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ABSTRACT

This paper reports on a study of the acquisition of subject and object relative clauses by monolingual French speaking children aged 4-10 years, in Rimouski, Quebec. The children were tested for their comprehension of six types of relative sentences. A coordinate sentence control test was administered. An adult control group was also tested on the relative sentence test. The results are discussed within the framework of two principles proposed to account for language learning. Slobin's (1971) putative universal principle claims that the interruption and rearrangement of linguistic units is hard for both the child language learner and the adult. Sheldon (1974) has proposed the Parallel Function Hypothesis, which claims that sentences in which the identical NPs have the same grammatical function in their respective clauses are easier than sentences in which the identical NPs have different grammatical functions. The results of both the child and the adult study support the Parallel Function Hypothesis. The acquisition of French relative clauses follows the same order of acquisition that has been found for English relative clauses (Sheldon, 1974, Legum, 1975) and provides additional evidence for a parallel function constraint in language learning. An analysis of the errors that were made indicates other similarities and differences in the acquisition of French and English. (Author/CLK)

The Acquisition of Relative Clauses in French and English: Implications for Language Learning Universals

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The goal of research in child language acquisition is to create a general theory of language acquisition. To accomplish this, child language research must compare acquisition across languages in order to discover which principles and strategies of language learning are universal and which are developed to process the particular language that is being learned. While it has often been claimed that there are behavioral universals in learning language (Bever, Chomsky, McNeil, Slobin, 1971), we know very little about what these are. Because we know little about what governs language acquisition we can make few reliable predictions about the order and pattern of acquisition.

Our knowledge of universal and language specific principles of language learning should be of particular value in understanding the course of learning a second language. Many of the errors that second language learners make are predictable. The question is: why are they made? To what extent are they due to interference from the native language, and to what extent are they due to language independent factors? Clearly we can not claim that the source of the learner's difficulty is due to interference unless we have ruled out the possibility that it is a function of language independent factors.

If we find evidence for universal principles in language learning then we would expect that in those situations where these principles are relevant, the order of acquisition and the kinds of errors that are made in learning any language will be the same whether the language is learned as a first or second language. Thus we would expect that certain difficulties that second

language learners have will be the same as those that they faced in learning their native language. For this reason, investigating the principles that children use in learning their native language can contribute to our understanding of the role of universal and language specific factors in second language learning.

The results of cross language research into what language learners find difficult,and why, should be of interest to teachers in a bilingual setting. The results can shape realistic expectations in teachers. They can create a positive and informed attitude toward learner errors, and they can be of use in developing appropriate reading and teaching materials.

This paper will discuss language acquisition in English and French. It will report on the outcome of a study of the acquisition of subject and object relative clauses by monolingual French speaking children between the ages of 4-10 years in Rimouski, Québec. I will compare their language behavior with the behavior of monolingual English speaking children between 4-8 years who had been tested previously in the United States (Sheldon, 1974, Legum). The results of both studies will be discussed within the framework of principles and strategies that have been proposed to account for language learning in English. I will show how these principles and strategies are also relevant to the explanation of language learning in French. I will claim that certain of these strategies are in fact universal, and that their use is not a function of the fact that these children are learning English, or French, or any SVO language for that matter. Note that we can not falsify the claim that the acquisition of relative sentences is governed by universal principles and that there will be a common order of development across languages unless we test

acquisition in more than one language. The French study brings evidence to bear on this claim.

This study investigated a universal principle that Slobin (1971:352) has proposed to account for language learning, which can be formulated as an empirical claim in the following way:

> A sentence with an interruption or rearrangement of linguistic units will be more difficult to process than a sentence that does not contain an interruption or rearrangement.

Sheldon (1974) investigated the evidence for this claim in a study in which four and five year old English speaking children were tested on their ability to comprehend sentences with relative clauses. They were given four types of relative sentences, which are shown in Table 1: #1,2,4,&5. Slobin's

---Insert Table 1 here---

universal can be interpreted in the form of two hypotheses that make predictions about the acquisition of relative clauses. The first is the Interruption Hypothesis, which claims that nested clauses (i.e. sentence internal) are more difficult to process than nonnested clauses (i.e. sentence final). Thus, in English and French, sentences with relative clauses that modify subject NPs (sentences # 1 & 2: SS, SO) should be harder to comprehend and process than sentences that have relative clauses that modify object NPs (# 4 & 5: OS, OO) because the subject relative in the former is nested inside of the main clause and interrupts it. The second hypothesis is the Word Order Hypothesis which claims that a surface sequence in which the underlying word order has been preserved is easier to process than one in which the underlying word order has not been preserved. According to this hypothesis sentences in which the object NP is relativized (#2 & 5: SO, OO) will be harder than

sentences in which the subject NP has been relativized (#1 & 4: SS, OS).[1]

Slobin (p.354) cites evidence that appears to support these hypotheses from studies that investigated the use of relative clauses by English speaking children between the ages of 2-5. In these studies sentences with object relatives (i.e. sentence final) were produced earlier than sentences with subject relatives (i.e. sentence internal). In addition, sentences with subject relatives were more difficult to imitate than sentences with object relatives. However, the positive data that he presents for this universal in regard to relative clauses consists solely of elicited or spontaneous production data. It is well known that correct imitation is not a reliable indication of how a sentence is understood or if it is understood at all. Spontaneous production data is also of limited use, at best, in providing insight into the speaker's linguistic competence or comprehension ability. It could be a function of the sample size, and sometimes reflects nothing more than pragmatic factors involved in communication. For example, Limber has shown this very nicely. He made recordings of spontaneous speech from children between the ages of 2-4, and from adults in a variety of activities. He found that for both children and adults the majority of subject NPs were personal pronouns, demonstrative pronouns and names. The fact that it is not possible to have restrictive relative clauses modifying such NPs explains why we don't find them in spontaneous speech. Pronouns and names appeared much less frequently in object position and this correlated with the higher proportion of object NP modification. Clearly one can not make reliable inferences about the speaker's linguistic or receptive competence on the basis of production data alone. For this reason, the English and French studies are an investigation of how children understand relative sentences. To test comprehension they

were required to act out the relative sentence with toy animals.

The results of Sheldon (1974) did not confirm Slobin's predictions about the difficulty of interruption or the difficulty of word order rearrangement for the language processor. That is, children's performance on sentences with internal relative clauses did not differ from their performance on sentences with sentence final relative clauses. And they did not make more errors on sentences which had the object NP relativized than they made on sentences which had the subject NP relativized. Instead, it was found that sentences in which the identical NPs have the same grammatical function in their respective clauses (SS & OO) were significantly easier to understand than sentences in which the identical NPs have different functions (SO & OS). The results of this study are shown in Table 2a. These results were replicated

---Insert Table 2 here---

with a group of 10 subjects whose mean age was 4.6 (Sheldon, 1976).

The Parallel Function Hypothesis was proposed to account for these facts. This hypothesis claims that in a complex sentence, if coreferential NPs have the same grammatical function in their respective clauses, then that sentence will be easier to process than one in which the coreferential NPs have different grammatical functions. The grammatical function of the relativized NP will be interpreted to be the same as its antecedent. Independent support for a parallel function constraint can be found in English studies of pronominal coreference (Maratsos), in relative clause comprehension using a picture identification task and different types of relative sentences (Brown), and in a study of the development of relativization (Ferreiro, et.al.).

In addition, Legum conducted a study of the comprehension of relative

sentences using the same toy moving task with monolingual English speaking children between the ages of 6-8 years, in an attempt to replicate the results of Sheldon (1974). The results of his study are shown in Table 2b. Legum found that there was no reliable effect of age; that is, the performance of children in the six year old group did not differ significantly from that of children in the seven and eight year old group, $F(2,41) = 3.12$, $p > .05$. There was no significant main effect for embedding, $F < 1$; that is, performance on sentences with nested relative clauses (SS & SO) was not significantly different from performance on sentences with final relative clauses (OS & OO). Performance on parallel function relative sentences (SS & OO) was significantly better than performance on nonparallel function sentences, again at greater than the .001 level of significance. These results replicate the finding of Sheldon with younger English speaking children. They support the Parallel Function Hypothesis, and they do not support the Interruption Hypothesis. They indicate that the parallel function constraint operates in acquisition as late as eight years. The only difference between the younger group (Sheldon) and the older group (Legum) is in how their performance was affected as a function of which NP is relativized. Sentences with relativized subjects (SS & OS) were significantly easier than sentences with relativized objects (SO & OO), $p < .001$. The younger group showed no difference in performance on sentences in which the subject or object NP were relativized, although there was a trend in the five year old group in favor of sentences with relativized subjects. Thus, the variable of word order in the relative clause appears to be an age related factor. It does not play a role in younger childrens' comprehension of English, but it is relevant to older children. Figure 1 is a graphic repre-

sentation of the performance of the younger and older English groups.

---Insert Figure 1 here---

These findings demonstrate that the Parallel Function Hypothesis is crucial for the explanation of certain facts about the acquisition of relative clauses in English, and that this effect is independent of the age of the language learner. The question that arises is whether a parallelism constraint is language specific or whether it plays a role in the acquisition of other languages. An answer to this question was sought in a study of the acquisition of French. The participants in this study, monolingual speakers between the ages of 4-10, living in Rimouski, Québec, were tested by means of the same toy moving procedure that was used in Sheldon and Legum. Examples of the types of sentences that were used are in Table 1.

The French sentence types differ from the English in two respects. First, the French relative pronoun varies in its form according to the function of the NP that is relativized. The form for relativized subjects is qui and the form for relativized objects is que. Because the French relative pronoun contains the grammatical information that is necessary to correctly assign a function to the relativized NP, which the English relative marker that does not, it is possible that French children would learn these sentences faster or in a different order than children learning English. In fact, we would expect that they would not use a parallel function heuristic for assigning NP function, since it isn't necessary.

Another difference between English and French is that French has an optional rule of subject postposition which places the subject NP in a que relative clause behind the verb. Thus, in Table 1 sentence types 2 & 3 are paraphrases, and types 5 & 6 are paraphrases.

Slobin has proposed another developmental universal which is relevant to the acquisition of the French type of relative sentences, # 3 & 6.. He claims (p.350) that:

> Sentences deviating from standard word order will be interpreted at early stages of development as if they were examples of standard word order.

I will label this claim the Preferred Word Order Hypothesis.[2] Since the standard word order in French is SVO this principle predicts that in the French type relatives, # 3 & 6, the NP that follows the verb will be understood as the receiver of the action and not the agent. Thus, sentence types 3 & 6 should be acquired late according to this principle because word order in the relative clause is que V S. On the other hand, because the French relative sentences have a morphological indication of which NP is relativized it is possible to interpret the correct function of the postverbal NP. If attention to morphological cues takes precedence over the Preferred Word Order principle, the French learners would have no difficulty with sentence types 3 & 6.

The results of the French study are shown in Table 2c. What we find is that French children are ignoring the morphological cues and instead are assigning functional relationships by means of other heuristics, which are also being used by children learning English.

Considering just sentence types 1, 2, 4 & 5, which correspond to the English types, an analysis of variance indicated that performance on the parallel function relatives (SS & OO) was significantly better than performance on the nonparallel function relative sentences (SO & OS), $F(5,90) = 2.86$, $p < .05$. A post hoc analysis of variance indicated that performance on the parallel function object relative sentence type (OO) is significantly better than performance on the nonparallel function

object relative sentence type (OS), $F(5,90) = 9.73$, $p < .01$. There was a significant interaction between the ease of parallel function object relatives and age,however. A Tukey standardized range test was performed on the consecutive means of the parallel function object relative (OO). It indicated that the level of performance of the eight year olds was significantly better than the performance of the seven year olds. A Tukey test was also performed on the consecutive means of the nonparallel function object relative (OS). It indicated that performance on this sentence type does not increase significantly until one year later, in the ninth year. At this time performance on the nonparallel function subject relative (SO) also improves dramatically. Performance across these four sentence types: SS, SO, OS, OO, begins to level out in the ninth year, showing a general mastery of these kinds of sentences at that time.

As in Sheldon (1974), a control test was administered after the relative sentence test. The purpose of this test was to determine the extent to which performance on the relative sentence task was due to the meaning of the sentence, the procedure of acting out two propositions, the length of the sentence, or preferred toy moving strategies, such as using the first toy that is picked up to perform both actions in the sentence. This test consisted of the coordinate structure counterparts to the relative sentences. The children had to act them out in the same fashion as the relative sentences. Examples of these sentences are in Table 3.

---Insert Table 3 here---

Only the youngest group of subjects were tested on this task. Their performance is shown below.

---Insert Table 4 here---

The results are essentially the same as those for the English subjects in Sheldon (1974). There is no difference in performance across the four types of coordinate sentences but there is a difference in performance across the different types of relative sentences. Not only is there no difference in the order of difficulty among the coordinate sentences, but they are much easier than the relative sentences. This is additional evidence that it is the structure of the relative sentences that is the source of difficulty.

We can conclude from the results of the relative sentence test, therefore, that a parallel function constraint is operating in the acquisition of French relative sentences. It is interesting to note that the factor of parallel function plays a role in the adult French speaker's comprehension of the sentence types also. A control group of 16 monolingual French speakers, who were nursing students at the College d'enseignement general et professionel de Rimouski, was tested on the same sentences, using the same toy moving task. To make the task more difficult they heard each sentence only once, whereas the children, on the other hand, could have the sentence repeated as often as necessary. The mean age of the adult subjects was 19.6. The results of the experiment are shown in Table 5. An analysis of variance indicated that the

---Insert Table 5 here ---

adults performed significantly better on the parallel function sentence types (SS & OO) than on the nonparallel function types (SO & OS), $F(1,62) = 9.00$, $p < .01$. The importance of this finding is that it shows that adults also do not always pay attention to the morphology of qui and que, but sometimes use a parallel function heuristic instead. Apparently, the parallel function heuristic

is a childhood strategy that persists into adulthood, although it is used to a much lesser degree by adults than by children.[3]

While the factor of parallel function plays a role in the acquisition and use of French relative sentences, it clearly doesn't account for the whole story. There is additional evidence that French speaking children are ignoring the morphology of the relative pronoun. This is shown by their performance on sentence types 3 (SO') and 6 (OO'), which have postposed subject NPs in the relative clause. When we compare performance on sentence type 3 (SO') to its counterpart type 2 (SO), and sentence type 6 (OO') to its counterpart type 5 (OO'), we see a big difference in the level of performance (see Table 2). An analysis of the errors indicates that sentence type 3: le lion que pousse le cheval.... (SO') was being interpreted as if it were an SS sentence type (#1): le lion qui pousse le cheval..... In addition, the OO' sentence type (#6): ....la vache que pousse le cheval was interpreted as if it were an OS sentence type (#4): ....la vache qui pousse le cheval. This is evidence that children are not paying attention to morphology but are depending on standard word order to interpret a sentence. Sentence types 3 (SO') and 6 (OO') have postposed subject NPs in the relative clause. The missing NP in these sentences can be correctly reconstructed only if the listener pays attention to and correctly identifies the relative pronoun. Only 3 out of 96 children in this study were successful on these sentence types, and they were almost 10 years old. In order to rule out the possibility that the children didn't use the morphological differences between qui and que because they couldn't hear them and therefore fell back on using a word order heuristic, I tested the two youngest groups for their perception of a phonemic difference

between qui and que in a minimal pair test. While 9 out of 15 children in the four year old group responded ramdomly, only 2 out of 15 in the five year old group responded ramdomly. On the basis of the five year olds' performance we can assume that older children would have had no trouble on this task. We could conclude that even though most children in this study could hear a difference between qui and que, when presented as a minimal pair, they were either unable to identify the grammatical function of qui and que in the sentences, or they did not use that information when it was present in the sentences to process them. Instead, they used a heuristic of relying on the standard word order of French and invariantly interpreted the NP that followed the subordinate clause verb as if it were the underlying object. The evidence from French indicates that Slobin's Preferred Word Order Hypothesis is a possible candidate for a langauge learning universal. The French speaking child's preference for interpreting any NVN sequence as the standard French order of agent-action-object has been noted by Sinclair. She presented children from 3-6 years with sequences of two nouns and a verb in all the possible orders of combination, for them to act out with dolls. As children got older they increasingly interpreted the first noun as the agent and the second noun as the object-acted-upon no matter where the verb occurred in the sequence. The tendency to interpret the first noun as the agent increased with age. In fact, more six year olds interpreted the sequence boite- ouvrir- garçon as 'the box opens the boy' than younger children.

The reliance of children on word order rather than morphology has also been observed in other languages. Word order in Russian is more flexible than in English or French. Russian is also a more highly inflected language.

Slobin (1966) reports that Russian children adopt a fixed order and learn morphological markers late. Roeper reports that German children prefer an ordering of indirect object before direct object. Sentences with the order of direct before indirect object were often understood as if the order was indirect before direct, even though the article in German is inflected for the grammatical function of the NP. When asked to imitate sentences with the NPs in the order of direct object before indirect object, children tended to switch the articles in their imitation, placing the article for the indirect object with the first NP and the article with the direct object with the second NP.

There is evidence for Slobin's generalization from English too. The preference that English speaking children have for interpreting the first NP in a sentence as the logical subject has been noticed in studies of the passive in child language. Children have difficulty understanding full passive sentences because they interpret them as being active sentences. Thus, a sentence like the girl is pushed by the boy is understood as the girl pushes the boy (Bever, Beilin and Spontak, Fraser, Bellugi and Brown, Turner and Rommetveit). The presence of passive markers in the sentence is ignored. It is not the case that children respond randomly, which one might expect if the child was paying attention to the passive markers. Instead, they systematically prefer the active interpretation, despite the passive markers in the sentence.

Children will also interpret object cleft sentences such as it's the lion that the giraffe kicks to mean the lion kicks the giraffe . But they have no trouble understanding subject cleft sentences correctly, such as it's the lion that kicks the giraffe (Bever, Sheldon, 1972). Children

will interpret object questions, in which the questioned object NP appears in surface subject position, such as who did John see? as meaning who saw John? . But they will have no trouble with subject questions, such as who saw John? (Ervin-Tripp).

In addition, children learn the John is eager to please type of complement construction earlier than the John is easy to please construction (Cromer, Kessel). In the example, John is easy to please while John is in the surface subject position, it is not the underlying subject of the sentence, rather it is the underlying object.

In general then, linguistic constructions that constitute an exception to SVO word order in English are hard to learn because they are interpreted as examples of standard word order. What this suggests is that children will develop strategies that work for the general case before they develop strategies that work for the exceptions. Sentences that are exceptions to the general case are also exceptions to the strategies that they have developed for processing these general cases. Because children persist in using strategies for processing the predominant word order inappropriately on sentences that are exceptions to the predominant word order, then they will have difficulty learning the exceptions. This difficulty that the French children have in decoding sentence types 3 and 6 (the que relatives with postposed subjects) indicates that rules that create surface structures that constitute linguistic exceptions, in this case the postposition of the underlying subject, are learned relatively late. Only after children can deal with que relatives that have the subject before the verb (#2 and 5) can they handle the exception.

One might also expect that sentences that children learn late will also be harder for adults to process. While this expectation is borne out in the

case of the nonparallel function sentences (SO and OS) which were harder for both children and adults, it is not the case that French adults have more difficulty with the relative sentences that have postposed subjects (SO' and OO'). The results of their performance on this task shows no significant difference on sentence types 3 and 6 (SO'and OO' types with postposed subjects) as compared to types 2 and 5 (SO and OO types that do not have the subject inverted). We can account for the difference between the adults and children if we assume that the adults have the rule of subject postposing, and that they are effectively using the morphological cues present in these sentences to process the inversion. The children do not have the rule and they are relying on word order to process these sentences. If the child doesn't have this rule then sentences with the inversion are not part of their relative clause system. This would make their relative clause system more like that of the English child than the adult Frenck speaker. This supports the hypothesis that at certain stages children's languages are more like each other than they are like the adult language they are learning.

There are other ways in which the behavior of the French and English speaking child are alike. One interesting outcome of the relative clause test in English with the four and five year olds (Sheldon, 1974) was that there was much less improvement on the object relatives than there was on the subject relatives. In the French study also, performance on the object relatives was not high. A tabulation of the errors that were made by each child indicated that they were responding to the object relatives in a consistent fashion. At each age level, the object relatives, which follow the main clause, were interpreted as modifying the main clause subject NP, rather than the main clause object NP. That is, given sentence #5: the

lion knocks down the cow that the horse pushes the children made the lion knock down the cow and the horse push the lion. This response was found in both French and English. We can explain it if we assume that the children have a rule of Extraposition from NP which moves an internal relative clause to the end of the main clause, and that they overrely on this rule to interpret any relative clause at the end of the main clause as if it had been part of the subject in deep structure and was transported by the Extraposition rule to sentence final position. The reason why their performance on object relatives is so low is because they are associating all relative clauses with the main clause subject NP. I have called this the Extraposition strategy (Sheldon, 1974). It is being relied upon heavily by children as old as 10 years. What is interesting about this finding for both English and French children is that it shows another way in which child languages are more like each other than they are like the adult language being learned. Both adult English and French speakers prefer to associate a relative clause with the adjacent NP whenever possible, even in cases where it can be associated with either NP as in:

A guy was dating my sister who lives in Montreal

Un garçon sort avec ma soeur qui vit à Montréal
object

Because most adults do not interpret/relative clauses as being extraposed, they do not find this sentence ambiguous, in English or in French.

Since the use of the Extraposition strategy by both English and French children indicates the systematic avoidance of continuous constituents and the favoring of discontinuous constituents, the French acquisition data, like the English data, falsifies Slobin's claim that children will use strategies of speech perception which prohibit interruption of linguistic units.

French and English children are alike in another aspect. A frequent mistake that was made on subject relatives by both groups is what I call an 'adjacency error'. Children would interpret a sentence like #1: the lion that pushes the horse knocks down the cow such that the lion pushes the horse and the horse knocks down the cow. In doing this they were apparently using a strategy that I call the Adjacency strategy (Sheldon, 1977), which is as follows:

> In parsing a noncompound sentence, starting from the left, group together as constituents of the same construction two adjacent NPs (i.e. not separated by other NPs) and an adjacent, noninitial verb that has not already been assigned to a clause. Intrepret the first NP as the subject of the verb and the second NP as the object of the verb.

This strategy accounts for why children segmented the sequence, in sentence #1, the lion pushes the horse as one clause, and the sequence that spans the clause boundary: the horse knocks down the cow as another actual clause. Users of this strategy would ignore the relative pronoun. Thus the use of this strategy in subject relatives accounts for the child's inability to find the boundary where the relative clause ends and the main clause resumes. This strategy is relied on until quite late, by both English and French children. Notice that it will correctly parse the OS relative type (#4). Between the ages of 7-9, when children's performance on the OS sentence type gets better, we also find an increased generalization of this strategy to sentences where it shouldn't apply (e.g. to SS and SO sentence types).

Adjacency errors have been noted in two other studies of relative clauses. In a study of the comprehension of written relative clauses, Quigley, et. al. found that most deaf subjects between the ages of 10-18 make adjacency errors on subject relatives. There was no change in the strength of this response between 10 and 18 years. Hearing subjects between 8 and 10 years also made

the same mistake. In a picture-cued comprehension task, Brown found that 3-5 year olds also made adjacency errors on subject relatives.

There is evidence that an adajcency strategy is over-relied on in interpreting other types of sentences also. Tavakolian asked 3-5 year old English speaking children to act out sentences with two conjuncts in which the subject of the second conjunct was missing. When given a sentence like: the horse jumps over the duck and bumps into the rabbit they would make the horse jump over the duck, and the duck bump into the rabbit. Adjacency errors were also found on sentences with inorder to complementizers. For example, on a sentence like: the rabbit jumps over the duck to bump into the horse they would make the rabbit jump over the duck and the duck bump into the horse.

To summarize the results of the French study, I have shown that despite the difference between French and English relative sentences, French children like English children have difficulty in assigning the correct function to the relativized NP. In attempting to do this, I am claiming that both English and French children rely on the Parallel Function strategy. Not only does this partly account for the order of acquisition of subject and object relative sentences, it also accounts for many errors that were made. Secondly, both French and English children have difficulty in finding the NP the the relative clause modifies. In attempting to find an antecedent for the relative pronoun in object relatives they overrelied on the Extraposition strategy. They preferred to associate all modifiers with the main clause subject, or sentence initial NP, despite the fact that adult speakers in both languages prefer to associate modifiers with the adjacent NP. We can not assume, therefore, that there will be differences in children's languages because there

are differences in adult languages.

Slobin's claim about the putative universal difficulty of interruptions, i.e. of nested clauses, makes false predictions about the child's difficulty with French relative sentences as well. On the other hand, the French data support Slobin's Preferred Word Order Hypothesis, since children will try to interpret functional relations in clauses in terms of the predominant word order of the language. That is equivalent to saying that children overrely on their strategies for processing the predominant word order, with the consequence that rules that change order are learned late.[4]

The French data also add to the growing body of evidence that language processors will overrely on an adjacency strategy to incorrectly segment adjacent surface sequences as actual constituents of a clause. Since the overuse of strategies for parsing sentences accounts for a number of the mistakes that were made, apparently learning a language involves --at least-- learning to restrict the use of these strategies in those cases where they do not apply.

The French study is one step in the line of testing the universality of language learning principles and strategies that were proposed to account for language acquisition in English. It replicates the main findings of the English studies using another language that had some differences as well as some similarities in the relative clause system. But the French results are stronger than a replication. They provide more evidence than we had with the English data alone to claim that these results are not due to the particular language that the children are learning but that they are due to the fact that they are learning relative clauses. Since we now know that these results

are not language specific, we have a basis for making the strongest possible claim, namely, that these same principles and strategies that found support in English will also account for the order of acquistion of relative sentences and the errors that language learners make on these constructions across languages. I am making the following hypotheses:

> 1. The Parallel Function strategy is a language independent processing heuristic.
>
> 2. All languages will have an Adjacency strategy for parsing sentences. The functional relations of the elements in the clause will be interpreted in terms of the predominant, language specific word order.
>
> 2. Reliance on word order takes precedence over reliance on morphology.[5]

While it is possible that the results of the English and French studies are due to the fact that they are related languages, the crucial test of the universality of these principles is with a language that is unrelated to them, e.g. an SOV language like Japanese. I think that an investigation of learners of such a language would be a fruitful avenue for future research.

In conclusion, although language learning research is still in its infancy, so to speak, it is still useful to measure the distance that has been traveled. Nelson Brooks made the following statement in his book on language learning in 1964:

> A discussion of learning is not complete without some remarks about error, which bears a relationship to learning resembling that of sin to virtue. Like sin, error is to be avoided and its influence overcome, but its presence is to be expected.

What I have shown here, however, is that we have alot to learn from learner errors. They supply important data in the construction of a theory of language acquisition.

FOOTNOTES

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[1] This principle is relevant is we assume that that is analyzed as a relative pronoun and the relativized NP has been fronted.

[2] Note that it is questionable whether there is a difference between this claim and his prohibition on the rearrangement of word order. It seems that what is at stake in both of these claims is that children will have difficulty processing sentences that violate the predominant surface word order in the language. I will not pursue this issue further here.

[3] There is an important methodological point to be made here. Developmental psychologists compare the performance of children to a control sample of adults inorder to avoid what Limber calls the "double standard of attributing gaps in children's performance to some developmental deficit, but tacitly assuming alternative explanations when those same gaps occur in the speech of a presumed fluent, mature individual", I think the same methodological moral applies in second language learning research, and in teaching too. The errors in the performance of bilingual children should be compared to the errors in the performance of monolingual children, and the gaps in the performance of the adult second language learner should be compared to those of native speakers, whose language processing powers should not be taken forgranted. If adults had difficulty comprehending sentences with singly embedded relative clauses in French, what types of sentences might they have trouble with that we

thought were too easy to justify investigation?

4 The implications that this hypothesis has for second language learners deserves to be studied.

5 This statement is consistent with Slobin's statement (1966:134) that

> ....all of the world's languages make use of order in their grammatical structure, but not all languages have inflectional systems.

Also Rūķe-Draviņa (p. 265) arrives at a similar conclusion in a diary study of the production of nominal, adjectival and verbal inflections in Latvian, through the child's fourth year.

TABLE 1

TYPES OF RELATIVE SENTENCES THAT WERE TESTED IN FRENCH AND ENGLISH

Subject Relatives

1. Subject NP relativized (SS)
   Le lion qui pousse le cheval fait tomber la vache
   The lion that pushes the horse knocks down the cow.

2. Object NP relativized (SO)
   Le lion que le cheval pousse fait tomber la vache
   The lion that the horse pushes knocks down the cow

3. Object NP relativized, relative clause subject postposed (SO')
   Le lion que pousse le cheval fait tomber la vache
   (The lion that the horse pushes knocks down the cow)

Object Relatives

4. Subject NP relativized (OS)
   Le lion fait tomber la vache qui pousse le cheval
   The lion knocks down the cow that pushes the horse

5. Object NP relativized (OO)
   Le lion fait tomber la vache que le cheval pousse
   The lion knocks down the cow that the horse pushes

6. Object NP relativized, relative clause subject postposed (OO')
   Le lion fait tomber la vache que pousse le cheval
   (The lion knocks down the cow that the horse pushes.)

TABLE 2

PERCENTAGE OF CORRECT ANSWERS BY AGE GROUP

2a. English Relative Sentences (3.0 possible) Sheldon, 1974

	Sentence Type			
	SS	SO	OS	OO
4.0 N=11	33.0	6.0	18.0	45.3
4.9 N=11	48.3	24.3	30.3	54.6
5.2 N=11	75.6	21.3	39.0	51.6
Average Percent Correct, N=33	52.3	17.1	29.1	50.5

2b. English Relative Sentences (5.0 possible) Legum, 1975

	SS	SO	OS	OO
6.1 N=15	68	18.6	17.2	48.0
7.0 N=18	72	23.2	41.0	67.6
8.1 N=14	80	31.4	47.0	57.0
Average Percent Correct, N=47	73.3	24.4	35.0	57.5

2c. French Relatives (4.0 possible).

Age Group	SS	SO	OS	OO	SO'	OO'
4.2 N=16	73.50	9.00	15.75	32.75	3.25	6.25
5.2 N=16	81.25	12.50	15.75	36.00	0	6.25
6.2 N=16	93.75	12.50	11.00	31.25	1.75	0
7.6 N=16	81.25	7.75	31.25	29.75	0	3.00
8.6 N=16	72.00	7.75	36.00	70.25	0	3.00
9.9 N=16	78.25	54.00	67.25	61.00	9.50	20.25
Average Percent Correct, N=96	80.00	17.25	29.50	43.50	2.41	6.54

TABLE 3

CONTROL TEST: COORDINATE STRUCTURE COUNTERPARTS TO THE RELATIVE SENTENCES

1. Identical subjects (SS) (Parallel Function)
   Le lion pousse le cheval et le lion fait tomber la vache
   The lion pushes the horse and the lion knocks down the cow

2. Subject of first clause identical to object of second clause (SO)
   Le lion pousse le cheval et la vache fait tomber le lion
   The lion pushes the horse and the cow knocks down the lion

3. Object of first clause identical to subject of second clause (OS)
   Le lion pousse le cheval et le cheval fait tomber la vache
   The lion pushes the horse and the horse knocks down the cow

4. Identical objects (OO) (Parallel Function)
   Le lion pousse le cheval et la vache fait tomber le cheval
   The lion pushes the horse and the cow knocks down the horse

TABLE 4

PERCENT OF CORRECT ANSWERS BY AGE GROUP

French Coordinate Sentences (4.0 possible)

Age Group	Sentence Type SS	SO	OS	OO
4.2 N=15	85	88	83	83

English Coordinate Sentences (3.0 possible) Sheldon, 1974

Age Group	Sentence Type SS	SO	OS	OO
4.0 N=8	58.3	58.3	54.3	71.0
4.9 N=11	60.6	66.6	60.6	66.6
5.2 N=11	88.0	66.6	75.6	85.0
Average Percent Correct, N=30	70.0	64.3	64.3	74.3

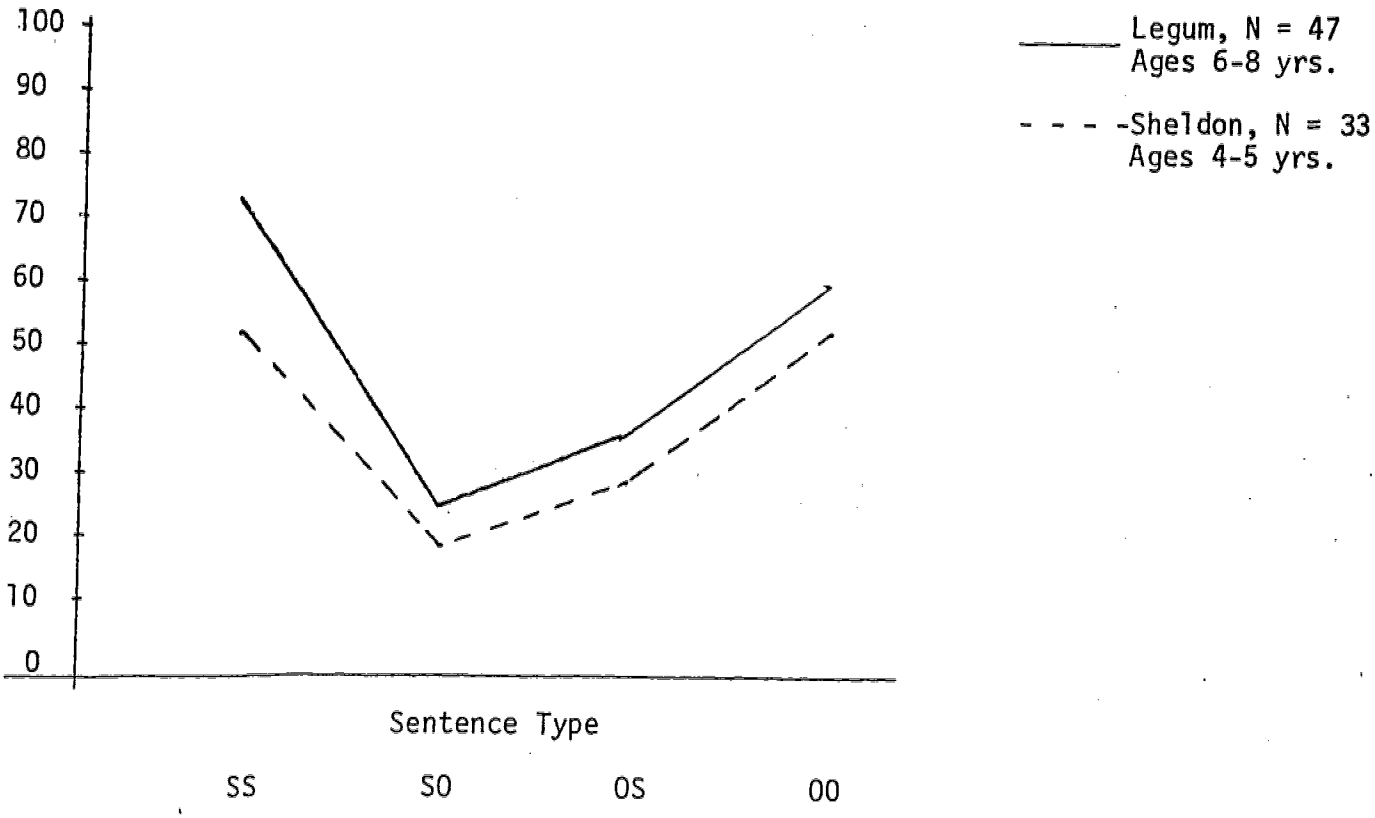
TABLE 5

FRENCH ADULT PERFORMANCE: PERCENT OF CORRECT ANSWERS

	Sentence type					
	SS	SO	OS	OO	SO'	OO'
N = 16	98.4%	89	89	98.4	89	82.8

FIGURE 1

PERCENTAGE OF CORRECT ANSWERS BY AGE: ENGLISH



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pronoun in object relatives they overrelied on [illegible]. They preferred to associate all modifiers with the main clause subject, or sentence initial NP, despite the fact that adult speakers in both languages prefer to associate modifiers with the adjacent NP. We can not assume, therefore, that there will be differences in children's languages because there

stronger than a replication. They provide more evidence than we had with the English data alone to claim that these results are not due to the particular language that the children are learning but that they are due to the fact that they are learning relative clauses. Since we now know that these results

> sin to virtue. Like sin, error is to be avoided and its influence overcome, but its presence is to be expected.

What I have shown here, however, is that we have alot to learn from learner errors. They supply important data in the construction of a theory of language acquisition.

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(The lion knocks down the cow that the horse pushes)

5.2 N=16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6.2 N=16	93.75	12.50	11.00	31.25	1.75	0
7.6 N=16	81.25	7.75	31.25	29.75	0	3.00
8.6 N=16	72.00	7.75	36.00	70.25	0	3.00
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Average Percent Correct, N=96	80.00	17.25	29.50	43.50	2.41	6.54