IS BILINGUALISM A MATTER OF MUTUALITY?

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1. Introduction

The study of second language acquisition (SLA) has yielded interesting and valuable information about the language acquisition process and the factors that affect it. One factor that has long been believed to affect SLA is the learner's first language. Traditional views of SLA have assumed a linear model of bilingualism; i.e., one's first language (L_1) affects one's second language (L_2). This model has been operationalized in different ways. For instance, Contrastive Analysis assumed that L_2 acquisition was a matter of comparing and contrasting the structures of the L_1 and L_2. Teaching and learning of the L_2 would then center on the differences between the two languages (Ellis, 1986). While there are certainly differences among traditional models of SLA, they have in common an assumption that the relationship between L_1 and L_2 is unidirectional (i.e., L_1 affects L_2).

Other theories of SLA have assumed a greater similarity between L_1 and L_2 acquisition. Researchers such as Dulay & Burt (1974) have questioned the role of L_1 in the L_2 acquisition process. In fact, Krashen's (1976) Monitor Model assumed that language acquisition (L_1 or L_2) is a natural process and therefore proceeds regardless of one's first language. More recent theories assume what Cummins (1994) refers to as a common underlying proficiency (CUP). That is, the language learner is equipped with an underlying ability to learn language; that ability is tapped for all language tasks, whether they occur in the L_1 or the L_2. If Cummins is correct, then an accurate model of bilingualism needs to allow for a more complex L_1/L_2 relationship than has previously been assumed. In other words, Cummins' hypothesis is more consistent with a model of bilingualism in which L_1 and L_2 influence each other than with a model in which this influence is unidirectional.

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This paper argues for a multidirectional model of bilingualism that allows for the bilingual's two languages to influence each other. First, evidence is given for the effect of L_1 on L_2. Next, the possibility of L_2 affecting L_1 is explored, and evidence is offered that suggests such a pattern of influence. Following this, two studies are presented. In each study, L_2 learners were presented with sentences in their own language and asked to judge the acceptability of each sentence. Results of these studies suggest that the learners' L_2 influenced their judgments. The paper concludes with a discussion of the implications of these findings for the study of SLA, and suggestions for future research.

2. Does L_1 influence L_2?

The belief that L_1 influences L_2 has been widely held since the late 1940s, and reached its peak with the theory of Contrastive Analysis (See above). While Contrastive Analysis itself has fallen into disfavor, the idea that one's first language affects one's second language is still intuitively logical. Whether one considers syntax, lexical choice, or any number of other factors, it is reasonable to believe that L_1 has an effect on L_2.

Few would argue that L_1 has no influence on L_2; however, the nature and extent of that influence continues to be a matter of debate, since many factors may play a role in the effect of L_1 on L_2 (Jarvis, 2000). As an example, let us consider the effect on L_2 attainment of age of acquisition. In the case of children, the processes of L_1 and L_2 acquisition are arguably quite similar (Cook, 1988); therefore, the processes and strategies used in L_1 acquisition might very well exactly the same ones used in acquiring L_2. However, the case of adult L_2 acquisition is more complicated. First, researchers do not agree as to the processes and strategies that adults use as they learn a new language. For instance, Epstein, Flynn & Martohardjono (1996) argue that adult L_2 acquisition closely resembles L_1 acquisition. For these researchers, the L_2 acquisition process is a matter of learning the ways in which the target language respects the universal principles of language that govern the L_1. Thus, the L_1 affects the L_2 acquisition process in that the learner "switches" from the L_1 to the L_2 parameterizations of these universal principles. Krashen (1988) also argues that the process of adult L_2 acquisition resembles that of child L_2 acquisition. Krashen explains adult/child differences in L_2 acquisition by pointing out the importance of the learning context (i.e., children who acquire L_2

generally do so in a more natural learning context than do adult L_2 learners). To Krashen, the more naturalistic the learning context, the greater likelihood there is of ultimate L_2 fluency.

Other researchers contend that the process adult L_2 acquisition is quite different from child L_2 acquisition. For instance, Clahsen (1990) accounts for differences between adult and child language acquisition by arguing that adults do not have the same kind of access to universal principles of language that children do; therefore, adults use different cognitive processes for learning a new language than do children, since they cannot rely on universal grammatical principles. As evidence for this position, Franco & Landa (1998) used the acquisition of Basque auxiliary verbs by Spanish-speaking children and adults to demonstrate that the two groups of learners did not use the same processes and strategies to acquire this structure.

As can be seen in the above discussion, there is little agreement on the role that L_1 plays in the acquisition of a new language, even when only one variable, age of acquisition, is considered. The question is made even more complicated when one considers the effect of other factors such as motivation and similarity of the L_1 to the L_2, to name just two. Despite this complexity, however, it seems that, whether one argues for universal principles of language, cognitive strategies, or some other means by which L_2 is acquired, it seems to be the case that L_1 plays a role in the process.

Recent research supports a role for L_1 in the L_2 acquisition process. For instance, Juffs (1998a, 1998b) has conducted studies of speakers of Chinese, Japanese, Korean and Romance languages who were learning English. In one of these studies, Juffs found that speakers of Chinese, Japanese and Korean took longer to parse English than did speakers of Romance languages. The argument structure of Chinese, Japanese and Korean differs from that of English; that of Romance languages does not. Therefore, Juffs concluded that these learners' L_1s were affecting their parsing of English. It is important to note that Juffs also presented these learners with a grammaticality judgment task and found no L_1 – related differences in accuracy on this task. That is, learners' L_1 did not affect their ability to judge the acceptability of English sentences. It would seem, then, that if Juffs is correct, one's L_1 affects the parsing and processing strategies one uses to learn another language, but not one's ultimate attainment of proficiency in that language.

Mori (1998) also studied L_1 effects on L_2 acquisition. In his study, native speakers of English, Chinese and Korean who were learning Japanese were presented with 20 pseudocharacters. Ten of these characters were phonologically accessible; 10 were phonologically inaccessible. After seeing flash cards with these characters, participants were asked to recall which characters they had seen. Mori found that native speakers of English had more difficulty remembering the phonologically inaccessible characters than those that were phonologically accessible. Native speakers of Chinese and Korean showed no differences in response based on phonological accessibility. English is a phonographic language (i.e., the written language is based in phonetics) and Chinese and Korean are morphographic languages (i.e., the written languages are based on morphemes, not phonetics). Therefore, Mori concluded that the native speakers of English did not have as flexible a strategy for remembering phonologically inaccessible characters, since they did not need such strategies in their own language. On the other hand, the native speakers of Chinese and Korean already had these strategies, since they used them in their own languages. Mori thus concluded that his subjects' L_1s were affecting their processing of the L_2 stimulus.

Other recent research into the question of L_1 effects on L_2 acquisition has been conducted by Scott Jarvis (2000). Jarvis argues that a solid understanding of the effects of L_1 on L_2 requires that researchers agree on a "rigourous methodological framework" (Jarvis, 2000: 249) that includes an agreed-upon definition of L_1 influence, a clear and complete statement of the types of evidence that must be taken into account when arguing for or against L_1 influence and a list of variables that would need to be controlled in any rigorous study of L_1 influence (Jarvis, 2000).

Within this framework, Jarvis conducted a study of Swedish and Finnish learners of English. To each group, as well as to a control group of native speakers of English, Jarvis showed a short film and asked respondents to write a short narrative of what they had seen. He then asked participants to list as many nouns as possible to describe a series of freeze-frame clips of the film they had seen. Finally, he asked learners to choose from a list of English words all those that were appropriate to describe the same freeze-frame clips of the film that were used in the second task.

Jarvis found homogeneity in each group's responses to all three tasks. That is, speakers of Swedish responded in a similar way to other speakers of Swedish and speakers of Finnish resembled other speakers of Finnish in their responses. Jarvis also

found differences between the responses of the two language groups. At first glance, this finding would support a case for L_1 influence on L_2. However, Jarvis did not find the striking differences between groups that would have been predicted by a model of L_2 acquisition that assumed influence. Jarvis suggested result might have obtained because of cultural similarities between the two groups of learners which might have led to their making similar responses on some of the tasks (Jarvis, 2000).

If Jarvis is correct, then L_1 does play a role in L_2 acquisition. However, Jarvis also reminds us that the specific role played by the L_1 may be affected by such factors as age of L_2 acquisition, structural differences between the L_1 and the L_2, and the nature of the linguistic task at hand (Jarvis, 2000).

3. Does L_2 influence L_1?

Thus far we have considered the question of L_1 influence on L_2. If, as seems to be the case, L_1 does affect L_2, is the reverse also true? If so, there is an argument that our model of bilingualism should be multidirectional; that is, it should acknowledge that bilingualism is a matter of L_1 and L_2 influencing each other.

3.1. Language contact and language maintenance

Research bearing on the question of L_2's influence on L_1 comes from at least two areas of interest within the larger field of linguistics. One is the area of language contact and language maintenance. Within this domain, Richards & Yamada-Yamamoto (1998) conducted a survey of 320 Japanese families with at least one preschool-aged child. At the time of the investigation, these families were living and working in the UK, but had plans to return to Japan within two years. These investigators found several interesting trends in their survey results. For example, they found that although these Japanese families lived, worked and conducted business among their British counterparts, there was little social contact between the two groups. Along these same lines, the researchers also found that the Japanese children involved in the survey were much more likely to spend time with other Japanese children than with English-speaking children. Taken as a whole, Richards and Yamada-Yamamoto's results suggest that their Japanese respondents' L_1 was not influenced by their exposure to English. This may be, as the researchers suggest, because of the relative social isolation of the Japanese families involved in the study. Richards and Yamada-Yamamoto go on

to suggest that the relative lack of exposure to English might have resulted from concerns on the part of the Japanese parents that their children's Japanese would suffer as a result of prolonged exposure to English and would lag behind that of their peers when the families returned to Japan.

Comparable results were found in a study of Russian-speaking students living in Israel (Abu-Rabia, 1999). In this study, Abu-Rabia found that, in general, his Russian-speaking respondents learned Hebrew because they felt it necessary in order to get jobs, continue their university studies, and for other pragmatic reasons. Rarely did the participants in this study cite intrinsic motivators as a reason for learning Hebrew. Abu-Rabia also found that his subjects spoke Russian whenever possible, preferred Russian literature, music, plays, etc., and socialized more with their Russian friends and acquaintances than with Hebrew-speaking peers. In other words, Abu-Rabia found that his respondents deliberately placed distance between themselves and Hebrew-speaking peers. The reason for this choice, according to the participants in this study, was primarily a perception of being unwelcome in Israel and being expected to assimilate completely into Israeli society as a prerequisite to social acceptance. These students were unwilling to assimilate, since they had a great deal of pride in their own language and culture; therefore, their L_1 was largely uninfluenced by Hebrew.

In the two preceding studies, it can be argued that the respondents consciously chose to maintain their L_1s in as "pure" a form as possible (i.e., uninfluenced by another language). Although both groups of participants learned an L_2, neither wished that L_2 to affect their L_1. This was not the case in two other studies of language contact.

In one of these studies, Sutton-Spence (1999) examined the influence of English on British Sign Language (BSL). She found that BSL-users had incorporated several aspects of English into their language and cites several examples of BSL structure, word order, lexicon, and mouth patterns in which English influence is evident. The vast majority of BSL-users are fluent in BSL and English and there is little perceived unwillingness to incorporate English into BSL. There are several reasons for which BSL-users might integrate English. Some that Sutton-Spence cites are: English as a high-status language relative to BSL; BSL as a minority language; the existence of English lexical items and function words for which there is no BSL equivalent; and the need for BSL-users to communicate with hearing native speakers of English, who do not generally use BSL. Whether BSL-users have integrated English for pragmatic or

intrinsic reasons is not apparent from Sutton-Spence's data; nevertheless, it seems that BSL-users have not made a conscious decision to prevent their L_2 from influencing their L_1.

In another study of L_2 influencing L_1, Makihura (2001) studied the language of native speakers of Rapanui, a Polynesian language spoken on Easter Island, Chile. In this study, Makihura examined transcripts of naturalistic linguistic data to determine the ways in which Spanish elements have been adapted into Rapanui. She found that native speakers of Rapanui had integrated elements of Spanish into their L_1 at several levels (syntactic, lexical, morphological, etc.). In this case, then, L_2 did influence L_1. Makihura argues Spanish has been integrated into Rapanui as a way of allowing Rapanui to survive as a modern language. In other words, instead of abandoning Rapanui in favor of Spanish, native speakers of Rapanui have adapted elements of Spanish for their own linguistic purposes. If Makihura is correct, then in this case, L_2 (here, Spanish) has influenced L_1 (here, Rapanui) at several levels because those for whom Rapanui is L_1 are open to this influence.

As we have seen, studies of language contact and language maintenance suggest that in cases of contact between groups of speakers of different languages, L_2 can influence L_1 where this influence is not impeded by social, cultural or other factors. Psycholinguistic research also suggests that L_2 can influence L_1.

3.2. Psycholinguistic research

Saville-Troike, Pan & Dutovka (1995) studied the language development of groups of children from several different L_1 backgrounds (Russian, Czech, Navajo and Chinese) who were learning English. These researchers were interested in the elements of L_1 that were most and least permeable to L_2 influence, as well as the elements of L_2 that would be incorporated into these children's grammars. The investigators analyzed video and audio data as well as published transcripts of unelicited speech to research these questions. This data yielded some interesting findings. First, Saville-Troike, Pan and Dutovka found that where elements of the children's L_1s were stable, uniform across the language, and not in direct conflict with the L_2, English had little influence on these children's L_1 grammars. The strongest areas of English influence were where elements of the L_1 were not as well developed, not uniform across the language, and directly conflicted with information from the L_2. If Saville-Troike, Pan & Dutovka

(1995) are correct, then L_2 can have a profound influence on L_1, particularly when the L_1 is not mature and stable.

The above evidence suggests that L_2 can influence L_1. There is also evidence indicating that in multilingual individuals, L_2 can influence L_3. Sikogukira (1993) investigated the grammars of speakers of Kirundi whose L_2 was French and who were learning English as an L_3. Sikogukira asked his participants to complete an acceptability judgment task and a sentence completion task. Both of these tasks involved English sentences, and both were designed to elicit French/English cognates. Sikogukira found that in the sentence completion task, subjects tended to complete sentences with French, rather than English words (i.e., *espionage* instead of *spying*). In the judgment task, learners were presented with English sentences; some included French/English cognates whose meanings are similar in the two languages and some whose meanings are not. In this task, Sikogukira observed that his subjects tended to accept the French/English cognates, even when the French meaning of the word differs from the English meaning (e.g., *vétérinaire*, where the English *veterinary* was required). Sikogukira interpreted these findings as evidence that these subjects were transferring their knowledge of French to English, their L_3, and used these findings to argue that language influence in multilingual individuals is not just a matterof L_1- L_2 transfer. Rather, the languages influence each other.

4. The present studies

If it is true that L_2 influences L_1, then bilingual individuals should make use of their L_2 knowledge to complete linguistic tasks in their L_1. The studies presented here were designed to test that hypothesis.

4.1. Study 1

4.1.1. Subjects

Subjects were 41 English-speaking fifth-grade students (20 male, 21 female) who had been enrolled in two US Spanish immersion programs since the first grade.

4.1.2. Hypotheses

It was hypothesized that, because these respondents' L_1 was English, they would correctly identify English sentences as acceptable or not acceptable with greater-than-

chance accuracy. It was also hypothesized that, because these subjects' L_2 was Spanish, they would rely on their knowledge of Spanish as they judged the acceptability of sentences in English, their L_1. They would therefore accept as grammatical sentences that would be acceptable in Spanish, even if those sentences were not acceptable in English.

4.1.3. Procedures

Participants in this study were asked to complete a group-administered acceptability judgment instrument containing 38 English sentences; 20 were grammatical, and 18 were ungrammatical. Of the ungrammatical sentences, 13 were ungrammatical in both Spanish and English (See (1)).

(1) *The teacher said we needs to bring in money tomorrow.
*La maestra dice que nosotros necesita3PS introducir el dinero mañana.

To begin testing the hypothesis that learners would not rely on their L_2 knowledge, 5 of the ungrammatical sentences in this task were unacceptable in English, but could have been acceptable in Spanish (See (2)).

(2) *Which restaurant did you ask whether I like?
¿Cuál restaurante preguntaste si me gusta?

Participants were asked to indicate whether each sentence was or was not acceptable.

4.1.4. Results

After the grammaticality judgment task was completed, each group's responses were compiled and analyzed. Results for correct and incorrect judgments on grammatical and ungrammatical sentences are shown in Table 1.

School Group	Grammatical Items	Ungrammatical Items
School 1	90.6	74.3
School 2	93.2	62.2

Table 1. Percentages of Correct Responses to the Judgment Task.

ANOVAs were conducted on the two groups' responses to identify any significant differences in their scores; none were revealed (F= 5.2, p=.99 a=.05). Based on this finding, it seemed reasonable to pool the two groups of responses. After the students' responses had been pooled, it was found that the mean percent correct score

on grammatical items was 92.3; on ungrammatical items, the mean percent correct score was 68.2.

After these scores had been acquired, further analysis was conducted on the data. First, t-tests revealed that the students' scores on both grammatical ($t=25.1$, $p<.0001$, $a=.05$) and ungrammatical ($t=4.76$, $p<.0001$, $a=.05$) items were more accurate than chance would dictate.

Given this result, an ANOVA was conducted on this data. The ANOVA results showed that scores on grammatical items were significantly higher than scores on ungrammatical items ($F=46.00$, $p<.0001$, $a=.05$). So, although participants judged both grammatical and ungrammatical sentences at greater-than-chance levels of accuracy, their judgments were more accurate on grammatical than on ungrammatical items.

It was decided to further explore this discrepancy between scores on grammatical items and scores on ungrammatical items. It will be recalled that 5 of the ungrammatical items were acceptable in Spanish, but not in English. In order to establish whether the participants might have been relying on L_2 information, responses to these items were examined more closely. Table 2 shows percentages of subjects who correctly identified these items as unacceptable.

Percent of Respondents	Number of Unacceptable Items
21	**0 Items Correctly Identified**
13	**1 Item Correctly Identified**
21	**2 Items Correctly Identified**
19	**3 Items Correctly Identified**
19	**4 Items Correctly Identified**
7	**All items Correctly Identified**

Table 2. Correct Identification of Unacceptable Items.

Each respondent's judgments of these items were also examined. It turned out that participants correctly identified a mean of 46.7% of these items as unacceptable. These results suggest that at least part of the difference in scores between grammatical and ungrammatical items might be due to low accuracy on these particular items.

4.2. Study 2

This study was conducted in order to determine whether the findings from Study 1 would hold only for speakers of English, or might apply to speakers of other languages. Therefore, in this experiment, the participants' L_1 was Spanish and their L_2 was English.

4.2.1. Hypotheses

As with Study 1, it was hypothesized that learners would correctly identify sentences in their L_1 as being acceptable or unacceptable based on their grammaticality. It was also hypothesized that, since these respondents' L_2 was English, they would rely on their knowledge of English and reject as ungrammatical sentences which were grammatical in Spanish but would not be grammatical in English.

4.2.2. Subjects

Subjects were Spanish-speaking fifth-grade students who had been learning English since the first grade. Eight of these students were female; 4 were male.

4.2.3. Procedures

Participants were asked to complete a group-administered acceptability judgment task that consisted of 26 Spanish sentences. Of those sentences, 13 were grammatical; 13 were ungrammatical. In order to address the question of whether these subjects would rely on their knowledge of English as they responded to this instrument, 11 of the grammatical sentences were designed to be acceptable in Spanish, but unacceptable in English (See (3)).

(2) ¿Cuál blusa no sabes si quiero?
Which blouse don't you know whether I want?

Respondents were asked to indicate whether each sentence was or was not acceptable.

4.2.4. Results

After participants had completed the acceptability judgment task, their responses were scored. It was found that the mean percent correct score for all items for these subjects was 74%. A t-test conducted on this data indicated that subjects' responses were overall more accurate than chance would dictate ($t=1.50$, $p<.0001$, $a=.05$).

The mean percent correct score for these individuals was comparatively low, considering that the judgment task was given in their L_1. Therefore, it was decided to look more carefully at these responses. It will be recalled that 11 of the test items were acceptable in Spanish but would not have been acceptable in English. In order to determine whether respondents might have been relying on their L_2, rather than their L_1 for information, these items were examined more closely. Table 3 shows percentages of respondents who correctly identified these items as acceptable.

Each individual's responses to these items was also examined; it was found that participants correctly identified a mean 65% of these items as acceptable. Respondents' relatively low scores on these items may be related to their relatively low overall accuracy score.

Percent of Respondents	Number of Acceptable Items
0	**0 Items Correctly Identified**
0	**1 Item Correctly Identified**
0	**2 Items Correctly Identified**
0	**3 Items Correctly Identified**
8.3	**4 Items Correctly Identified**
25	**5 Items Correctly Identified**
33	**6 Items Correctly Identified**
0	**7 Items Correctly Identified**
0	**8 Items Correctly Identified**
0	**9 Items Correctly Identified**
8.3	**10 Items Correctly Identified**
25	**All Items Correctly Identified**

Table 3. Correct Identification of Acceptable Items.

4.3. Discussion

It will be recalled that, in both studies, it was hypothesized that participants would accurately determine the acceptability of sentences in their L_1. Since in both cases, mean percent correct scores were higher than chance would dictate, it can be argued that this hypothesis was borne out by the data. Both groups of participants scored at higher-than-chance levels.

The other hypothesis advanced here was that subjects would rely on their L_2 knowledge as they approached this task, so that they would judge as acceptable sentences that were structurally acceptable in the L_2 and judge as unacceptable sentences that would be ruled out in the L_2. In the case of Study 1, the data seem to bear this hypothesis out; overall, subjects correctly judged as unacceptable only 46.7% of the test items that were acceptable in Spanish but unacceptable in English. This data supports the argument that these subjects were relying on information from their L_2, which would have allowed those sentences.

A look at Study 2's results shows respondents' scores on items that were acceptable in Spanish but not in English were lower than on items that were grammatical in both languages. It would seem that this finding supports the notion that these subjects were using their knowledge of English to rule out items that were actually acceptable in their L_1. However, a careful consideration of this data shows less conclusive results. In Study 2, subjects correctly identified as acceptable 65% of the items that were acceptable in Spanish but not in English. While this score does not approach the near-100% accuracy we might predict, it is higher than chance would dictate. It would appear, then, that L_2 might have been a less important factor for these individuals than for those in Study 1.

How do we account for the discrepancy in the results from these studies? If L_2 affects L_1, why did the native speakers of Spanish in Study 2 not have more difficulty accepting sentences that would be ruled out in English, their L_2? It is unlikely that age of L_2 acquisition would explain the difference in accuracy, since all the participants were the same age and had acquired their L_2 at the same time in their lives. A review of the procedures for each study reveals that the linguistic task was the same for both studies; this similarity makes it also improbable that differences in linguistic task would account for the differences between the two groups.

A more plausible explanation for the results presented here may lie in the differences between Spanish and English, the two languages involved in these studies. Spanish permits items within a sentence to move further from their point of origin than does English (Haegeman, 1994). For this reason, (4) is acceptable in Spanish but its English equivalent (5) is not.

(4) Ése es el hombre que no sé si conoces.
(5) *That is the man that I don't know whether you know ___.

In both studies presented here, it may be argued that learners tended to operate under the less restrictive movement seen in Spanish rather than the more restrictive parameter seen in English. In Study 1 this might explain why the native speakers of English accepted English sentences that would be allowed in Spanish but not in English. These learners were being influenced by their L_2. In Study 2, we also see the tendency to accept the "Spanish" parameter governing movement; these learners had a 65% accuracy rate on sentences exhibiting this kind of movement. However, if a tendency to accept a less restrictive parameter on movement were the only explanation for the results seen in Study 2, we would predict even greater accuracy on these items, particularly since the test items were in the respondents' L_1. Therefore, the difference in restriction on movement cannot in itself explain the findings from Study 2.

A more comprehensive account of the findings from the studies presented here could be the following. Both groups were influenced by the fact that Spanish and English differ with respect to the movement allowed in sentences. Both groups were also influenced by their L_2. In the case of the English-speaking participants in Study 1, this influence shows itself in their tendency to accept sentences containing movement that would be allowed in Spanish, their L_2, but ruled out in their L_1. This effect can also be seen in Study 2. These Spanish-speaking respondents also accepted sentences that obeyed the less restrictive movement rules that govern their L_1; however, they were also influenced by the more rigid movement rules that govern their L_2, English. This influence may explain why these participants did not score at close to 100% accuracy on items that are acceptable in Spanish but not in English.

If this explanation is correct, then the findings here lend support to the theory that L_2 influences L_1. It also lends support to Jarvis' (2000) claim that one language's influence on another may be affected by several factors, one of which is the nature of the languages involved.

5. Conclusions

If, as is claimed here, L_2 influences L_1, then our model of bilingualism should be seen as bidirectional (i.e., a bilingual's two languages influence each other). In other words, bilingualism should be seen as a matter of mutuality. However, in order to understand the nature of this kind of model, we need a comprehensive framework for

investigation. As mentioned above, Jarvis (2000) argues that any investigation of L_1 influence on L_2 requires an agreed-upon definition of L_1 influence, a clear and complete statement of the types of evidence that must be taken into account when arguing for or against L_1 influence and a list of variables that would need to be controlled in any careful study of L_1 influence. These criteria would also be useful in further investigation of L_2's influence on L_1. A solid framework for research would allow us to determine the nature of L_2's influence given such variables as the languages in question, the age of L_2 acquisition and the nature of the linguistic task involved.

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