THE MONOLINGUAL NATIVE SPEAKER:
NOT A NORM, BUT STILL A NECESSITY

Molly Mack
University of Illinois at Urbana-Champaign
m-mack1@uiuc.edu

Over the past several decades, a number of linguists have expressed concern regarding the use of the monolingual native speaker — either as a construct or as a reality. The tradition, in linguistics, of positing the language user as an abstract construct is briefly considered, then several of the most frequently voiced concerns about the notion (and use) of the monolingual native speaker are presented. While it is recognized that some aspects of these concerns are justified, it is here maintained that three major areas of investigation would be seriously compromised if monolingual native speakers could not be used in comparative research with bilingual non-native speakers. That is, it would be difficult to obtain important information about the structure of bilingual language systems, to test the sensitive-period hypothesis for second-language acquisition, and to examine the possible linguistic, metalinguistic, and cognitive consequences of bilingualism.

0. Introduction

Throughout history, a dominant paradigm in the study of language has been that language and its users are unitary constructs. As Robins 1990 notes in discussing the modistae of the Middle Ages (philosophers who devoted study to, among other matters, scholarly approaches to linguistic science), there was a pervasive belief that the mind abstracts the essence of objects in the world and that language permits such abstraction. He further states that this approach, rooted in an Aristotelian view and later interpreted by Thomas Aquinas, is predicated on the assertion that ‘despite superficial differences all languages communicate in the same way’ (Robins 1990:97).

One of the major contributions of the modistae to linguistic inquiry was their emphasis upon the study of language as a formal system. However, implicit in their approach was a focus upon one normative language, Latin. As Robins states, ‘They wrote in, and illustrated from, Latin, the international language of culture during the Middle Ages; ... they sought to give a universal validity to the rules exhibited in Latin grammar’ (1990:98). In the mid-19th century, the comparative linguist and neogrammarian, August Schleicher 1868 also treated languages as formal analyzable systems, with apparently little attention paid to the actual users of these systems. (Unfortunately, he also erroneously asserted that prehistoric languages had evolved into and eventually declined from a
highly developed URSPRACHE.) Nonetheless, the overall contribution of Schleicherscher and his fellow neogrammarians to the formal study of language was substantial.

Many years later, both the structuralist approach (Bloomfield 1933; Hockett 1942; Bloch 1948; Harris 1951) and the generative-grammar approach (Chomsky, 1957, 1965, 1972, 1986; Chomsky & Halle 1968) were rooted in the notion that language is a complex formal system best understood by positing — either implicitly or explicitly — a community of speakers as an abstract concept realized, in Chomsky’s work, in his proposal of the ‘idealized speaker-hearer’. Chomsky (1965:3) defines this idealized speaker-hearer as an individual who resides in a completely homogeneous speech-community, who knows its language perfectly and is unaffected by such grammatically irrelevant conditions as memory limitations, distractions, shifts of attention and interest, and errors (random or characteristic) in applying his knowledge of the language in actual performance.

Chomsky also discusses the possibility of constructing a learning theory (LT) whereby the input to the LT system is an analysis of a specific domain of linguistic data by O where O is taken not as an individual but as a species’. (Chomsky 1981:313) Thus, integral to his theory, and that of others working in the tradition of generative grammar, has been the proposal that one must posit a language user (i.e., a speaker-hearer) as an abstraction rather than as a reality. (However, see e.g., Flynn 1987; Grodzinsky, Pierce, & Marakovitz 1994).

Thus, the notion of linguistic norms, whether they have been based upon an adherence to the idea of the purity of certain living or dead languages, or upon a belief in the validity of an idealized language user, have played a paramount and, in many cases, crucial role in linguistic analysis.

And yet such a notion is not limited to the modistae, the neogrammarians, the 20th-century structuralists, or the adherents of generative grammar. In a slightly different form, it can be discerned in the work of researchers in psycholinguistics and neurolinguistics. That is, both the progenitors of psycholinguistics and neurolinguistics and contemporary researchers in these fields have predicated much of their work upon the belief that language can and should be understood as a formal system (an undeniably reasonable premise) and that insights into language can be found by examining a specific type of language user — i.e., the monolingual (and/or native) speaker. Indeed, the noted neurolinguist, Michel Paradis (1998:205), refers to a unilingual (monolingual) speaker as a member of ‘an idealized homogenous group of speakers of any of the various sociolects ... of a language’.

Within the past several decades, the work of psycholinguists and neurolinguists has had a major impact upon theories of second-language acquisition (SLA), bilingualism, cognitive science, psychology and, more recently, neuropsychology. Yet many would maintain that, among at least some researchers in these fields, there remains an inappropriate reliance upon a type of 'idealized speaker-
hearer similar to the one described above by Paradis — namely, the monolingual native speaker.

However, in reality, psycholinguists and neurolinguists often do not adhere to the notion of an idealized speaker-hearer. That is, for many, their linguistic hypotheses and models remain grounded in and/or tested through observations of the actual performative aspects of language comprehension and production (most often in experimental or clinical settings), and they perforce must view the language user as a reality, rather than an abstraction or a construct. Moreover, it is the central premise of this paper that psycholinguistic and neurolinguistic studies utilizing comparative analyses of monolingual native and bilingual non-native speakers are essential to the development of theories about bilingual language organization and acquisition, and about the possible linguistic, metalinguistic, and cognitive effects of bilingualism.³

1. Definitions

First it is important to define the terms native speaker and monolingual. A native speaker is here defined as an individual who has, or has had, a first language. Most often, the native speaker is exposed to his/her language from infancy (although there exist relatively rare exceptions, as among some deaf individuals who have not been exposed to their native language, such as American Sign Language, until childhood or even adolescence [e.g., Newport 1990]). As Paradis 1998 rightly points out, a native speaker need not be a monolingual and, in fact, many are not. That is, an individual may possess more than one native language. Such is the case among millions of individuals worldwide who have acquired two (or even more) languages in infancy. Some of the issues surrounding the use of the term, native speaker (e.g., Pride 1981; Paikdøy 1985; Lowenberg 1986; Davies 1991; Rajagopalan 1996) may result from treating the term as synonymous with monolingual or highly fluent. Skutnabb-Kangas (1981:14) exemplifies this in the statement that 'the mother tongue [native language] can also be defined as the language a person knows best'. Such a competency-based definition of the native speaker is rejected in the present paper.

Further, a monolingual is here interpreted as an individual who has command of only one language. He/she cannot comfortably or fluently carry out tasks of language production or comprehension in more than one language. Thus, most native-English-speaking students in the United States who have had one or two years of a foreign language in high school would still be considered monolingual speakers of English. It is also possible to be a monolingual speaker of a language that is not one’s native language — as in the case of an individual who emigrates at a very early age from his/her country of origin to another country and proceeds to lose his/her native language (Bloomfield 1933; R. Harris & Nelson 1992).

The present interpretation of a monolingual native speaker of a given language is thus based upon a combination of order-of-acquisition and use criteria — i.e., it refers to an individual who has been exposed to a specific language from infancy and who can function effectively in only one language.
In contrast to the above definition of a monolingual native speaker, a non-native speaker of a given language is an individual who has acquired his/her language or languages after infancy. While this definition is seemingly straightforward, it is actually difficult to specify exactly when infancy ends for the purposes of linguistic analysis. If it is assumed that infancy is a period during which a native language can essentially be lost if it is not subsequently used, then it is reasonable to posit, as infancy, the period from birth to early childhood. However, if specific linguistic components are taken into account, the situation becomes more complex. That is, studies have revealed that infants who have not been exposed to sounds in their native-language environment lose the ability to discriminate such sounds between six and twelve months of age (Kuhl, Williams, Lacerda, Stevens, & Lindblom 1992; Polka & Werker 1994; Werker 1995). Thus, the term infancy, when applied to the notion of native-speaker-like competence, may need to take into account the particular linguistic component under consideration and even whether one is referring to production or perception.

It is also here assumed that a non-native speaker may or may not be a bilingual. If the individual is a non-native speaker of a language by virtue of having acquired a second language (L2) and having lost his/her L1, then he/she is simply a non-native but monolingual speaker of the L2. His/her linguistic ability in that L2 may be, depending upon the age at the loss of the L1, essentially identical to that of a monolingual native speaker of that language. Thus, if the individual is in possession of two languages and can function effectively in both, then he/she is a bilingual. It is important to emphasize that it is not assumed that, to be a bilingual, an individual must function in a monolingual-like, native-like or — in the unfortunate terminology of Bloomfield 1933 — a perfect manner in his/her two languages. On the other hand, it is not assumed (contra Macnamara 1967) that an individual is bilingual if he/she possesses even a small amount of knowledge, in whatever medium, of a second or foreign language.

In sum, it is a central premise of this paper that the monolingual native speaker actually exists. Moreover, it is maintained that empirically based studies using monolingual native speakers have yielded, and will continue to yield, invaluable information regarding the structure of language and of languages in contact.

2. Comparisons of native and non-native speakers and of monolinguals and bilinguals

One of the first linguists to provide a systematic linguistically based account of the native and non-native use of a language was Weinreich 1953 in his analysis of the linguistic systems of the bilingual. Weinreich describes the possible structural relationship between two languages — and, importantly, between two languages co-existing within a given individual. Using a simple example of the word book in English and its translation equivalent kniga in Russian, Weinreich presents three possible types of association between these words — one in which the two words are treated as two separate signs each with its own underlying semantic form, and one in which the two words are treated as variants of one underly-
ing form with two separate signifiers. The former condition Weinreich refers to as Type A (later termed a coordinate system), the latter as Type B (later termed a compound system).

But perhaps most interesting is Weinreich’s description of Type C, which came to be known as a subordinate system. Here the second language (the L2) is mediated through the first language (the L1). According to Weinreich, to an English speaker learning Russian, the underlying form of the English word book would be some type of representation of the English word book through which the Russian word kniga would be mediated (i.e., understood and/or produced). The most obvious example of subordinate bilingualism occurs in the literal translation of words or phrases from an individual’s first into the individual’s second, or later acquired, language. The phonetic realizations, syntactic structures, semantic properties, selectional restrictions, and contextual constraints of the individual’s L1 may be transferred whole cloth into his/her second language. An example of this would be the translation of the apparently simple English phrase, Sincerely yours, into French. If one translates the phrase utilizing the L1 he/she might produce Sincèrement vôtre which is syntactically, semantically, and pragmatically inadmissible in French.

Although Weinreich characterized the interaction between a bilingual’s two languages as interference — a term which, over the years, has acquired negative connotations and is generally seen to devalue the systems involved — his attempts to provide a formal account of the typologies of bilingual language organization foreshadowed the hundreds of studies which followed, and whose objective has been to describe the structure of the bilingual’s two language systems with reference to the one language of a (native-speaking) monolingual. Indeed, the fundamental aspects of Weinreich’s typology are similar to aspects of some of the four hypotheses proposed by Paradis 1985, 1987 in which he addresses issues regarding the functional organization and possible neurological correlates of language in a bilingual.

In the remainder of this paper, it is therefore proposed that psycholinguists and neurolinguists who are interested in bilingualism must posit the existence and validity of the language systems of bilingual non-native speakers. Further, it will be maintained that it is also necessary to posit the existence and validity of the language systems of monolingual native speakers. First, however, three of the most frequently cited concerns regarding the continued emphasis on monolingual native speakers in language study will be presented. This will be followed by a discussion of some of the types of language research that could not take place if these three major concerns were permitted to stand as roadblocks to research involving the comparative analyses of monolingual native speakers and bilingual non-native speakers.
3. Concerns regarding the monolingual native speaker in language research

3.1 Non-native speakers as a majority

One of the most frequently cited concerns about the notion and use of the monolingual native speaker is not that monolingual native speakers do not exist but that, in many regions of the world, they are in a minority. Hence it is viewed by some to be of dubious value to continue emphasizing such individuals in language study. The first portion of this position is undeniable. As R. Harris & Nelson (1992:3) state,

> On a worldwide basis, bilingualism is very common and much more the rule than the exception in most places. Even many largely monolingual countries, such as many in western and central Europe, are relatively small in area and surrounded by other nations speaking different languages. Larger monolingual immigrant societies like the United States, Brazil, Argentina, or Australia have culturally and linguistically overwhelmed (if not almost exterminated) their indigenous languages. Residents of such nations are the most likely to be truly monolingual. Such nations, however, are relatively few in number, and even in these societies, many individual residents are bilingual. Today’s unprecedented ‘permanent’ migration across international boundaries seems likely to accelerate this trend.

The case becomes even clearer when English is considered. As B. Kachru 1986, 1994 has pointed out, there are now more non-native than native speakers of English worldwide. Indeed, he has estimated that that there are approximately 500 million native speakers of English (and they reside primarily in a relatively small number of countries including, but not limited to, the United States and Great Britain), while there are possibly two billion non-native speakers of English (and they reside in scores of countries). This point is echoed in the title of a book by Crystal 1997, *English as a Global Language*. While it is beyond the scope of this paper to discuss the multifarious historical, economic, social, and political reasons for the rather remarkable spread of English, it cannot be denied that (1) there are billions of non-native speakers worldwide and that, with respect to English (2) there are more non-native than native speakers, both reflecting and resulting in the globalization of English. Thus monolingual native speakers, at least of English, appear to be something of an anachronism. They are certainly not in the majority and their numbers may even be dwindling.

3.2 Within-language variability

The second major concern regarding the monolingual native speaker is that there is, within any given language, so much between-speaker variability that the concept of a monolingual native speaker as a unitary phenomenon is not viable.

This sentiment was articulated as long ago as 1965 by B. Kachru in his article, ‘The Indianness in Indian English’. Here he clearly presents examples, at the lexical and phrasal levels, of forms which are acceptable in Indian English but

More specifically, Fillmore (1979:88), in discussing a lack of consensus regarding the acceptability of certain linguistic forms, states that one possible conclusion is that

the disagreeing speakers are actually speakers of different languages (different dialects or idiolects, if you prefer), and that the grammars of the languages they speak are demonstrated, precisely on the basis of the observed differences in grammaticality judgments, as being distinct.

A somewhat related position has emerged in psycholinguistics and neurolinguistics. That is, for decades, there has been discussion in these fields of individual differences in language acquisition and use, as well as in cognitive processes possibly correlated with such differences (e.g., Waber 1976; Fillmore 1979; Wittig & Petersen 1979; Genesee & Hamayan 1980; Gordon & Kravetz 1991; King & Just 1991; Skehan 1991; Kimura 1992; Curtiss 1994).

For example, King & Just 1991 observe that individuals who have less working memory for language have relatively greater difficulty in processing and comprehending center-embedded sentences (e.g., sentences such as *The reporter that the senator attacked admitted the error*) than do individuals with more working memory for language. And, in a study of the intelligibility of semantically anomalous computer-processed (acoustically degraded) American English sentences, Mack 1992 observed a fairly large range in the performance of monolingual native-English-speaking subjects. (Subjects were required to write the sentences they were presented with as accurately as possible.) Moreover, she found systematic differences in the performance of native American-English subjects and native British-English subjects. Even within-subject differences may exist, as observed by Mack & Lieberman in their 1985 investigation of the acquisition of temporal features in the speech of a monolingual native-English-speaking child studied longitudinally from age 46 to 149 weeks. For example, the child’s acquisition of voice-onset time (VOT) was found to be partially dependent upon the specific word being acquired; hence certain generalizations about the structure of this child’s phonetic system, at any specific stage of development, were difficult to make.

In view of findings such as these, it is reasonable to ask to what extent the linguistic systems of speakers of a given language are, in fact, alike. It is obvious that, as Strevens (1983:88) notes, ‘Virtually all languages ... exhibit variation — that is, not all users of a language speak and write it identically’. The question thus becomes this: When is it appropriate to treat a given group of individuals as speakers of the same language? Moreover, how can it be determined whether or
not differences, should they prove significant, constitute a challenge to the seemingly homogeneous notion of the monolingual native speaker?

3.3 Linguistic ethnocentrism

A third major concern regarding the monolingual native speaker is that the treatment of such a type of speaker often reflects LINGUISTIC ETHNOCENTRISM. It has been argued that one result of linguistic ethnocentrism is that the monolingual native speaker becomes a linguistic norm against which the bilingual is measured and evaluated (Grosjean 1985, 1989; Davies 1991; Andreasson 1994). For example, Davies (1991:1) states that

[a]pplied linguistics makes constant appeal to the concept of the native speaker. This appeal is necessary because of the need applied linguistics has for models, norms, and goals, whether the concern is with teaching or testing a first, second or foreign language, with the treatment of a language pathology, with stylistic discourse and rhetorical analysis or with some other deliberate language use.

B. Kachru (1992:52) appears to share this position, at least in part, when he states that ‘the question of a “model” for English did not originally arise with reference to a model for “non-native” users of English’. Grosjean (1985:472-3) is even more emphatic, for he decries the monolingual or FRACTIONAL view which is that a bilingual is treated linguistically as two monolinguals in one person. Moreover, he states that tests involving the form of language rather than the ‘ability to communicate in context’ are inappropriate when used in comparative analyses of monolinguals and bilinguals (and, perhaps by implication, native and non-native speakers).

3.4 Summary regarding concerns about the monolingual native speaker

In light of the above discussion, it would be irresponsible to dismiss the views of those who object to the construct OR certain uses of the monolingual native speaker. Recognition of the relatively small and perhaps diminishing size of the (English) monolingual native-speaker population is of paramount importance. In his extensive research on this topic, B. Kachru has appropriately and incisively emphasized this point. Likewise, concerns about a lack of linguistic homogeneity within given languages and researchers’ covert (and sometimes overt) linguistic ethnocentrism MUST be recognized. On the other hand, the fact that the population of monolingual native speakers (at least of English) is smaller than is the population of bilingual non-native speakers does not, of itself, constitute an argument against the use of monolingual native speakers in language research. (And it must be noted that many researchers, including B. Kachru, have not asserted that it should.) If such a position were tenable, it would mitigate against the study of ANY group of language users who are not in a majority. Moreover, the diversity of types of monolingual native speakers should not be used as an argument against their inclusion in language research: It is axiomatic that any group of speakers of a given language will be, in some respects, linguistically dissimilar.
On the other hand, the assertion that monolingual native speakers have often been treated as norms or ideals is valid. For implicit in such a treatment is a value judgment — i.e., that monolingual native speakers are linguistically superior to bilingual non-native speakers. What is needed, therefore, is a heightened awareness among psycholinguists and neurolinguists of potential negative biases regarding bilingual non-native speakers and a change in attitude toward such speakers if that attitude is based upon a view that bilingual non-native speakers are anomalous or linguistically inferior to monolingual native speakers.

However, what is not called for is a radical change in the research paradigms and methodological approaches utilized in psycholinguistic and neurolinguistic studies that compare monolingual native speakers to bilingual non-native speakers. Indeed, if researchers cannot continue to examine the language systems of monolingual native speakers as distinct from those of bilingual non-native speakers, a potential wealth of information about the bilingual mind and brain will remain only a modest and partially retrieved sum. This can best be understood in light of the consequences of significantly altering or abandoning comparative research with monolingual native speakers and bilingual non-native speakers.

4. Consequences of altering or abandoning established research paradigms

There are three major consequences that would result if studies utilizing comparative analyses of monolingual native and bilingual and/or non-native speakers were significantly altered or abandoned. First, it would become extremely difficult to gain certain types of insights about the organization of language in the mind and brain of the bilingual. Second, it would be nearly impossible to test the hypothesis that there is a sensitive period for second-language acquisition. And third, important information about the linguistic, metalinguistic, and cognitive consequences of bilingualism could not be obtained.

4.1 Obtaining information about the bilingual mind and brain

As stated above, one of Weinreich’s major contributions to the study of bilingualism arose from his attempt to provide a systematic account of the relationship between the two languages of a bilingual. In contemporary psycholinguistic and neurolinguistic studies, there continues to be much work devoted to understanding to what extent the two languages of a bilingual are shared (interdependent) or separate (independent) (e.g., Paivio & Desrochers 1980; Potter, So, Von Eckhardt, & Feldman 1984; Mack 1982, 1986, 1988, 1989, 1990; Flege & Eefting 1987; Flege 1993, 1995a, 1995b; Logan & Pruit 1995; Mack, Bott, & Boronat 1995, 1998; Schmidt & Flege 1995; Deucher & Clark 1996).

This is an exceedingly important issue. An understanding of the extent to which a bilingual non-native speaker is able to maintain one system for the native language and another for the non-native language provides invaluable information about human cognition, memory, perception, and the neural substrates of language. But such study of languages in contact becomes impossible to carry out without making reference to the languages INDEPENDENT of one another. An analogy from cultural contact may help clarify this point.
It is well known that there have been massive European-based (Western) cultural influences from immigrants to North America upon the indigenous populations. For example, there have been major influences upon Navajo culture from Western cultures in terms of dress, music, food, family structure, and religious and medical practices. From an anthropologist’s perspective, knowledge of which aspects of Navajo culture have been particularly susceptible or resistant to Western influence could be of extreme interest. For example, if Navajos have adopted a Western style of dress but not Western medical practices, why have they done so? And, if they have incorporated Western influences into aspects of their cultural practices, to what extent have they done so? These questions could be answered by knowing what Navajo cultural traditions and mores were like prior to Western influence.

In reality, acquiring complete information about the nature of Navajo culture prior to Western influence is now nearly impossible since there have been so many years of interaction between Navajo and Anglo cultures (Janet Keller, personal communication). Yet this does not affect the basic premise that an understanding of an indigenous culture in the absence of outside influence is, at least in the ideal, of potentially major significance.

Linguistic study is actually more amenable to comparative analysis than is analogous ethnographic work. That is, although there are very few cultures that have remained completely isolated from the influence of other cultures, there are still millions of monolingual native speakers who have experienced no (or minimal) contact with other languages. It is therefore maintained that, when one wishes to study the language systems of bilingual non-native speakers, these systems are (ideally) interpretable — for at least some types of analysis — if the data elicited are compared to data from monolingual native speakers.

4.1.1 Data obtained in experimental contexts

A psycholinguistic approach involving the comparative analysis of monolingual native and bilingual non-native speakers, utilizing experimentally obtained data, is well exemplified in studies of a temporally based phonetic feature, VOT. Cross-linguistic study of this phonetic feature has perhaps received more attention in the past several decades than has any other, in part because it is relatively easy to analyze acoustically, and because it differs in predictable and systematic ways across languages (see, for example, the seminal work of Lisker & Abramson 1964). For example, in French, the phoneme /k/ is realized phonetically with a relatively short VOT of about 20-40 msec, while in English it has a relatively long VOT of about 60-100+ msec. Although there is some overlap in the phonetic realizations of the French and English VOTs, this overlap does not obscure the fact that there are clear and systematic differences in the range of the VOICED and VOICELESS VOTs in the two languages.5

Thus in work by Mack, Bott, & Boronat 1995, 1998, these questions have been asked: What are the average VOTs, in French and in English, among French-English bilingual children who have had exposure to both French and English?
That is, does early exposure to two languages result in two separate phonetic systems or are the systems merged? If they are, why and to what extent?

Results of this work have been quite revealing: Mack et al. 1995, 1998 found that for the class of voiceless stop consonants /p, t, k/ the bilingual children’s average VOT in French was 34 msec (with an average range of 27 to 39 msec), while in English it was 47 msec (with an average range of 27 to 67 msec) — a difference that was not statistically significant. This finding is especially interesting in view of the VOTs produced by age-matched monolingual native-speaking French children and monolingual native-speaking English children whose average VOTs for the same class of sounds were 26 msec (with an average range of 20 to 36 msec) and 78 msec (with an average range of 63 to 109 msec), respectively. Thus, by examining the speech production of the monolingual native-speaker children, one can readily observe that the influence of English upon the bilinguals’ French was weaker than was the influence of French upon their English. That is, the bilinguals’ average VOT for the English voiceless stop consonants (47 msec) was almost exactly at the midpoint between the VOTs of the French monolingual native and English monolingual native speakers; on the other hand, their average VOT for the comparable French stop consonants (34 msec) was closer to that of the French monolingual native speakers.

Comparative analysis of the lexico-semantic systems of monolingual native speakers and bilingual non-native speakers can likewise provide much-needed information about the storage and retrieval of words in both types of language users. In their 1984 study, Potter et al. found support for the concept-mediation rather than the word-association hypothesis. The former hypothesis predicts that picture naming in the L2 will take the same amount of time as translating into the L2 since both require the same number of stages in processing. However, the latter hypothesis predicts that picture naming in the L2 will take longer than translating into the L2 since L1-to-L2 translating involves more stages — i.e., it includes the mediation of the image to be named or translated vs a conceptual store. Moreover, their results supported the concept-mediation hypothesis among both fluent Chinese-English bilinguals tested in their L2 and among native-English-speaking subjects who were relatively non-fluent in their L2 (French).

Also of interest is a study by Amrhein & Sanchez 1997 who replicated and extended the work of Potter et al. by conducting four experiments — two of which involved the comparative analysis of English monolinguals and fluent compound Spanish-English bilinguals (i.e., bilinguals who had acquired both languages in childhood and who had continued to use them in a variety of settings). These researchers not only found evidence of support for the concept-mediation hypothesis, but concluded that (Amrhein & Sanchez 1997:1456)

[p]roficient, compound bilinguals are extremely balanced in their translation between pictures and words of either of their languages. In this regard, they appear similar to ... monolinguals. ... However, bilinguals, because of their additional translation abilities, are particularly impeded even in monolingual situations when there is
some uncertainty about impending translation activity. This translation uncertainty may activate knowledge of the other language, resulting in fewer cognitive resources being devoted to task demands. ... However, when this uncertainty is reduced, bilinguals function much better and indeed become equivalent to their monolingual counterparts in overall processing time.

Findings such as these provide important empirical information about how some aspects of the language systems of bilinguals are organized, to what extent the systems are susceptible (or impervious) to cross-linguistic influence, under what conditions such influence can be diminished, and differences as well as similarities between bilinguals and monolinguals.

Yet these findings also reveal that linguistic influence or transfer, with respect to at least some linguistic components and under some circumstances, may be an inevitable consequence of bilingualism. However, such a conclusion is, and should be, value free. It in no way suggests that the linguistic systems of bilinguals are somehow inferior to those of monolinguals or that native speakers are normative or in any way superior to non-native speakers.

4.1.2 Data obtained in clinical settings

Another example of insights gained from comparative research involving monolingual native and bilingual non-native speakers derives from clinical work in neurolinguistics. Two areas of study examined here include research with aphasic bilinguals (bilinguals who have experienced brain damage and consequent linguistic impairment in one or more of their languages) and research using brain imaging.

For over 100 years, aphasic bilinguals have been an important source of information about the organization of language in the bilingual brain due to the diversity of patterns of language loss and restitution that they exhibit. Indeed, in his book, *Readings on Aphasia in Polyglots and Bilinguals*, Paradis 1983 provides clinical descriptions of aphasia among bilinguals with the first of the accounts in his book dating from a report written in 1843. One of the major findings to emerge from the work of Paradis and others on this topic (e.g., Voinescu, Vish., & Maretis 1977; Paradis 1977, 1985, 1989; Rapport, Tan, & Whitaker 1983; Bates, Friederici, Wulfeck & Juarez 1988; Karanth & Rangamani 1988; Nilipour & Ashayeri 1989; Paradis & Goldblum 1989; Wulfeck, Bates, & Capasso 1991) has involved the description of patterns of language loss and restitution in bilingual aphasics. For example, in some cases, both languages of a bilingual may be lost, and to approximately the same extent. In other cases, one language is lost while the other is preserved. In still other cases, languages may be uncontrollably mixed, even when code-mixing was not exhibited prior to the onset of aphasia.

Of relevance here is the fact that research in bilingual aphasia has often been dependent upon knowledge about the use of language by monolingual native speakers. This is exemplified in Paradis’ 1987 Bilingual Aphasia Test Battery (BAT), designed to evaluate the extent and patterns of language loss and restitution in both languages of a bilingual aphasic and, in so doing, to discover pos-
sible explanations for the patterns observed. At present, there are at least 140 versions of the BAT (i.e., versions that utilize 140 pairs of languages) being administered worldwide. A major strength of the BAT is the fact that its test items have been designed to be compatible with and appropriate to the linguistic/cultural features of each language tested. (In this respect, the test provides an essential corrective to the often indiscriminate use of English-based aphasia test batteries which are directly translated into various languages for administration to bilingual aphasics.)

The design of the stimuli in the BAT necessitated the development of a scoring system not based upon bilingual non-native test performance. As Paradis (1987: 39) states, 'The BAT is a criterion-referenced test. Each subtest of the BAT has been designed to be easy enough so that any native speaker/writer of the language can perform the tasks successfully'. One could object that such an approach reveals an inherent bias against bilingual responses that could reflect uni- or bidirectional influence between the two languages or the existence of an internalized system exhibiting properties of the languages involved. However, the tasks to which Paradis refers are unlikely to be sensitive to within-language variability, and they result in accurate performance by most moderately fluent bilinguals. For example, in an English-language version of the test, subjects are asked to read words such as cat, bees, and ship, as well as sentences such as The boy holds the girl and The truck is not pulled by the car. And in a task in which French-English bilingual aphasics are required to translate sentences from English into French, such sentences as these are used: He eats late in the evening, Paul swam across the river, and Melanie will write when she comes back. Thus, a French-English bilingual aphasic who was even reasonably competent in his/her two languages prior to the onset of aphasia should be able to carry out the above tasks without difficulty; any problems in doing so can thus fairly safely be attributed to the effects of the brain damage incurred by the individual.

But perhaps an even more compelling issue arises when possible differences in the organization of the brains of monolinguals and bilinguals are considered. Myriad hypotheses have been proposed regarding the anatomical localization of languages in the brain of the bilingual, with some researchers even concluding that the two languages of at least certain types of bilinguals are stored in or subserved by different hemispheres of the brain with, for example, the native or more fluent language of a bilingual being localized to the left hemisphere and the non-native or less fluent language being localized to the right (e.g., Albert & Obler 1978; Genesee, Hamers, Lambert, Mononen, Seitz, & Starck 1978; Vaid & Lambert 1979; Hynd, Teeter, & Stewart 1980; Vaid, Green, Nicholson, & White 1989). If this were so, it would constitute a strong argument for a functional and possibly anatomically based difference between the organization of language in monolinguals and bilinguals and/or between native and non-native speakers.

Yet behavioral tasks (Hoosain 1992) as well as brain-imaging studies (Rapport et al. 1983) and studies in which one hemisphere is selectively deactivated with the injection of sodium amytal (Berthier, Starkstein, Lyllyk, & Leiguarda 1990) have revealed that a differential-hemisphere hypothesis is not
supported in the case of bilinguals. This work has provided much-needed information in the field of bilingual research, for it has demonstrated that bilingual language organization is more similar to monolingual language organization than many have assumed. Again, what is essential to note here is that this conclusion could NOT have been reached if data regarding the organization of language in monolingual native speakers had not been used for comparative purposes.

4.2 Testing the sensitive-period hypothesis for second-language acquisition

Another area of study that would be adversely effected, were comparative analyses of monolingual native and bilingual non-native speakers significantly altered or abandoned, involves the still-vibrant controversy surrounding the possibility that there is a sensitive (or critical) period for L2 acquisition. In order to understand the relevance of this notion to language acquisition, it is first necessary to understand the concepts, CRITICAL PERIOD and SENSITIVE PERIOD.

4.2.1 The critical-period hypothesis

The concept of the critical period is not new. Indeed, as reported by Almli & Fingers 1987, the possible existence of such a period in relation to certain developmental features was proposed in the late 19th century, and experiments concerning its effect on physiology and behavior have been well-documented for many decades. The concept, which arose from the fields of embryology and ethology, is based upon the finding that, for certain physiological properties and behavioral traits, there is a circumscribed period of time during which specific external experiences or internal influences must impinge upon an organism if it is to develop normally and completely. For example, Stockard 1921 revealed that chemicals could adversely affect the fish embryo, but only at certain times during development. Likewise, Lorenz 1935 demonstrated that imprinting in birds occurs, but only during a constrained time shortly after a bird’s hatching. And Hubel & Wiesel’s highly acclaimed work with the visual system of cats has revealed temporal constraints on the ontogeny of that system (e.g., Hubel & Wiesel 1963, 1970).

These findings point to several important characteristics of a critical period. That is, (1) its onset and offset should be clearly observable; (2) its duration should be specifiable; (3) it should be related to some cause or causes; and (4) it should be irreversible. It is important to note that the term critical period has often been used interchangeably with the term sensitive period in the developmental literature, and some researchers use the term sensitive period when others would use the term critical period (e.g., Bateson 1979). However, especially when referring to language acquisition, many researchers prefer the term sensitive period to critical period in order to emphasize that this process is more accurately characterized by a period of time during which an individual gradually, rather than abruptly, becomes less able to acquire language. Yet because it is difficult to operationalize ‘gradually’ and ‘abruptly’, it seems preferable to view a critical period as that time during which COMPLETE acquisition or development and/or acquisition of a characteristic or ability (such as language) is possible, and a sensitive period as that time during which PARTIAL acquisition or development is possible.
(William Greenough, personal communication). And because studies devoted to testing the critical-period hypothesis (CPH) and/or the sensitive-period hypothesis (SPH) in language-acquisition research have invariably found evidence that at least some language acquisition is possible during a temporally constrained period of time (even in adulthood), the term sensitive period will be used in the present discussion.

Early discussions of a sensitive (or, in their terms, critical) period for language acquisition by Penfield 1953 and Lenneberg 1966, 1967 drew considerable attention to the possibility that there are maturationally based constraints upon first- and/or second-language acquisition — and that these constraints are due to neuroanatomical changes in the brain. (However, Lenneberg’s proposal that such changes were due to an increase in the lateralization of language to the left hemisphere and that this process occurred around the time of puberty is no longer widely accepted.)

In spite of claims that there are major methodological confounds in testing the SPH for language acquisition (e.g., Snow & Hoefnagel-Höhle 1977, 1978; Morris & Gerstman 1986; Snow 1987; Singleton 1989), there remains convincing evidence that such a maturationally based period exists or that — at the least — earlier acquisition of a language is fundamentally different from later acquisition.

This conclusion is based upon the comparative analysis of brain damage in children versus adults (Robinson 1981); examination of language-deprived children (Lane 1976; Curtiss 1977); the study of proficiency in deaf adults who were first exposed to American Sign Language (ASL) as a native language at various ages (Newport 1988, 1990; Mayberry & Eichen 1991; Emmorey, Bellugi, Friederici, & Horn 1995); the analysis of age-related differences in the perception of non-native computer-processed speech and speech presented in noise (Bott 1992; Mayo, Florentine, & Buus 1997); examination of event-related brain potentials in subjects whose exposure to English occurred at different ages (Weber-Fox & Neville 1996); studies of the phonological, syntactic, and semantic systems of subjects who acquired their L2 at different ages (e.g., Oyama 1976; Patkowski 1980; Johnson & Newport 1989; Flege 1991; R. Kim 1994; Shim 1995; Flege, Munro, & MacKay 1995; Munro, Flege, & MacKay 1996; E. Kim 1997; Mack 1998); and in research utilizing positron-emission tomography to obtain images of regional cerebral blood flow in subjects listening to native and non-native speech (Perani, Dehaene, Grassi, Cohen, Cappa, Dupoux, Fazio, & Mehler 1996).

4.2.2 The sensitive-period hypothesis in language acquisition

Testing of the SPH for first-language acquisition using a true experimental design — i.e., one in which there is random selection and assignment of subjects to control and treatment groups — is simply not possible. More specifically, testing the SPH in such a manner would require the random selection of infants from a population and the random assignment of these infants to groups differing in the age at which they are to be exposed to a given language (or languages). This would require, for example, that one set of infants be assigned to a group that would receive normal linguistic input from birth, that another set be assigned to a
group that would receive no linguistic input until age one, that another set be assigned to a group that would receive no linguistic input until age two, or three, or four, etc. Such an experiment would thus involve, for most groups of subjects, a period of complete linguistic deprivation; it would clearly be unethical and would never be sanctioned by any human-subjects review board. (Nor, understandably, would any reasonable parent allow his/her child to participate in such an experiment.) The closest approximations to such an 'ideal' experiment come from so-called experiments in nature (such as the now-famous case of the child Genie, who received almost no linguistic input until age 13) and from the study of deaf individuals who have received no native-language input (e.g., ASL from native signers) in infancy.

However, another approximation of this design can be found in studies that utilize monolingual native speakers of a given language and bilingual non-native speakers who differ in terms of their age at the onset of exposure to that language. To date, scores of such studies have been conducted. It is however important to note that there may be fundamental differences in the neurofunctional, neurophysiological, and neurobiological mechanisms involved in learning in young children versus older children and adults (Lamendella 1977; Aoki & Siekevitz 1988; Jacobs 1988; Long 1990; Elman 1993; Pulvermüller & Schumann 1994) and this reveals a major limitation in the comparative analysis of monolingual native speakers and bilingual non-native speakers in tests of the SPH. Nonetheless, it is maintained that this type of analysis can still provide some valuable insights into the possible existence of a sensitive period for language acquisition (even though these insights must perforce be interpreted with caution, and possible confounding variables must be considered and, to the extent possible, controlled). Examples of several experiments will serve to illustrate this point.

An oft-cited study regarding the existence of a sensitive period for L2 acquisition is that of Johnson & Newport 1989. They conducted a study of 46 native speakers of Korean and Chinese who arrived in the U.S. between the ages of 3 and 39. Subjects were tested on a grammaticality-judgment task in English. It was found that subjects who had arrived in the U.S. between the ages of 3 and 7 performed, overall, as accurately as did native speakers of English. Those whose age of arrival was 8 to 10 performed less accurately, those who arrived from age 11 to 15 performed less accurately yet, and those who arrived after age 15 performed the least accurately. To examine the role of factors other than age of exposure, the researchers conducted statistical analyses which revealed that age of arrival in the U.S. was the strongest predictor of test performance among the variables examined. That is, it was a stronger predictor than duration of exposure to English or attitudinal variables, including motivation to learn English. Johnson & Newport interpret these findings as evidence of a maturationally based sensitive (or, in their terms, critical) period for the acquisition of an L2.

E. Kim 1997 likewise tested the SPH by using not only a grammaticality-judgment task, but a lexical-decision task with semantic priming based upon previous work by Mack 1986. Korean-English bilingual adults were divided into seven groups based upon their age at the onset of exposure to English. Her
findings revealed that subjects exposed to English after age 5 performed differently, in their responses to English lexical and sentential stimuli, from those exposed to English prior to age 5. Kim interprets these results as evidence for the existence of an optimal sensitive period for second-language acquisition which lasts from birth until about age 6. In this respect, her conclusions are consistent with those of Shim 1995 who conducted a grammaticality-judgment task with Korean-English bilinguals whose ages differed at the onset of the bilinguals’ exposure to English.

In an experiment designed to test the SPH for the phonological component, Mack 1998 compared adult English monolingual native speakers and two groups of adult Korean-English bilinguals who were native speakers of Korean. Bilingual subjects were divided into two groups — those who arrived (or had resided in) the U.S. from birth to age 3 (the 0-3 bilingual group), and those who had arrived in the U.S. between the ages of 4 and 7 (the 4-7 bilingual group). Subjects were presented with two types of speech-perception tasks with two different vowel continua. That is, they were required to discriminate and identify stimuli in computer-synthesized /i/-/u/ and /a/-/u/ continua. (These sets of vowels were used because neither /i/ nor /u/ exists in the Korean vowel system.) Results revealed that all three groups discriminated the vowels similarly. However, the 4 - 7 bilingual group identified vowels in the /i/-/u/ continuum significantly differently from the monolingual native speakers of English and from the 0-3 bilingual group. (No difference in the identification of the /u/-/u/ vowel continuum was observed. Discussion of possible reasons for this is beyond the scope of the present paper.) Moreover, first-order partial correlations revealed that age was more strongly correlated with the identification of the /i/-/u/ continuum among the bilinguals than were their duration of exposure to English, their Korean proficiency self-ratings, or the amount of Korean used in the home. Thus, these findings are interpreted as at least partial support for the existence of a sensitive period for the acquisition of L2 speech contrasts.

Also relevant to the SPH is the work of Perani et al. 1996 who used positron-emission tomography (PET scans) to examine regional cerebral blood flow (rCBF) in nine Italian-English bilinguals presented with short stories in their native language (Italian), in their non-native language (English), and in a language that none of them knew (Japanese). When listening to their native language, subjects exhibited activation, as reflected in the pattern of rCBF, in the left perisylvian language areas. When subjects listened to their non-native language, the region of rCBF was markedly reduced; moreover, in this condition the pattern of activation was similar to that observed when subjects listened to the language unknown to them. Perani et al. (1996:2444) conclude the following:

The selective response of a network of cerebral areas, including left hemispheric regions (the inferior frontal cortex and the parieto-occipital areas) and the temporal poles bilaterally, to Italian as opposed to English and Japanese, implies that the organization of these areas has been shaped by exposure to the native language during childhood. Decreased neuronal plasticity within these areas might be
the cerebral substrate of the ‘sensitive period’ in language acquisition.\(^5\)

been used in order to obtain data about the linguistic and neurological consequences of early versus later exposure to language and hence about the possible existence of a sensitive period for the acquisition of an L2. Such comparative analysis can clearly provide important information about the relationship between age at the onset of exposure to an L2 and subsequent performance in that language. It can likewise provide (albeit indirectly) information about the possible existence of biologically based maturational constraints on the acquisition of language.

4.3 Possible advantages of bilingualism

Lastly and perhaps most importantly, if researchers were precluded from using monolingual native speakers in psycholinguistic experiments with bilingual non-native speakers, it would be impossible to determine whether bilingualism has any type of linguistic, metalinguistic, or cognitive advantage compared to monolingualism. In other words, it would become impossible to answer a question often posed by parents who wish to raise their child bilingually: ‘Will exposure to two languages be beneficial or detrimental to my child?’

From the turn of the century until the 1960s, much comparative research involving monolingual native-speaking children and bilingual (and often non-native-speaking children) concluded that bilingualism had deleterious effects upon children’s linguistic, intellectual, and cognitive development (e.g., Epstein 1916, C. Harris 1948; Darcy 1953). However, as pointed out by Peal & Lambert 1962, Diaz 1983, and Hakuta & Diaz 1985, early studies usually suffered from potentially significant methodological problems, including a lack of control for subjects’ socioeconomic status, degree of bilingualism, and age and manner of L2 acquisition.

An early corrective to some of the problems inherent in previous studies was work done by Peal & Lambert 1962, who discussed research projects which, to that time, did NOT find intellectual or cognitive deficits resulting from bilingualism. They also conducted experiments utilizing French-English bilingual and English monolingual children who were matched with respect to such variables as socioeconomic status, age, and sex. They found clear evidence that the bilingual subjects did not perform less well than did the monolingual subjects on a variety of tests, including those of nonverbal intelligence.\(^6\) Although they admit that ‘[i]t is impossible to state from the present study whether the more intelligent child became bilingual or whether bilingualism aided his intellectual development’ (Peal & Lambert 1962:20), they propose that ‘bilinguals, because of their training in two languages, have become more adept at concept formation and abstract thinking than ... monolinguals’ (Peal & Lambert 1962:14).

In fact, in studies conducted throughout the past three decades, researchers have found that bilingualism is either not deleterious or that it actually confers certain advantages, at least in childhood, when compared to monolingualism (Torrance, Gowan, Wu, & Aliotti 1970; Feldman & Shen 1971; Ianco-Worrall 1972;

Before proceeding, it is important to acknowledge that, in certain types of experiments (for example, speeded tasks in which reaction time is a dependent variable) adult monolingual native and bilingual non-native speakers often perform dissimilarly (e.g., Mack 1986, 1988, 1992; Mägiste 1986; E. Kim 1997), with monolinguals performing faster and/or more accurately than bilinguals.

For example, Mack 1986 observed that adult French-English bilinguals who had acquired both languages prior to age eight made significantly more errors in an English grammaticality-judgment task and responded significantly slower to an English lexical-decision task with semantic priming than did English monolingual native speakers. However, in the grammaticality-judgment task, the errors made by the bilinguals were in response to only one of three types of sentence — those which were ungrammatical in English due to the fact that they contained morphological and/or syntactic features characteristic of French (e.g., *Explain me the meaning of this exercise, translated from the French, Expliquez-moi la signification de cet exercice*). As Mack points out, such a finding suggests that the bilinguals had a differently internalized grammar of English — not that they were linguistically ‘deficient’. And in the lexical-decision task, the reaction times of the monolinguals were significantly shorter than were those of the bilinguals by an average of about 150 msec — a difference attributed by Mack to the fact that the bilinguals were required to search two lexicons to provide a response while the monolinguals were required to search only one. Moreover, the bilinguals’ pattern of responses and number of correct responses to various types of prime-target pairs were virtually identical to those of the monolinguals suggesting that they were equally sensitive to the semantic relationships inhering between the word pairs and to the lexical status of phonotactically admissible strings in English.

While it is apparent that findings from experiments such as these provide important information about language processing in bilinguals, it must be asserted that such results do not indicate that monolinguals are linguistically superior to bilinguals or that the differences observed are likely to cause serious difficulties for bilinguals in normal non-experimental communicative contexts.

### 4.3.1 Linguistic and metalinguistic awareness

An empirical examination of linguistic and metalinguistic awareness in monolingual and bilingual children is found in a 1990 study by Galambos & Goldin-Meadow. (Note: Metalinguistic awareness is interpreted as explicit knowledge about language, while linguistic awareness is interpreted as implicit knowledge of language.) These researchers examined the performance of 98 children — 32 English monolinguals, 32 Spanish monolinguals, and 32 Spanish-English bilinguals — ranging in age from four to eight. Subjects were required to detect,
correct, and explain grammatical errors — with the explanation of errors constituting the most explicit form of knowledge about language and the detection of errors the least explicit. Subjects were given a set of orally presented grammatical and ungrammatical sentences. After each utterance they were asked, ‘Is that the right way to say it?’ If they detected an error they were further asked, ‘Well, what is the right way to say it?’ and ‘Well, why can’t you say it like that?’ (The bilingual subjects were given English and Spanish versions of the test and were asked the above questions in Spanish in response to Spanish utterances.)

Results revealed that the Spanish-English bilingual children detected the same number of errors in the English sentences as did the English monolingual children, and that they detected more errors in the Spanish sentences than did the Spanish monolingual children. Of special interest is that, when the average numbers of errors detected was adjusted for the bilingual subjects’ proficiency, they actually detected MORE errors than did the monolinguals — evidence supportive of a linguistic advantage among the bilinguals. However, Galambos & Goldin-Meadow also found that there were no obvious group differences in the types of error corrections or in the quality of the explanations they gave for the errors detected. This finding is interpreted by the researchers as evidence that no metalinguistic advantage was conferred by the subjects’ bilingualism. Thus Galambos & Goldin-Meadow (1990:53) conclude that ‘while learning two languages may enhance a speaker’s “ear” for regularities of form, it does not appear to augment his grammatical “mind” for understanding those regularities’.

In a related study, Campbell & Sais 1995 compared 15 native-speaking English monolingual children with 15 children who were bilingual in English and Italian. All children were at a pre-literate stage of development. Campbell & Sais administered four tasks including morpheme and syllable deletion, letter detection, and sorting words by meaning and sound. In three of the four tasks, the bilinguals outperformed the monolinguals despite the fact that the bilinguals were slightly younger than the monolinguals. Campbell & Sais (1995:67) conclude that ‘this advantage appears before any evidence of acquired literacy and extends recent claims that linguistic or metalinguistic abilities may appear earlier in bilingual than monolingual children’.

Taken together, these studies suggest that, in terms of their linguistic and metalinguistic ability, bilingual children are not at a disadvantage vis-à-vis monolingual children and, in fact, they may actually outperform monolinguals in certain types of linguistic or metalinguistic tasks.

4.3.2 Cognitive flexibility

An abiding question of relevance to theoretical and pedagogical issues in SLA and bilingualism is whether or not bilingualism places the bilingual at a disadvantage in terms of intellectual or cognitive development. As stated above, a number of early studies concluded that bilinguals were actually less intelligent than monolinguals — in other words, that bilingualism somehow stunted intellectual and cognitive growth. Contrary to this position is a large and increasing body of
evidence to the contrary — evidence obtained from studies devoted primarily to the notion of cognitive flexibility.

Two oft-mentioned studies in this area are those of Ianco-Worrall 1972 and Ben-Zeev 1977. In the former study, Afrikaans-English bilingual children were compared to monolingual Afrikaans and monolingual English children; in the latter study, Hebrew-English bilingual children were compared to monolingual Hebrew and monolingual English children. Although both studies are now rather dated, they are cited so frequently in the literature on the cognitive effects of bilingualism that they still merit discussion.

Applying a method based upon a procedure used by Vygotsky 1962, Ianco-Worrall administered a questionnaire to her subjects in which they were required to explain and interchange names. For example, the subjects were asked why a dog is called dog. They were also asked, for example, if a dog could be called a cow. Results revealed no significant differences between the two subject groups in terms of the types of reasons they gave for why an object was called by a specific name. However, there was a significant difference in terms of the groups’ responses to the interchange of object names, with most bilinguals responding that the names of objects could be interchanged and most monolinguals responding that they could not. However, there were no group differences in a word game involving the interchange of names as in this example: ‘Let us play a game. Let us call a dog “cow”. Does this “cow” have horns?’ Both groups were equally accurate in correctly replying ‘No’ to such questions.

Ianco-Worrall and others have interpreted these findings as partial evidence that bilingual children are better able than monolingual children to distinguish the name of an object from its referent — i.e., to recognize that language is a system of largely arbitrary symbols. To this extent, bilingual children may be less susceptible to what has been termed word magic — the notion that a word and its referent are inextricably linked — and they thus may possess greater cognitive flexibility than do monolinguals. (See however Rosenblum & Pinker 1983.)

Ben-Zeev 1977 extended the work of Ianco-Worrall by conducting linguistic and non-linguistic tests with 96 children ranging in age from four to eight. The groups tested were of comparable intelligence as measured by the Wechsler Intelligence Scale for Children (WISC). Among the six tests administered were tests of symbol substitution (including, for example, substitution of one part of speech for another, as in the substitution of the word clean for into in the sentence, ‘The doll is going clean the house’), as well as tests of nonverbal symbol understanding (as tested in the transposition of objects that differ in two dimensions such as height and diameter). Results revealed that the bilinguals outperformed the monolinguals on the tests of symbol substitution as well as on certain aspects of the object-transposition (matrix) task.

Ben-Zeev (1977:1016) states that

[w]hether responding by means of words or gestures, the bilinguals were able to isolate the dimensions of the matrix pattern better. In this respect the orientation toward analysis which was found for bilin-
guals on strictly verbal material does generalize to nonverbal patterns.

She further states that her study suggests that bilingual children possess a 'readiness to impute structure, and a readiness to reorganize' and she attributes these features of their cognitive abilities to their early exposure to 'a verbal environment of unusual complexity, in which underlying order is difficult to discover because the rules belong to two structures, not one' (Ben-Zeev 1977: 1017).

However, in recent years, the conclusion that bilingualism confers certain cognitive advantages has been criticized on a variety of grounds. For example, Diaz 1985 asserts that it is inappropriate to compare monolinguals and bilinguals because they often differ with respect to many variables other than the number of languages they possess. He further concludes that the apparent advantage of bilingualism has been found only in very young children who are in the early stages of second-language acquisition.

Jarvis et al. 1995 addressed this latter issue in a study of 50 Mexican Spanish-English bilingual children whose mean age was 9;7 with a range of 8;7 to 10;9. They utilized standardized tests of degree of bilingualism, as well as tests of phonological proficiency, vocabulary, and syntax, and a test of nonverbal general intelligence (the Raven Coloured Progressive Matrixes Test, also used by Ben-Zeev 1977). Of particular interest here, in terms of the hypothesis that bilingualism confers cognitive advantages, is the researchers' examination of the relationship between SLA proficiency and the test of nonverbal intelligence. Using partial correlation and multiple regression analysis, Jarvis et al. found that proficiency in English (the subjects' second language) was unrelated to nonverbal intelligence. Moreover, degree of bilingualism was not a predictor of nonverbal intelligence. Thus, contrary to the assertion of Diaz 1985, these researchers found that children at relatively low levels of SLA proficiency did not exhibit a cognitive advantage over children at higher levels of SLA proficiency.

It seems then that, with respect to questions surrounding the cognitive or intellectual merits of bilingualism, the pendulum has swung back and forth and — to some extent — back again. That is, early studies concluded that bilingualism was deleterious. These were followed by studies that suggested that bilingualism was actually advantageous. In more recent years, studies have either found that bilingualism does not yield a cognitive advantage over monolingualism or that, if an advantage is found, it may be dependent upon variables other than just the bilingual’s use of two languages. What is needed, therefore, are additional studies using both child and adult bilinguals in various stages of second-language acquisition, having varying degrees of L2 proficiency, and living in a variety of sociocultural and linguistic environments. In addition, these bilinguals should be matched as closely as possible with monolingual native speakers of their languages in terms of a large number of potentially confounding variables that can be controlled statistically (e.g., as covariates in statistical analyses).

What should NOT be lost in the bilingual-advantage debate are these conclusions: First, virtually no carefully designed study exploring the relationship be-
between linguistic, metalinguistic, or cognitive abilities and bilingualism has concluded that bilinguals are at a serious disadvantage when compared to monolinguals; the theoretical, developmental, and pedagogical implications of this cannot be underestimated. And second, continued investigation of this topic cannot be undertaken in any meaningful way if monolingual native speakers are excluded from testing.

5. Conclusion

To summarize, three areas of research in particular would be seriously compromised if comparative analyses of monolingual native speakers and bilingual non-native speakers were to cease. First, it would become difficult to obtain at least certain types of information about the structure of bilingual language systems; second, it would be even more difficult than it already is to test the sensitive-period hypothesis for second-language acquisition; and third, it would be nearly impossible to determine whether or not bilingualism yields linguistic, metalinguistic, or cognitive advantages over monolingualism.

In a recent and thought-provoking article, Swales (1997:374) refers to English as a *Tyrannosaurus rex* — i.e., as a ‘powerful carnivore gobbling up the other denizens of the [worldwide] academic grazing grounds’. His concern is well founded and is, in some respects, related to the concerns of those who lament the apparent treatment in empirical studies of the (usually English) monolingual native speaker as normative, ideal, and, one might even say, predatory.

Such concerns are valid, and it is imperative that they be acknowledged and addressed appropriately by language researchers. However, it is also maintained that there are compelling theoretical and practical reasons for continuing to devote attention to the monolingual native speaker. This statement is not a call for the treatment of the monolingual native speaker as normative, ideal, or linguistically superior — or as the *Tyrannosaurus rex* of the linguistic world. Nor is it a suggestion that the monolingual native speaker be treated as a unitary and abstract construct. Rather, it is simply a straightforward assertion that the monolingual native speaker is an empirical reality and a linguistic necessity, essential to intellectual pursuits in the psycholinguistic and neurolinguistic study of second-language acquisition and bilingualism.

If the monolingual native speaker were banished from the terrain of comparative analysis in such intellectual pursuits, the linguistic landscape would become a barren place indeed, and an entire ‘species’ of language user would become a living dinosaur — a veritable Komodo Dragon — rarely examined, poorly understood, and assiduously avoided.

**NOTES**

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Newmeyer 1980:36 points out that Chomsky was not the originator of a generative view of language. Newmeyer cites, as earlier examples, Panini’s grammar of Sanskrit, which predated Chomsky by two millenia. He also states that ‘the spirit of Bloomfield’s treatment of Menomini morphophonemics ... and Jakobson’s of Russian conjugation ... is clearly that of a generative phonology, although their rules are not stated formally’.

2 The present paper is limited to discussions of work in psycholinguistics and neurolinguistics, since it is researchers in these areas who have conducted many of the comparative empirically based studies of native versus non-native speakers and of monolinguals versus bilinguals.

3 No theoretical assumption is made here regarding differences in the organization of the language systems of bilinguals and multilinguals. Therefore the terms BILINGUALS and BILINGUALISM are used throughout, although they are intended to include MULTILINGUAL and MULTILINGUALISM, respectively.

4 In this paper the term COMPETENCE is not necessarily to be interpreted in the Chomskyan sense (specifically in distinction to the term PERFORMANCE). That is, it is used here atheoretically and as synonymous with ability.

5 The designations VOICED and VOICELESS are used for descriptive convenience and as a matter of convention in order to emphasize that, at the phonological level, the English stop consonants /p, t, k/ are comparable to the French /p, t, k/. However, in their phonetic realizations — at least in word-initial stressed and/or isolated-word contexts — the English stops are voiceless (produced with a long lag between vocal tract occlusion and the onset of phonation), while the analogous French stops may be voiced (produced with a short lag between vocal tract occlusion and the onset of phonation).

6 The merging of the systems is particularly apparent in view of the fact that four of the seven bilinguals produced VOTs in English which were nearly identical to their VOTs in French. Nonetheless, three of the seven bilinguals had somewhat distinct VOTs in English and French — yet their English VOTs were still shorter than the average VOT of the English monolinguals.

7 In fact, the first 50 items of the BAT are designed to provide information about the aphasic’s premorbid history of acquisition and ability in the languages involved so that the examiner has a reasonable assessment of the aphasic’s degree of bilingualism.

8 It is possible that such decreased neuronal activity reflects the existence of an EXPERIENCE-EXPECTANT mechanism, as proposed by Greenough, Black, & Wallace 1987 and Greenough & Black 1992, and further discussed in Greenough, Black, Klintsova, Bates, & Weiler [forthcoming]. An experience-expectant mechanism is proposed to correspond, at the neural level, to an overproduction and subsequent regression of dendrites and is considered to be a temporally constrained process that responds to and is designed to capture information available to all young members of a given species (Greenough & Black 1992; Greenough et al. [forthcoming]). Clearly, much more research is needed in order to correlate develop-
mental changes at the neuronal level with apparently temporally constrained aspects of first- and second-language acquisition, but study in this area could prove extremely fruitful.

9 In recent decades, the concept of intelligence has elicited a great deal of often-heated debate regarding its meaning, conceptual and empirical validity, and application as evidenced by the storm of controversy surrounding the publication of The Bell Curve (Herrnstein & Murray 1994) and its authors’ assertion that intelligence can be measured with reference to the standard normal curve as applied to specific populations. While there have been numerous and often valid objections to the notion that intelligence is a unitary and reifiable construct (e.g., Gould 1981; Gardner 1983), examination of such objections is beyond the scope of this paper. For the present purposes, it is assumed that the studies cited test some aspect (or aspects) of intelligence, defined by Gardner (1983:x) as ‘the ability to solve problems ... that are valued within one or more cultural settings’ and characterized by Lezak (1983:22) as ‘a meaningful concept when it refers to a tendency shared by most individuals to perform many different intellectual tasks at about the same level of proficiency’. In the present paper, cognitive flexibility is interpreted as one component of intelligence.

REFERENCES


MOLLY MACK: THE MONOLINGUAL NATIVE SPEAKER


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