Several chapters in this volume appear to agree on two main points: (1) second language acquisition is a creative process, whereby learners construct and test hypotheses in much the same way that we assume first language learners do, yet it is a process which differs from first language acquisition in that the nature of these hypotheses is determined partly by the languages that the learner already knows; and (2) despite the obviously important role of the first language in second-language acquisition, the term "language transfer" is a misleading one because (a) it has strong associations with behaviorist learning theories that view language learning as habit formation, and (b) it implies a simple transfer of surface "patterns" and thus obscures the complex interaction between the first and second language systems and language universals.

We agree with both of these points, and believe that this study provides evidence in favor of a "hypothesis-testing" view of first language influence rather than a "pattern-transfer" view.

The purpose of our study is to provide further insight into the role of the first language (L1) in second language (L2) acquisition by investigating the acquisition of pronominal anaphora by second language learners. It seems to be the case that some similarities between languages facilitate second language learning, while others do not: transfer alone cannot account for this difference. In order to understand why some similarities facilitate learning more than others, it is useful first of all to distinguish those properties which are shared not only by the languages in question but by all natural languages, i.e., properties which are universal, from those properties which are shared by the languages in question but
are not universal. Assuming with Adjémian (1976) that a learner’s language is a natural language, we propose the hypothesis in 1:

1. L1-L2 Facilitation hypothesis (LLFH)
   a. When all natural languages are alike with respect to some linguistic property, L1-L2 facilitation is guaranteed. Such properties do not have to be (re)learned.
   b. When L1 and L2 are alike with respect to some linguistic property, but not all languages are alike with regard to that property, L1-L2 facilitation is not guaranteed in learning that property in the L2.

Our study asks the following questions: (a) Are there any properties on pronominal anaphora which pose no problem for learners, i.e., where learners never make errors and, if so, to what extent can these be predicted by the LLFH in 1? (b) What kinds of pronominal anaphora errors do learners make and to what extent can these be attributed to influence from the first language?

We make no distinction here between anaphora, exaphora, cataphora, etc. (cf. Halliday and Hasan 1976) and are using the term “pronominal anaphora” in a broad sense to include all those cases where a position normally occupied by a noun phrase is filled by some form with minimal, if any, semantic content—that is, a pronoun—as in the italicized positions in 2:

2. Leah likes the squirrel; she can watch it through the window for hours.

or, where the noun phrase position is totally empty, that is, so-called “zero anaphora,” as in 3:

3. The squirrel that Leah was watching comes here every day.

In both cases, the italicized position must be assigned a referent in order for the sentence to receive a full semantic interpretation.

**PROPERTIES OF PRONOMINAL ANAPHORA**

In answering the questions in (a) and (b) above, it may be helpful to summarize the ways in which pronominal anaphora can differ across languages and what learners need to know in order to be able to use pronominal anaphora as a native speaker would in a given target language.

First, it is probably safe to assume that all natural languages obey something like the condition in 4:

4. Pragmatic condition on anaphora (Gundle 1978a, 1978b)
The use of a pronominal anaphor will be felicitous if and only if its referent is activated, that is, if the speaker’s and addressee’s attention is focused on the referent.

We refer to this as a pragmatic condition, since violation of it does not result in ungrammaticality of the usual sort. If the condition in 4 is violated, the result is
simply infelicitous, because the addressee is unable to identify the referent of the pronoun.

5. Q. Did he get back?
   A. Who?

Second, it appears that all natural languages have a condition which blocks coreference between a pronoun and a following full noun phrase (NP) in a sentence like 5 (where identical subscripts indicate coreference):

6. *He ¿ said that Eric would be back in an hour.

Compare this with 7 and 8, where Eric and he can refer to the same person:

7. Eric ¿ said he would be back in an hour.
8. If he finishes the paper, Eric will be back in an hour.

There have been a number of attempts to account for such facts. We include here one of the more recent and general proposals put forward in Rinehart (1976):

9. Structural condition on coreference (Rinehart 1976)
   Two NPs cannot be coreferential if one is in the syntactic domain of the other and is not a pronoun. The syntactic domain of some node A consists of A and all and only the nodes dominated by the first branching node above A.

10. 

   The NP Eric in 7 corresponds to A on the diagram in 10, and the position occupied by he corresponds to D on that diagram. Since the first branching node above A also dominates D, the two can only be coreferential if D is a pronoun. Thus, in 7 the position occupied by he not only can be a pronoun in order to be coreferential with Eric, it must be. Since the subject of the embedded clause in 6 is not a pronoun, it cannot be coreferential with the subject of the main sentence. In 8, on the other hand, the subject of the if-clause is not in the syntactic domain of the main sentence (since the first branching node above he is the embedded sentence); so the subject of the main sentence (i.e., the position occupied by the NP Eric) does not have to be a pronoun in order to be interpreted as coreferential with the subject of the embedded sentence (i.e., the pronoun he). Although it is not entirely clear whether all languages allow so-called backwards anaphora of the type exemplified by 8, as far as we know all languages must obey at least the condition in 9.

In addition to these two universal properties of pronominal anaphora, there are a number of ways in which pronominal anaphora can differ across languages. These are enumerated below.

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1. Languages can differ as to whether they allow pronoun or zero anaphora in certain environments. For example, English does not allow zero in a sentence like 11:

11. The boy made a sandwich and put \( \{ \text{it} \} \) in the bag.

though zero in such environments would be perfectly acceptable in Japanese, for example. On the other hand, English requires zero in a relative clause, as in 3, which we repeat here for convenience:

3. The squirrel that Leah was watching \( \emptyset \) comes here every day.

whereas Arabic for example, requires a pronoun in this environment.

2. Languages can differ in the kind of information that is encoded in the pronoun. For example, English encodes gender in the third person singular, but not in the other forms. Chinese, on the other hand, makes no gender distinctions at all. All languages distinguish at least first, second, and third person. Many languages distinguish more than that. In some languages, pronouns encode information about the social relation between speaker and addressee, or between speaker and person being talked about.

3. Pronouns across languages differ in their position relative to the verb in the sentence. In English, a pronominal anaphor occupies the same position as the corresponding full noun phrase; i.e., subject pronouns always appear immediately to the left of the verb and object pronouns follow the verb. In French, weak form object pronouns obligatorily precede the verb\(^5\) while full NP objects obligatorily follow.

In this study we will be concerned primarily with the distribution of pronoun versus zero anaphora in interlanguage.

PRONOUN VS. ZERO ANAPHORA

In order to make generalizations about the distribution of pronoun vs. zero anaphora across languages, it is useful to distinguish between two types of syntactic environments in which pronominal anaphora can occur. A pronominal anaphor is in an \( A \) environment if the noun phrase that controls it (i.e., the coreferential full NP) is a syntactic topic, where a syntactic topic is defined as a noun phrase adjoined to the left or right of a sentence in surface structure. The circled positions in 12a and b are both examples of syntactic topics:

12. a. \[ \begin{array}{c}
\text{NP}_i \\
\downarrow S \\
Y_i \\
\end{array} \]

12. b. \[ \begin{array}{c}
\text{S} \\
\downarrow Y_i \\
\end{array} \]

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Examples of anaphora in A environments are given in 13 to 18: 6

13. The sandwich which the boy put \{ it \} in the bag was wrapped in foil.
14. The sandwich, John put \{ it \} in a paper bag.
15. The boy \{ he \} made a sandwich and \{ he \} poured himself some milk.
16. Alexander made \{ it \} and Harry ate it, the sandwich. 7
17. Alex made \{ it \} and Harry ate it, the sandwich.
18. Al put \{ it \} in the bag, the sandwich.

As these examples show, English allows, and in some cases requires, zero anaphora in all A environments where the coreferential syntactic topic is to the left of the sentence. 8 If the syntactic topic is on the right, as in 16 to 18, the situation is somewhat more complicated. A full explication of this is beyond the scope of this chapter.

A pronominal anaphor is in a B environment if the controlling NP is not a syntactic topic. Examples of pronominal anaphora in B environments are given in 19 to 22:

19. The girl made a model airplane and threw \{ it \} across the room.
20. John made the sandwich and Harry put \{ it \} in the bag.
21. Q. What happened to the sandwich?
   A. John ate \{ it \}
22. Ann couldn’t come to the meeting, because \{ she \} had a class that hour.

As these examples show, English requires pronouns in all B environments. 9 The table in 23 shows the distribution of zero vs. pronoun in B environments for the languages that were relevant for our study: English, French, Spanish, and Mandarin Chinese.

23. Distribution of Zero vs. Pronoun in B Environments

<table>
<thead>
<tr>
<th>English</th>
<th>French</th>
<th>Spanish</th>
<th>Chinese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>{ He  } saw Mary</td>
<td>{ Il  } a vu Marie.</td>
<td>{ El  } vió a María.</td>
<td>{ lā  } xǐhuan hē jiǔ.</td>
</tr>
<tr>
<td></td>
<td>(He saw Mary.)</td>
<td>(He saw Mary.)</td>
<td>(S/he likes to drink wine.)</td>
</tr>
<tr>
<td>Nonsubject</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>John saw { him  }</td>
<td>Jean { l'  } a vu.</td>
<td>Juan { lo  } vió.</td>
<td>wǒ bù xiǎohuă { 0  }</td>
</tr>
<tr>
<td></td>
<td>(John saw him.)</td>
<td>(John saw him.)</td>
<td>(I don’t like it.)</td>
</tr>
</tbody>
</table>
English, as noted above, requires pronouns in all B environments; French is like English in this respect; Spanish allows zero in subject position but requires pronouns elsewhere; Chinese allows zero in all NP positions. Although languages differ in the distribution of zero and pronoun in A and B environments, the distribution is not totally unpredictable. First, the more topic-prominent the language, the more it will allow zero anaphora in B environments (see Gundel 1980 for details). Second, there does not appear to be any language which requires pronouns in an A environment and does not also require a pronoun in the corresponding B environment:

24. Implicational condition on zero anaphora (ICZA)
   If a language requires pronouns in an A environment, it will also require pronouns (i.e., it will not allow zero anaphora) in the corresponding position in a B environment.

The ICZA is an implicational universal which predicts that there will be no language which is simultaneously like Arabic, for example, in that it requires a pronoun in a sentence like 3, and at the same time is like Japanese, Chinese, etc., in that it does not require a pronoun (i.e., it allows zero anaphora) in a sentence like 11.

THE STUDY

The data for our study were gathered from four sources: tape-recorded conversations, recorded picture descriptions, a written grammaticality judgment task, and a coreference judgment task. (The paper and pencil tasks appear in the appendixes.) The picture description task was designed in order to encourage the use of pronouns, since obligatory contexts for pronouns in certain positions simply do not occur with sufficient frequency in free conversation. The grammaticality judgment task required subjects to mark various sentences containing pronouns or zero anaphora as grammatical or ungrammatical. This task was included in order to obtain judgments about anaphora in A environments, which do not occur with sufficient frequency in free conversation. The task was also necessary in order to test the implicational universal ICZA in 24. In order to test 24, it was necessary to determine when pronouns were obligatory in interlanguage; the use of pronouns in free conversation would simply tell us when they were possible. The coreference judgment task was necessary in order to test the structural condition on coreference in 9. Again, the analysis of anaphora in free conversation would just tell us when coreference was possible. In order to test 9, we needed to determine when it was not possible. This task required subjects to make coreference judgments on sentences like 6 to 8.

We must assume that under these different conditions (free conversation, tape-recorded descriptions of pictures, written grammaticality judgments, and coreference judgments) subjects style-shift along their interlanguage continua so that our view of their grammars will shift as well, depending on which data base we use (cf. Tarone 1979, 1982). We have therefore kept the data from the four sources separate in our analysis.

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There are five adult subjects for whom we have all four types of data: two Chinese speakers (C1 and C2) and three Spanish speakers (S1, S2, and S3). All five had placed into the same level class on the basis of scores on the Michigan Proficiency Test, and all five had been in the United States for 4 to 6 months only. All except for S2 had studied English before coming to the United States.

In addition, we have been granted access to OISE's data from English-speaking children in the French immersion program in Toronto; for these children, we have conversation and picture description data, but no data from written tasks. For six children, we have both grade 1 and grade 2 data, gathered after 2 and 3 years (respectively) of exposure to the target language, French. In this paper, we will discuss these six learners' grade 1 data only; a forthcoming paper will examine the longitudinal development of the pronominal systems of these children's interlanguages in more detail.

Other data have provided us with additional information that may provide some insights and suggestions for future research. These are picture description data which are available for three Spanish speakers and four Chinese speakers; these were gathered in 1977 for another study (Tarone 1978).

The data from our original five subjects (English L2) were analyzed as follows. The results of the written tests were examined to determine whether there was any pattern in the subjects' judgments, and if so what that pattern was. All tape recordings of conversations and picture descriptions were transcribed; sentences containing obligatory contexts for pronominal anaphora in English were then extracted and listed separately. Each pronominal anaphor was classified according to whether it was in an A environment or a B environment; whether it was a subject, object, or object of a preposition; whether a pronoun was supplied or not (i.e., whether it was zero or pronoun); and whether or not it was correct in English. Below we list examples of each category of sentence we found. 12

B environment sentences:

25. I came to United States.
26. *But now he is fine.
27. I have them, yes.
28. *...but he didn't take her.
29. I worked with him.

(B environment, subject pronoun)
(B environment, subject zero)
(B environment, object pronoun)
(B environment, object zero)

(B environment, object of preposition pronoun)

A environment sentences:

30. That boy, he's smart.
31. John came and he went.
32. So he taking the ball and he throw.
33. *He is very new, the study.
34. The man hurry away to catch it, this.
35. She arrive to the place where she prefer him.

(A environment, subject pronoun)
(A environment, subject pronoun)
(A environment, subject zero)
(A environment, subject zero)
(A environment, object pronoun)
(A environment, object pronoun)
(A environment, object zero)

The results of the analysis of the conversational and picture description data are displayed in Table 1.
For the French L2 data, the picture descriptions and conversations had already been recorded and transcribed by native speakers of French. Pronominal anaphors from these data were classified in the same way as those from the English L2 data described above. Results from the grade 1 data are displayed in Table 2.

RESULTS AND DISCUSSION

As noted above, the purpose of our study was (a) to test the hypothesis in 1, and (b) to determine the extent to which errors for pronoun vs. zero anaphora could be attributed to influence from the first language. To date, we can report on the following results. The L1-L2 facilitation hypothesis was upheld with respect to the universals in 4 and 9. That is, our data contained no occurrence of an anaphor which was used infelicitously in violation of the pragmatic condition on anaphora in 4; these learners seemed to know, in the same way that native speakers know, that a pronoun should not be used unless the speaker has reason to believe the hearer’s attention is focused on the referent. The conversational data and coreference judgment task13 were also consistent with the structural condition on coreference in 9; these learners never considered a pronoun to be coreferential with a full NP in that pronoun’s syntactic domain, even though all of the subjects accepted coreference between a pronoun and a following full NP when this did not violate the condition in 9.14 It remains to be seen whether, in free conversation, these learners follow the same pattern that they do on this written task, or whether style shifting occurs in their use of backwards anaphora. As we have pointed out, such information will be extremely difficult to obtain, given the low frequency of backwards anaphora in normal conversations.

We were unable to test the implicational condition on zero anaphora (ICZA) in 24 for two reasons. First, the data from free conversation and picture descriptions for both English L2 and French L2 did not contain a sufficient number and range of pronominal anaphora in A environments to allow us to make any generalizations about anaphora in this environment or to compare it with the B environments. Second, the written grammaticality judgment task was unsuccessful in eliciting any reliable information concerning the distribution of pronoun vs. zero anaphora in the learners’ interlanguages. The subjects seemed to be totally unsystematic in their responses to this task, and we are now in the process of redesigning it in an attempt to obtain more reliable information about when pronoun or zero is required in interlanguage.15

Tables 1 and 2 show the distribution of pronoun and zero in the conversational and picture description data for English L2 and French L2 speakers, respectively. Since we did not obtain a sufficient number of obligatory contexts for pronominal anaphora in A environments, we will restrict the remainder of our discussion to the B environments. We will discuss the production of pronominal anaphora first in subject contexts, and then in object contexts, in B environments.

In Table 1, the first column under each grammatical function (subject, object, object-of-preposition) indicates the number of pronouns produced in that
Table 1 Pronouns in Subject, Object, and Object-of-Preposition Position (English L2, Spanish, and Chinese L1)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Task</th>
<th>Subject Pro</th>
<th>Subject θ</th>
<th>Object Pro</th>
<th>Object θ</th>
<th>Obj. of prep Pro</th>
<th>Obj. of prep θ</th>
</tr>
</thead>
<tbody>
<tr>
<td>B environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>Conv.</td>
<td>68</td>
<td>6*</td>
<td>7</td>
<td>2*</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pict.</td>
<td>22</td>
<td>6*</td>
<td>0</td>
<td>1*</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>S2</td>
<td>Conv.</td>
<td>22</td>
<td>1,11*</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pict.</td>
<td>21</td>
<td>13*</td>
<td>0</td>
<td>3*</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>S3</td>
<td>Conv.</td>
<td>35</td>
<td>1*</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pict.</td>
<td>16</td>
<td>6*</td>
<td>0</td>
<td>2*</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>C1</td>
<td>Conv.</td>
<td>32</td>
<td>3*</td>
<td>4</td>
<td>1*</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pict.</td>
<td>11</td>
<td>5*</td>
<td>8</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>C2</td>
<td>Conv.</td>
<td>24</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pict.</td>
<td>22</td>
<td>1*</td>
<td>5</td>
<td>1*</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>A environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>Conv.</td>
<td>3</td>
<td>2,2*</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pict.</td>
<td>7</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>S2</td>
<td>Conv.</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pict.</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>S3</td>
<td>Conv.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pict.</td>
<td>2</td>
<td>6,1*</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>C1</td>
<td>Conv.</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pict.</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>C2</td>
<td>Conv.</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pict.</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*signifies ungrammaticality.

The two cases of zero pronoun in object of preposition position in B environments were both cases of "put on" like:

... put, butter on, on

The "prepositions" in these cases seem to us to be rather adverbial in nature. In any case, these sentences are grammatical for some speakers of English and thus are not starred.

context; the second column indicates the number of zero anaphors in that context. Thus, for example, S1 in Table 1 (S indicates Spanish speaker and C indicates Chinese) produced 68 pronouns and 6 zero anaphors in B environment subject context. Since English does not allow zero anaphora in B environments, the zero anaphors are all ungrammatical, as indicated by the asterisk. Table 1 shows that both Spanish and Chinese speakers produced many errors in B environment subject context (though it may be worth noting that the number of such errors relative to the total number of obligatory contexts for pronouns in B environment subject context—i.e., the number of zero relative to pronouns required in this context—is relatively low). Since both Spanish and Chinese allow zero anaphora in this context (see the table in 23), these errors could be attributed to influence from the first language. Notice that the English speakers learning French (Table 2) made virtually no errors by producing zero subjects.
Table 2. Pronouns in Subject, Object, and Object-of-Preposition Position  
(French L2, English L1. French Immersion Grade 1)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Task</th>
<th>Subject</th>
<th>Object</th>
<th>Obj. of prep</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pro</td>
<td>φ</td>
<td>Pro</td>
</tr>
<tr>
<td>B environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N.</td>
<td>Conv.</td>
<td>49</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Pict.</td>
<td>22</td>
<td>1*</td>
<td>2</td>
</tr>
<tr>
<td>D.</td>
<td>Conv.</td>
<td>27</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pict.</td>
<td>32</td>
<td>0</td>
<td>4*</td>
</tr>
<tr>
<td>J.</td>
<td>Conv.</td>
<td>12</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pict.</td>
<td>26</td>
<td>1*</td>
<td>2</td>
</tr>
<tr>
<td>W.</td>
<td>Conv.</td>
<td>31</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pict.</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B.</td>
<td>Conv.</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Pict.</td>
<td>22</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>T.</td>
<td>Conv.</td>
<td>45</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Pict.</td>
<td>25</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

A environment

| N.      | Conv. | 1  | 0 | 0  | 0  | 0  | 0  | 1* |
|         | Pict. | 1  | 2* | 0  | 0  | 0  | 0  |
| D.      | Conv. | 1  | 0 | 0  | 0  | 0  | 0  |
|         | Pict. | 4  | 6  | 0  | 0  | 0  | 0  |
| J.      | Conv. | 10 | 0 | 0  | 0  | 0  | 0  |
|         | Pict. | 10 | 1* | 0  | 0  | 0  | 0  |
| W.      | Conv. | 3  | 3* | 0  | 1  | 0  | 0  |
|         | Pict. | 8  | 5* | 0  | 0  | 0  | 0  |
| B.      | Conv. | 0  | 0 | 0  | 0  | 0  | 0  |
|         | Pict. | 11 | 1* | 0  | 0  | 0  | 0  |
| T.      | Conv. | 5  | 1* | 0  | 0  | 0  | 0  |
|         | Pict. | 7  | 1* | 0  | 0  | 0  | 0  |

*signifies ungrammaticality.

Since French and English both require subject pronouns in B environments, these results are consistent with the LLFH in 1; that is, while we would not guarantee L1-L2 facilitation in this case, LLFH would not rule it out. In this case L1-L2 facilitation seems to have occurred. It should be pointed out that these results do not follow from the LLFH, since facilitation is not guaranteed in cases where the property in question is not universal.

If we turn now to object anaphora in B environments, the situation becomes more complicated. Although the number of obligatory contexts for object anaphora is quite small compared with the subject contexts (this is usually true for native speakers as well), the relative number of errors in object context is higher for the Spanish speakers than for the Chinese speakers. In fact, two of the three Spanish speakers used zero only in object context. In the case of the Chinese speakers, those few errors made could be attributed to influence from the first language, since object pronouns are not obligatory in
Chinese (see the table in 23). However, no such explanation is possible for the Spanish speakers, since object pronouns in B environments are obligatory in Spanish. What is particularly surprising is that the Spanish speakers actually made more errors here than the Chinese speakers did. In Table 2, we see that English speakers learning French also made many errors involving zero anaphora for objects, even though English, like Spanish, requires object pronouns.

How can we explain the use of zero anaphora in object position by the English speakers in French, and Spanish speakers in English? First of all, we should point out that these results are consistent with the LLFH in 1. Since the requirement of pronouns as opposed to zero in B environment object context is not universal, L1-L2 facilitation is not guaranteed here. At least two explanations suggest themselves for why facilitation did not occur in this case. First, the error may be developmental. That is, one possible explanation is that the L2 learners are going through the same process that L1 learners do in acquiring object pronouns; it may be that there is a stage of L1 acquisition where object pronouns are not supplied in B environments. We know of no L1 acquisition evidence on this point to date. A second possible explanation—and one which we currently favor—is that these errors result from an influence from the first language of a more complex sort than has been considered in the past under the label “transfer.” If “transfer” is considered to be the transfer of a pattern from L1 to L2, then “transfer” cannot explain these facts, as no such pattern exists in the L1. That is, there is no pattern SV∅ in any of these L1s. However, if we view second language acquisition as a process of hypothesis testing which is influenced by the L1 (see e.g., Schachter, this volume), then perhaps these data can be explained in terms of L1 influence. Even though English, Spanish, and French all require object pronouns, they require them in different positions relative to the verb. English requires pronouns in the same position as the full NP—after the verb. Spanish and French, however, require object pronouns before the verb. We can view the acquisition of object anaphora by the Spanish and English speakers as proceeding in the following order. At first, the speakers hypothesize that the L2 will have object pronouns in the same position as in the L1—that is, S-pro-V in the case of the Spanish speakers learning English, and S-V-pro in the case of the English speakers learning French. Since the L2 input is not consistent with this hypothesis in either case, the learners reconsider the first hypothesis. They construct a second hypothesis, namely, that the L2 has no pronoun forms in object context at all—that is, it has zero anaphora in object context. Since this too turns out to be inconsistent with L2 input, the third and final hypothesis is that the L2 does have object pronouns, but in a different position from that in the L1.

We do have some evidence which supports this proposed explanation. First, there were no errors at all for these learners in object-of-preposition contexts, where all the languages concerned require pronouns, and where the word order is the same for all the languages. Second, in the data of the English speakers learning French, we have evidence of all the three structures hypothesized above:
36. Hypothesis 1: *S-V-pro (*il n’est pas prend le)
37. Hypothesis 2: *S-V-∅ (*je n’ai pas voir)
38. Hypothesis 3: S-pro-V ( . . . mais je l’aime.)

Obviously, we need a longitudinal study to show that the sequence of these hypothe-
ses is as our proposed explanation would predict. The ultimate test would be to
determine whether the same sorts of errors would be found where L1 and L2
not only require object pronouns but require the same word order. Our proposed
explanation would predict zero in object context would not occur in those cases
where the L1 and L2 both require pronouns in this context and both have the
pronouns in the same position relative to the verb.

SUMMARY AND FUTURE DIRECTIONS

This study is, to our knowledge, the only study to date which has explicitly
examined the occurrence of pronominal anaphora in the interlanguages of second
language learners.

We have proposed an L1-L2 facilitation hypothesis, and shown in our study
that so far this hypothesis is upheld. In support of the hypothesis we have shown
that second language learners do not violate either the structural condition or the
pragmatic condition on anaphora.

We have proposed that the range of interlanguage phenomena that can be
explained as resulting from the influence of L1 on L2 can be broadened if we
view second language acquisition as a process of hypothesis testing, as suggested by
Schachter (this volume) and others.

Finally, we have suggested a sequence of acquisition of pronominal anaphora
in object contexts for Spanish speakers learning English as a second language, and
for English-speaking learners of French as a second language. We have presented
some evidence that English speakers learning French do make all three of the
hypotheses about object pronoun anaphora which would be involved in our
suggested sequence of acquisition.

We are continuing to gather data on pronominal anaphora in interlanguage.
We need information in a great many areas: (1) we need to study the development
of pronominal anaphora over time; (2) we need to elicit more obligatory contexts
in A environments so we can compare pronominal anaphora in A and B environ-
ments; (3) we need to obtain more data in general to see whether the trends which
are currently observable in our data will be upheld; (4) we need to look at native
speakers of other languages learning a variety of second languages—for example,
Arabic speakers learning English (as Arabic and English object pronouns behave
differently in A environments), or German speakers learning English (as German
has the same word order constraints on object pronouns as English); (5) we need
to examine learners’ usage in matters of number and gender marking of pronouns,
and word order of pronouns.
Nevertheless, we feel that we have made an important first step in investigating the acquisition of pronominal anaphora by second language learners, and thereby providing further insight into the role of the first language in second language acquisition.

APPENDIX A: GRAMMATICALITY JUDGMENT TASK

Put a star (*) by each sentence which is NOT a grammatical English sentence.

EXAMPLE: A. Last year, John went to Italy.

* B. Next year, John is go to Spain.

1. We saw the mayor and thank him for his help.
2. She picked up the book and put it away.
3. The house which we lived in it last year was sold.
4. The man that you thanked him was not the mayor.
5. She took the picture and put on the board.
6. He took the paper and tore it.
7. The woman are talking to the mayor.
8. Last year we go to Bermuda.
9. We called the mayor and thanked for his help.
10. This is the book that I was telling you about.
11. They met their friend and they took her home.
12. He took the ball and threw to Tom.
13. The box which you put the key into it is in the second drawer.
14. I will do the dishes when come home.
15. John walked in when we were talking about him.
16. The girl was talking to the teacher who you gave the book to.
17. I couldn't use the typewriter because was broken.
18. Camel lives in the desert.
19. I won't know what is in the package until I receive.
20. The washing machine broke because I put too much clothes into.
21. The student who she is in your class lives next door to me.
22. There is a spot on this coat.
23. I can't go shopping until you give the money.
24. John walked in and sat down on the couch.
25. This is the student who everybody is talking about him.

APPENDIX B: COREFERENCE JUDGMENT TASK

In each of the following examples, a word is italicized. That word could refer to several possible people. Please circle the letter which indicates most accurately who that word refers to.

EXAMPLES: 1. Dave asked Mary to go to the movies with him. She said yes.
   a. Dave  b. Mary  c. Dave or Mary

II. First Dave, then John, said hello to Mary. Then Mary said hello to him.
   a. Dave  b. John  c. Dave or John

1. John asked Mary what Sue said. She said that Sue would come visit soon.
   a. Sue  b. Mary  c. John  d. either Sue or Mary  e. John, Mary, or Sue

2. Mary said hello to her friend Sue in Dinkytown. Sue decided she would invite her to lunch.
   a. Mary  b. Sue  c. either Mary or Sue

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3. Mary invited Sue and Tom to go to the movies with her. She said she would be ready to go when Mary came home from work.
   a. Mary  b. Sue  c. Tom  d. either Sue or Tom  e. either Mary or Sue
   f. Mary, Sue, or Tom
4. Tom asked Sue what Mary said. Sue said that she would come visit.
   a. Tom  b. Sue  c. Mary  d. either Sue or Mary  e. Tom, Sue, or Mary
5. Tom saw his friend Dave downtown. He decided Tom would invite him to the movies.
   a. Tom  b. Dave  c. either Tom or Dave
6. Tom invited Dave and Mary to go to the movies. He said he would be ready to go when Dave came home from work.
   a. Tom  b. Dave  c. Mary  d. either Tom or Dave  e. either Dave or Mary
   f. Tom, Dave, or Mary
7. Professor Jones told Mary that she would have to take the exam again. She said she failed because Mary wasn't feeling well that day.
   a. Professor Jones  b. Mary  c. either Mary or Professor Jones
8. Mary said hello to her friend Sue. Mary thought she would invite her to lunch.
   a. Mary  b. Sue  c. either Mary or Sue
9. Tom doesn’t know if he and Dave were invited to the party. If you see him, tell Tom that Dave was invited.
   a. Tom  b. Dave  c. either Tom or Dave
10. Mary wants me to call John. If you see him, tell John I’ll call tomorrow.
    a. Mary  b. John  c. either Mary or John

NOTES

1. We would like to thank Merrill Swain (Ontario Institute for Studies in Education) for providing us with access to data from children in French immersion programs in Toronto, Ontario. We would also like to thank Amy Sheldon and Nancy Stenson for substantive comments on this chapter.
2. “L1-L2 facilitation” is a term we are using in place of “positive language transfer.”
3. We are using the term “error” (as distinct from “mistake”) in the sense of Corder (1967).
4. Halliday and Hasan (1976) refer to this as “cataphora.”
5. Except in positive imperatives.
6. Examples 13 to 18 are to be taken as examples which are acceptable in colloquial speech. Left dislocations, as in 15, The boy he made a sandwich . . . are common in colloquial English.
7. We are assuming here that conjoined sentences like 15 and 16 have a surface constituent structure as exemplified in
   a. [[the boy]] [[[the sandwich] [and [in [John poured himself some milk]]]]
   b. [[[Alex made [John]]] [and [Harry ate [the sandwich]]]]
   c. [[the boy made a sandwich] [and [in [John poured himself some milk]]]]
   d. [[[Alex made [John]]] [and [Harry ate [the sandwich]]]]

We are aware of no strong arguments in favor of either alternative, although the intonational facts seem to favor (a) and (b). The fact that such an analysis also allows us to make generalizations about the distribution of zero vs. pronoun in English further supports (a) and (b) as the correct analysis of such sentences.
8. Sentences where the syntactic topic is in an “about” phrase preceded by as for, concerning, etc., are an exception here. In such cases a pronoun is obligatory; as in

“As for John, I like him.”

We are grateful to Ricky Jacobs for pointing this out to us.

9. This generalization does not hold in the following cases: (1) subjects of imperative sentences (e.g., Leave me alone.), (2) special registers like the language used in giving recipes and prescriptions (e.g., Take three eggs and beat until frothy, or Take twice a day.), (3) main-sentence initial position in casual speech (e.g., Smells good; but *I think smells good).

10. A detailed discussion of zero NP deletion in Mandarin Chinese can be found in Li and Thompson (1979).

11. These data have been used in several studies, including Selinker, Swain, and Dumas (1975) and Tarone, Frauenfelder, and Selinker (1976).

12. All these examples were actually produced by our English-L2 learners, with the exception of 30 and 31, which we made up to exemplify the category, as there were no short sentences in this category produced in the data.

13. Four of these five subjects were completely systematic in their responses on the coreference judgments. The fifth subject had a great deal of difficulty performing the task, told the experimenter so, and his responses seemed in fact to be quite random. We did not count his responses.

14. Similar results are reported in Berent (1989) for native speakers.

15. One possibility suggested to us by Michael Kae is to interview subjects one by one and ask for paraphrase rather than grammaticality judgments, e.g., “Could you also say it like this?”

16. The one subject-zero not marked with an asterisk in Table 1 is the subject of an imperative.

17. We are not sure how to explain the apparent lack of Chinese learner errors in object pronoun position. It may be that because Chinese and English are perceived by the learner as being very different from one another in their use of pronominal anaphora, these learners have paid more attention to this aspect of English in learning it as a second language. See Kellerman (1978 and this volume) on the way in which a learner’s perception of language distance may affect the influence of L1 on L2.

18. Harley (mt.) has some evidence that speakers of French (L1) omit object pronouns in French in certain contexts: in giving recipes and with mettre. See Dwyer, Fellbaum, and Winkler (1981) for a study of zero vs. pronoun anaphora in the speech of children learning English as their first language.

REFERENCES


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