turn influences another language in the process of being acquired. It was noted that we cannot feasibly continue to examine CLI data following the assumption that transfer can only come from one of the speakers’ languages, as research has traditionally done in the past. When more sources are available, these sources have to be accounted for, whether used or unused by the learner. Several instances of combined CLI were reported in the book, with the intent to show how the source of the influence can rest with more than one language at the same time – a possibility that hypotheses about CLI do not currently account for (see Chapters 2 and 3).

Non-native language proficiency affects lexico-semantic organization

The addition of languages to the mind raises the question of what type of relationship the new language is likely to develop with the previous languages already in the mind in terms of organizational structure. Proficiency in the non-native language is clearly an important factor in this regard. From previous research with bilinguals, we know that an additional language may develop a word association or a concept mediation type of organizational structure with the L1, depending on the proficiency level reached in the non-native language. This hypothesis was extended to multilinguals with knowledge of weak and strong non-native languages. The weak language was hypothesized to show a word-association type of structure and the strong language a concept-mediation type of structure. This hypothesis was confirmed and proficiency level in the non-native language was indeed found to affect lexico-semantic organization. Moreover, the relationship between two languages was also argued to change over time. A question which instead has remained almost com-
pletely unaddressed relates to the type of relationship that non-native languages establish with one another at a single point in time and over time, especially in view of the rapid changes in proficiency level non-native languages are subject to (see Chapter 5).

**Heavy processing loads slow down multilinguals in the execution of some tasks**

Does having more knowledge in the mind slow down multilinguals’ processes in some meaningful way? Some studies have found that it does, showing very modest delays in the execution of some tasks in multilinguals in comparison to monolinguals or bilinguals. These delays, however, are in the range of milliseconds, and are therefore to be regarded as a fairly negligent consequence of multilingualism (see Chapter 6). As Chapter 6 discusses, the negative consequences of multilingualism are minimal in comparison to the cognitive advantages that can be gained.

**Prior language knowledge and previous learning experience have a positive effect on third or additional language learning**

Bilingualism and multilingualism have been associated with a broad range of effects in grammar, syntax, surface structures, writing skills, lexical learning and pragmatic competence. Clearly, prior knowledge does impact learning processing in many ways. One of the most important questions about these effects is whether bi/multilingualism positively or negatively affects third or additional language achievement and learners’ cognitive development. Research has shown that bi/multilingualism has a positive effect on learning processes, but mostly when learning occurs in additive contexts. Moreover, research has pointed to two factors of major influence for the individual: literacy in the previous languages, and metalinguistic awareness. Both these factors have been found to be positively associated with foreign language achievement and cognitive development in multilinguals (see Chapter 6).

**A Final Comment**

This book has focused on multilinguals’ cognitive and psycholinguistic processes in Third or Additional Language Acquisition, but many more areas of inquiry could have been easily included. As Hufeisen (2004: 145) has noted, adding a language is not just a matter of adding knowledge to
the mind and defining how this knowledge is used. Adding languages to the mind brings about an entire range of effects which can influence the individual’s ‘personal life and learning experience, individual learning strategies [. . .] and/or knowledge about one’s own learner type’. Clearly, adding a language to the mind is bound to enrich us linguistically and culturally, and what is gained can generate effects of various kinds. Some of these effects were discussed in the book while some others remain to be identified to date.

Reflecting more broadly on the role of language and of language learning within societies, we all know that languages can be a source of struggle or a source of freedom in many parts of the world. In some countries, dominant political powers try to suppress minority languages and minority cultures, while other countries deliberately introduce measures to protect minority languages with the intent to encourage the spread of multilingualism within the social environment. Even though the sociolinguistic aspects of multilingualism were not the focus of this book, one cannot forget that language acquisition research eventually informs educational practices, and therefore touches peoples’ lives. It is my hope that a better awareness of the effects of multilingualism on learning processes may ultimately reach the effect of encouraging governments to support multilingual education more systematically and promote multiculturalism where possible.
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