NATURAL SEQUENCES IN CHILD SECOND LANGUAGE ACQUISITION[1]

Heidi C. Dulay and Marina K. Burt
State University of New York at Albany

The acquisition sequences of 11 English functors were compared for native Chinese- and Spanish-speaking children learning English. Three different methods of speech analysis used to obtain the sequences are described in detail. All three methods yielded approximately the same sequence of acquisition for both language groups. This finding provides strong support for the existence of universal child language learning strategies and suggests a program of research that could lead to their description.

BACKGROUND AND RATIONALE

The present study is the third "episode" in our on-going efforts to discover the universal regularities in child second language acquisition. The first episode (Dulay and Burt 1972; Dulay and Burt 1974) summarized and added to the growing amount of evidence for the existence of second language learning strategies common to all children. These studies are for the most part error analyses which strongly indicate that regardless of first language background, children reconstruct English syntax in similar ways. Specifically, the types of errors in English that Spanish-, Chinese-, Japanese-, and Norwegian-speaking children make while still learning English are strikingly similar. This similarity of errors, as well as the specific error types, reflect what we refer to as *creative construction*, more specifically, *the process in which children gradually reconstruct rules for speech they hear, guided by universal innate mechanisms which cause them to formulate certain types of hypotheses about the language system being acquired, until the mismatch between what they are exposed to and what they produce is resolved.* The child's construction of linguistic rules is said to be creative because no native speaker of the target language—whether peer, parent, or teacher—models the kind of

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sentences produced regularly by children who are still learning the basic syntactic structures of a language.

The second episode (Dulay and Burt 1973:251-256) was a pilot investigation of natural sequences in the acquisition of eight English grammatical structures by Spanish-speaking children. We found that for three different groups of children—Chicano children in Sacramento, California; Mexican children living in Tijuana, Mexico, but attending school in San Ysidro, California; and Puerto Rican children in New York City—the acquisition sequence of the following eight structures was approximately the same: plural (*-s*), progressive (*-ing*), copula (*is*), article (*a, the*), auxiliary (*is*), irregular past (*ate, took*), 3rd person singular (*-s*), and possessive (Noun-*'s*).

The rationale for this pilot study was the same as that for the study we will report in this paper. Namely, if the creative construction process does play a major role in child L2 acquisition, then we should find a common sequence of acquisition of grammatical structures across diverse groups of children learning the same language. In other words, if it is true that universal cognitive mechanisms (or strategies) are the basis for the child's organization of a target language, and if it is the L2 system rather than the L1 system that guides the acquisition process, then the general sequence in which certain English syntactic structures are acquired by children of different language backgrounds should be the same, with only minor individual variation.

To test this hypothesis we compared Chinese- and Spanish-speaking children's acquisition order for 11 English "functors"—the little function words that have at best a minor role in conveying the meaning of a sentence: noun and verb inflections, articles, auxiliaries, copulas and prepositions. We chose to study functors (for the time being) as they are easily elicited—almost any verbal utterance contains several, and it is also fairly easy to determine whether or not they are used correctly. Moreover, Brown's (1973) important methodological insights in functor acquisition research for first language learners permitted us to develop rigorous methods of analysis. The functors included in this study were those that were regularly elicited by an expanded version of the *Bilingual Syntax Measure* (Burt, Dulay and Hernández 1973), the instrument we used to collect *natural* speech. It is briefly described below. The functors include the original eight in the pilot study just mentioned, plus pronoun case (nominative and accusative), regular past (*-ed*), and long plural (*-es*, e.g. hous*es* as opposed to the "short" plural doors). These are also described in detail below.

METHOD

Our original plan had been to use a longitudinal research design, as Brown had done for first language acquisition. This would have involved collecting large amounts of speech at weekly intervals from a small number of children (about three Chinese and three Spanish) over a one-year period. Coincidentally, however, at the time we were looking for children who were likely to stay in the area for a nine-month data collection period and whose parents and teachers would permit us to spend several hours every week or two with them, we became involved in the evaluation and diagnosis of the language development of children in two bilingual programs. This involvement resulted in 1) access to nearly 1,000 children who were acquiring English as a second language and 2) the development of the *Bilingual Syntax Measure* (BSM), which successfully elicited natural L2 speech from young children. Thus, instead of pursuing the original longitudinal plans, we decided on a cross-sectional design, using small corpuses of natural speech collected from large numbers of children by means of the BSM.

Subjects

The subjects in this study were 60 Spanish-speaking children, from seven schools in the Brentwood, Long Island school district in New York, and 55 Chinese-speaking children in Public School #2 in Chinatown, New York. The distribution of children by age and ethnic background was as follows: of 38 six-year-olds, 18 were Chinese and 20 Spanish; of 39 seven-year-olds, 18 Chinese, 21 Spanish; of 38 eight-year-olds, 19 Chinese and 19 Spanish. Both groups of children were in schools where many of their peers, of both their own ethnic group and of Anglo-American background were native speakers of English. Our subjects all received some ESL instruction and some subject matter instruction in English.

Data Collection and Instrument

All of the data were collected using an expanded version of the BSM to elicit speech. The BSM is designed to measure children's acquisition of English and/or Spanish grammatical structure while they are in the process of becoming bilingual. It consists of seven color cartoon-type pictures and a set of 33 questions in English and Spanish. Each version—either the English or the Spanish—can be used alone—to measure proficiency in one of the

two languages. For this study, the English version was used alone, to which two pictures and six questions were added to increase the opportunities for the children to use certain functors as required by the research methods used in this study.

The administration of the BSM is like chatting with a child about some pleasant pictures. There are no "correct" answers in a conversation of this kind. Different answers to the same questions are expected since children have different backgrounds and perceive the pictures differently. For example, in answer to the question "Which one is he?" one child might say, "He's the fat guy"; another might say, "The big man"; another "The father"; or even, "She's the mother." These are all recorded as the child says them. In effect, the BSM only looks at the degree of proficiency with which the child uses the structures he offers in response to the questions. The questions are constructed so that certain structure types will be almost unavoidable in the child's responses. For example, pointing to a very fat cartoon character, the investigator asks: "Why is he so fat?" Most children offer some form of "Because (s)he eat(s) too much." Thus, one can look to see how the child forms simple finite clauses (word order, gender, number and case for the pronoun, agreement for the verb, the form of the qualifier, etc.). However, less common responses such as "He no do exercise" are also valid data and are coded for the structures the child offered. The aim of the BSM is to elicit natural speech from children, not specific responses.

Having personally administered the BSM to some 800 children, we can confidently report that the children became so absorbed with the content of the "BSM conversation" that even those who could produce only a minimal amount of L2 speech were eager to express their thoughts and opinions about the pictures.

The BSM was administered in the schools, usually in an empty classroom, sometimes in a quiet corner of the regular classroom. The "conversations" were taperecorded, and in addition, the child's responses were written down along with the child's non-verbal gestures that were relevant to the meaning of the utterances. All the written responses were checked against the tape recordings.

Scoring Procedures

The 11 functors regularly elicited from the children appear in Table 1.

TABLE 1

The 11 functors

Functors	Structures	Examples
Pronoun case	Pron-(Aux)-(Neg)-V-(Pron)	*He* doesn't like *him*
Article	(Prep)-Det-(Adj)-{N / Pron ± Poss}-(N)	in *the* fat guy's house
Singular Copula	{NP / Pron}-(*be*)-{Adj / NP}	He*'s* fat
-ing	({NP / Pron})-(*be*)-V+ing	(He's) mopp*ing*
Plural	NP+pl	window*s*
Singular Auxiliary	{NP / Pron}-*be*-V+ing	She*'s* dancing
Past regular	{NP / Pron}-(*have*)-V+pst-{NP / Pron}	He close*d* it
Past irregular	{NP / Pron}-V+pst-({NP / Pron})	He *stole* it
Long plural	NP+pl	house*s*
Possessive	Det-(Adj)-N+poss-(N)	the king*'s*
3rd person singular	{NP / Pron+sing}-V+tns-(Adv)	he eat*s* too much

Pronoun case: Regularly elicited were the pairs *he-him*, *they-them*, and less frequently, *she-her*. These were scored for case whenever they appeared, i.e. in subject position, in indirect or direct object position, and immediately following prepositions. Nominative or accusative pronouns were not scored separately. However, the number of occasions for both forms were about the same. (*It* and *you*, of course, can not be scored for case as the form remains the same in all positions.)

Pronoun number and gender were also scored, but they were eliminated from this study for the following reasons. For pronoun number in English, one deals only with singular or plural. As it turned out, the singular pronouns *he-him*, *she-her*, and *it* were much more frequent than the corresponding plural pair *they-them* (*we-us* was not elicited). Since we did not keep a separate tally of singular and plural, but lumped them together under "pronoun number," the data could not be used to make any conclusions about the acquisition of pronoun number.

Pronoun gender includes masculine (*he-him*), feminine (*she-her*), and neuter (*it*). However, the masculine pronouns were more

frequent than the feminine and neuter pronouns combined, and since masculine, feminine, and neuter were not tallied separately this information could not be used to make conclusions about the acquisition of pronoun gender in general.

Article: Following Brown, both *a* and *the* were combined under the general category "article." The linguistic context in which the articles were most often elicited were prepositional phrases, noun phrases, and adjective and possessive NP constructions.

Copula: Singular and plural copulas were tallied separately, but present and past were lumped together under these categories. (Past copulas were very infrequent). As it turned out, the plural copula was elicited too infrequently to be used in this study. Therefore we used only the singular copula. In scoring, it became very important to note *back-to-back* "s's." In such cases it is impossible to tell where the "s" belongs. For example, in "He's so fat" one cannot be sure whether the copula is present or not in conversational speech. Thus, all cases of *back-to-back "s's"* were omitted from the tally.

-ing: -ing was tallied for any progressive tense, whether it was present, past, or future progressive. Gerunds were not included in the tally.

Plural: Under this category only the "short plural" was included, the *-s* (both /s/ and /z/ allomorphs) attached to nouns such as *door-s, window-s.* The short plural was tallied separately as there is evidence that it is acquired well before the long form (*-es*), (D. C. and L. F. S. Natalicio 1971). Here again, cases of back-to-back "s's" were eliminated from the tally (e.g. "He have windows so he can see").

Auxiliary: As in the case of the copula, the singular and plural were tallied separately, but present and past were combined under each category. As with the copula, the plural auxiliaries were infrequent and thus only the singular auxiliary was included in this study. Back-to-back "s's" were eliminated (e.g. *He's sleeping.*)

Past regular: All allomorphs of the past regular (/t/, /d/, and /əd/) were included. In addition to scoring *-ed* on weak verbs when it was required, *-ed* was also scored as correct when it appeared on strong verbs, such as *eated, tooked,* etc., as it showed clearly that the child had acquired the past *-ed* rule, and was simply applying it to exceptional cases. (See Past Irregular below). The *-ed* was disregarded in cases of back-to-back stops, for the same reason back-to-back "s's" were disregarded. For example, in "He closed the door" it is not possible to tell where the stop belongs—on the end of "close" or the beginning of the article.

Past irregular: These included only main verbs, such as *ate, stole, bit,* and *fell.* Auxiliaries (*were, was,* etc.) were not included in this tally, and neither were past participles such as *gone.* In cases where a child offered "eated," past irregular was scored as a misformation, and past regular was scored as correct.

Long plural: These included all cases where the plural allomorph /əz/ was required, e.g. *houses, noses,* and *fishes.*

Possessive: Only the possessive marker *'s* on nouns was included in this tally, even though we had originally also tallied for possessive pronouns separately. However, the problem of distinguishing *he's* from *his,* since some children pronounced both the same, prohibited use of this data. Occasions of *hers* were too infrequent to permit any analysis.

3rd person singular: These were scored whenever a singular noun or pronoun appeared in subject position immediately followed by a main verb (*does* and *has*) used as main verbs were not included in the tally. Again, cases where back-to-back "s'" obtained were disregarded from the tally (e.g. "He eats so much").

Data Analysis

So far, there have been no cross-sectional studies of natural sequences of L2 acquisition. Consequently we developed new methods of analysis appropriate both for a cross-sectional design, and for L2 speech. In this study we used three different methods of analysis to arrive at a single acquisition sequence. The use of three methods permits us to report our results with confidence.

These methods are described in some detail below, and readers who are more interested in the results than in the methods used to obtain them should disregard the statistical detail in those descriptions.

All our methods of analysis include two core notions adopted from Brown's L1 research: 1) "obligatory occasion" and 2) the scoring of each obligatory occasion as a test item.

Obligatory Occasions: Most verbal utterances that consist of more than one morpheme create occasions where certain functors are required. For example, in the utterance "She is dancing" a mature native speaker of English would never omit the functor *-ing,* because it is obligatory that *-ing* be attached to any verb in English when expressing a present progressive action. When a child speaks a language he is still learning, he will create *obligatory occasions* for functors in his utterances, but he may not furnish the required forms. He may omit them, as in "he like ham-

burgers," where the 3rd person present indicative is missing, or he may misform them, as in "They do hungry," where something was supplied for the copula, but it wasn't quite the right "thing."

Scoring of obligatory occasions: Given this notion of "obligatory occasions," one can use the natural utterances children offer, and at the same time precisely quantify the degree of functor acquisition:

> . . . one can set an acquisition criterion not simply in terms of output but in terms of output-where-required. Each obligatory context can be regarded as a kind of test item which the child passes by supplying the required morpheme or fails by supplying none or one that is not correct. This performance measure, the percentage of morphemes supplied in obligatory contexts, should not be dependent on the topic of conversation or the character of the interaction (Brown 1973:255).

Treating each obligatory occasion for a functor as a 'test item,' each item was scored as follows:

no functor supplied	= 0 (She's dance_)
misformed functor supplied	= 1 (She's dances)
correct functor supplied	= 2 (She's danc*ing*)

Group Score Method

The method bears this label because the group of children for whom an acquisition sequence is to be determined, e.g. the 55 Chinese children in our sample, receives one single score for each grammatical morpheme. The group score for a particular functor is obtained by computing a ratio whose denominator is the sum of all obligatory occasions (where each occasion is worth two points) for that morpheme across all the children in the group, and the numerator is the sum of the scores for each obligatory occasion of that morpheme across all children (see paragraph on scoring obligatory occasions above), and multiplying the resulting quotient by 100.

To illustrate the method, let us take five utterances produced by three children and compute the group score for the Past Irregular.

		Past Irregular	
		Raw Score	Occasion
Child 1:	He *eated* it.	1	2
	This man *taked* it away.	1	2
Child 2:	He *bite* it.	0	2
Child 3:	He *stole* it.	2	2
	The dog *took* it.	2	2
		6	10

$$\text{Group Score} = \frac{6}{10} \times 100 = \underline{\underline{60}}$$

The functors were then ranked according to *decreasing group score* to yield a sequence of acquisition. Sequences of acquisition were obtained for the Chinese and for the Spanish children separately. The comparison of these two sequences were determined by a Spearman rank order correlation and is illustrated in Figure 1.

The advantage of this method is that even a child who has just one obligatory occasion for a morpheme in his speech corpus is admitted into "the group." The assumption made is that the error introduced in using only one obligatory occasion from a child whose performance may be variable, will be minimized by the size of the sample. For example, a child may have one occasion for a functor and miss it, but another child might only have one occasion and provide it. In both cases, the children might be in the process of acquiring the functor in question, meaning that they sometimes supply it, and sometimes not. However, their scores should tend to "even out" when the sample is large enough.

The potential weakness of the method is that variable performance is indeed a fact in syntax acquisition. When a functor is not yet fully acquired, the child sometimes supplies it and sometimes not. Thus the contribution of only one obligatory occasion by a child to the group corpus may not accurately reflect that child's degree of acquisition, and the statistical assumption that a large sample would in the end iron out that inaccuracy is still a real risk. Thus, the Group Means Method was designed to correct for that weakness.

Group Means Method

To reduce the effect of variability, the children who had fewer than three obligatory occasions for the morpheme in question were eliminated from the sample on which a functor score for that morpheme was computed. For example, if a child had two obligatory occasions for the long plural, but three or more for the other ten morphemes, that child would be excluded from the long plural computation, but not from the others. For each child who had three or more obligatory occasions of a functor, a functor score was computed. (For a similar procedure see J. and P. de Villiers 1973.) The functor score, like the group functor score, is obtained by computing a ratio whose demonimator is the sum of the child's scores for each obligatory occasion. The resulting

TABLE 2

Samples for group score and group means methods

Functor	Number of children who had: 3 or more oblig. occasions (Group Means Method)	1 or 2 oblig. occasions	Totals (Group Score Method)
Pronoun case	115	0	115
Article	115	0	115
Progressive -ing	103	12	115
Copula	92	20	112
Plural	115	0	115
Auxiliary	40	54	94
Past regular	35	55	90
Past irregular	106	9	115
Long plural	41	70	111
Possessive	67	48	115
3rd person	52	50	102

quotient was multiplied by 100 to yield a whole number. For example, if a child had six occasions for the copula and correctly supplied the copula three times, misformed it twice and omitted it once, his functor score would be computed as follows:

$$\text{functor score}_{\text{cop}} = \frac{2+2+2+1+1+0}{12} = \frac{8}{12} = .67 \times 100 = 67$$

Mean functor scores were computed for each of the 11 functors, for the entire sample, and for the Chinese and Spanish children separately. Acquisition sequences were obtained by ranking the functors according to *decreasing mean functor scores.* The comparison of the Chinese and Spanish sequences obtained by this method, and the comparison of sequences obtained by both methods for each group were determined by Spearman rank order correlations and are illustrated in Figure 1.

The sample sizes for each method for each functor are tabulated in Table 2.

The Syntax Acquisition Index (SAI)

This method is a variation on one used in first language acquisition research (J. and P. de Villiers 1973). For the reader who is familiar with L1 research, the SAI is a variation of the de Villiers' Method I for ordering functors: "The morphemes were

first ranked according to the lowest MLU sample at which each morpheme first occurred in 90% or more of the obligatory contexts. When more than one morpheme reached this criterion at the same MLU, the ranks were tied" (J. and P. de Villiers 1973). The SAI replaces MLU as an acquisition index, while the 90% acquisition criterion is retained, with the refinement of giving the child "half credit" for a misformed functor. MLU was not used as the acquisition index as it is inappropriate for older children learning a second language.

The SAI is an acquisition index borrowed from the experimental BSM scoring system. It is based on the assumption that it is relatively easy to tell what structure the child offered within the context of the "BSM conversation," even when part of it is absent or misformed. The questions are not only highly structured and specific, but the pictures to which the investigator points suggests the questions in many cases. We found that children who were just beginning to speak relied heavily on gesturing and pointing to the pictures while communicating. For example, to "Why does he live there?" one child pointed to the picture of the fat man and that of the fat house and said "He in here." And whether this is interpreted as "He lives/goes/belongs in here," the structure is still the same. There are times, however, when it is impossible to determine what structure the child offered—as in "He who the fat skinny." Such cases are omitted from consideration altogether. In the event that there is more than one grammatical option available when interpreting a child's response, the shorter option is always chosen in an attempt to stay as close as possible to what the child said so as to give him the benefit of the doubt. For example, the response "For he fat" (to "Why does he live there?") is interpreted as "because he's fat" rather than as "because he's a fat man."

Given that the grammatical form of a child's utterance can be determined for the BSM corpus (following the conditions specified above), it became feasible to think of an overall syntax acquisition index in terms of *how much of the grammatical structure that the child offered in his utterance was wellformed.* The quantification of this notion consists of 1) assigning points to the grammatical version of the child's response and 2) subtracting points from this grammatical form to reflect the still "developing" parts of the child's utterance to obtain a value for it. A system of weighted morphemes is used to assign point values to utterances. The syntax acquisition index is the quotient resulting from computing a ratio whose numerator is the sum of the values of all the utterances of the child and whose denominator is the sum of the values of all

the corresponding grammatical forms, multiplied by 100. For example, if the child response value is 80 and the grammatical form value is 120, the SAI would equal (80/120) (100), or 67.

The SAI's for our sample ranged from 47-100. These indexes were arbitrarily divided into 5-point ranges for this analysis, except for the lowest range. Then, the number of children who had acquired a particular functor, and the number of children who had not acquired that functor were tallied for each 5-point range and for each functor. The criterion of acquisition was as follows: the functor is acquired if it is used 90% correctly in occasions where that particular functor was required (see Group Means Method above for description of computation).

The last step in this analysis is to determine the lowest SAI range in which at least one child had acquired a given functor. The functors were ranked according to the lowest SAI range within which each functor was first acquired by at least one child. For example, to determine the sequence of Copula, Auxiliary, and Past Irregular, the first step is to assign each functor the value of the lowest SAI range within which it was first acquired by at least one child, using the following data:

SAI range		Number of children		
		Copula	Auxiliary	Past irregular
84-80	acquired	•	•	1
	not acquired			13
79-75	acquired	•	•	0
	not acquired			16
74-70	acquired	•	1	0
	not acquired		5	10
69-65	acquired	•	0	0
	not acquired		4	7
64-60	acquired	1	0	0
	not acquired	2	3	4

Thus, Copula = 64-60, Auxiliary = 74-70, Past Irregular = 84-80, and the resulting sequence is Copula-Auxiliary-Past Irregular. All 11 functors were ranked in this manner. The resulting L2 sequence is compared with the sequences obtained by the other two methods, again using Spearman's rank order correlation. Rank orders for each method are reported in Table 4.

RESULTS

We have waited long and labored patiently to answer the question: Is there a natural sequence of L2 acquisition common to children of diverse backgrounds, in particular to Chinese and Spanish-speaking children learning English? The results of our efforts are most rewarding.

1. *The sequences of acquisition of 11 functors obtained for Spanish and Chinese children are virtually the same.* Using two methods—the Group Score and the Group Means methods—acquisition sequences were obtained for 60 Spanish children and 55 Chinese children separately. The results are illustrated in Figure 1.

As Figure 1 illustrates, the contours of the Spanish and Chinese children are strikingly similar, for both methods used in

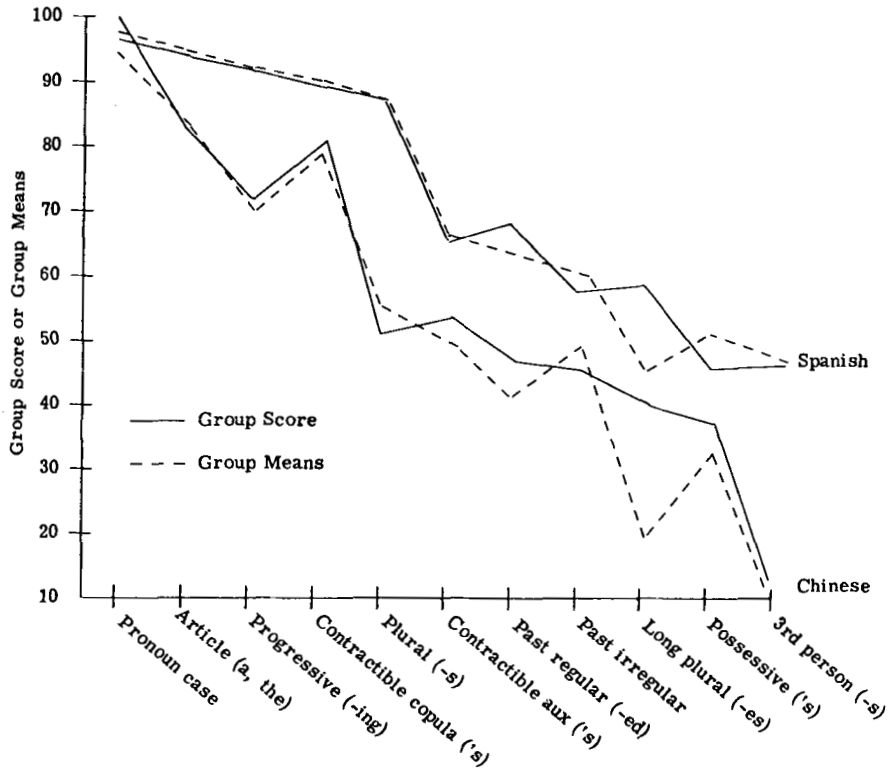

Figure 1. Comparison of L2 sequences obtained by the Group Score and the Group Means methods.

the comparison. Statistically, the similarity is shown by almost perfect Spearman rank order correlations ($p < .001$) for the sequences obtained:

Spanish with Chinese (Group Score Method)	+.95
Spanish with Chinese (Group Means Method)	+.96
Group Score Method with Group Means Method (Chinese)	+.98
Group Score Method with Group Means Method (Spanish)	+.96

These extremely high correlations surpassed the expectations of even those of us who did expect a similarity of sequence (as predicted by the creative construction account of L2 acquisition).

2. *The same sequence of acquisition of 11 functors, obtained by three different methods, provides strong evidence that children exposed to natural L2 speech acquire certain structures in a universal order.* The similarity of sequences reported above justified the use of a third method—the SAI Method described in the

TABLE 3

Syntax-acquisition-index method to determine order of acquisition

SAI		Case	Art	Ing	Cop	Plu	Aux	Pastr	Pasti	Pos	LPlu	3rd
100-96	+acquired	9	7	7	7	9	3	5	8	3	3	1
	-acquired	0	2	0	0	0	0	1	0	1	5	2
95-90	+acquired	26	23	20	21	20	6	⑤	7	8	③	⑤
	-acquired	0	3	5	2	6	2	9	19	8	10	6
89-85	+acquired	18	13	14	12	12	1	0	0	2	0	0
	-acquired	0	5	2	2	6	4	3	18	11	7	9
84-80	+acquired	13	7	9	7	4	3	0	①	①	0	0
	-acquired	1	8	4	6	11	2	3	13	6	6	8
79-75	+acquired	17	12	4	7	③	1	0	0	0	0	0
	-acquired	0	5	11	9	14	5	1	16	12	6	8
74-70	+acquired	10	4	2	2	0	①	0	0	0	—	0
	-acquired	0	6	7	7	10	5	3	10	8	—	6
69-65	+acquired	9	2	4	0	0	0	0	0	0	0	0
	-acquired	0	7	4	6	9	4	3	7	4	1	4
64-60	+acquired	2	②	0	①	0	0	0	0	0	—	0
	-acquired	2	3	5	2	5	3	2	4	0	—	3
59-55	+acquired	1	0	①	—	0	—	—	0	0	—	—
	-acquired	0	1	0	—	1	0	—	1	1	—	—
54-47	+acquired	③	0	0	0	0	—	—	0	0	—	—
	-acquired	0	5	3	1	5	—	—	2	2	—	—
Total		111	115	103	92	115	40	35	106	67	41	52

TABLE 4

L2 rank orders (sequences) obtained

Group Score Method	Group Means Method	SAI Method
1 case	1 case	1 case
2 Article	2 Article	2 Copula
3 Copula	3.5 Copula, -Ing	3.5 Article, -Ing
4 -Ing		
5 Plural	5 Plural	5 Auxiliary
6 Auxiliary	6 Auxiliary	6 Plural
7 Past-reg	7 Past-reg	7.5 Past-irreg, Possessive
8 Past-irreg	8.5 Past-irreg, Possessive	
9 Long Plural		10 Past-reg, Long Plural, 3rd Person
10 Possessive	10 Long Plural	
11 3rd Person	11 3rd Person	

previous section—which combined both Chinese and Spanish children to obtain a single sequence for the entire sample. The results of the SAI analysis are reported in Table 3, where the direction of the circles from the lower left hand corner to the upper right illustrate the order of acquisition obtained. In order to compare this sequence with that obtained by the Group Score and Group Means methods, the group score and the group means for each functor was obtained for the entire sample also. The resulting rank orders for the 11 functors are given in Table 4.

The correlation of the three rank orders are, again, remarkably high, as shown by the following Spearman correlation coefficients ($p < .001$):

Group Score with Group Means	+.98
Group Score with SAI	+.89
Group Means with SAI	+.91

In sum, the sequences of acquisition of 11 English functors for native Chinese- and Spanish-speaking children are virtually the same, as determined by three different methods of analysis.

CONCLUSION

It is difficult to write a conclusion for an investigation that has by no means ended. We have studied a small part of the L2 acquisition of English syntax—11 functors—in an effort to further display the creative construction process in child L2 acquisition. We have found that both Chinese- and Spanish-speaking children

exposed to natural English peer speech acquired 11 functors in approximately the same order. Although only a fragment of English was studied, the results of this study provide a strong indication that universal cognitive mechanisms are the basis for the child's organization of a target language, and that it is the L2 system, rather than the L1 system that guides the acquisition process. The grammar of the 11 functors is wildly different in Chinese and Spanish, and both differ from English in certain ways. For example, Chinese does not express Copula at all, while Spanish does, yet both Chinese and Spanish children acquire Copula at about the same point in the sequence. Spanish plurals are expressed exactly as plurals are expressed in English, yet Plural appears midway in the acquisition sequence, not first, as one would expect if the child's L1 grammar were guiding the L2 process.

The obvious question—which we will not attempt to answer yet—now arises: What is the specific nature of the creative construction process? In other words, what characterizes universal language processing strategies? It would be very tempting to formulate strategies based on the acquisition sequence we obtained. However, we believe that "universal strategies" should be sufficiently abstract and comprehensive so as to predict acquisition orders based on different types of language input, such as languages other than English, or types of speech exposure other than natural speech. For example, if a child is exposed only to a list of vocabulary words and one or two syntactic structures, the resulting product—acquisition sequence—would be quite different from the sequence resulting from exposure to the entire basic framework of the target language, as in exposure to natural speech. Although the language processing strategies available to the child are the constants in the language acquisition process, the language data to which the child is exposed may vary. As the speech product is the result of the interaction between the child and the input language, the product should reflect both, i.e. the product should not be constant if the language input varies significantly. Thus, acquisition sequences and error types should vary to the extent that the language input varies significantly; and "universal strategies" should predict all of those variations.

Realizing this, a major purpose of this study has been to stimulate the much needed research that is required before we can formulate L2 acquisition strategies with any confidence. For this reason, the research methods that have proved productive in our investigations were described in detail. Using these and other tools,

it may become possible to systematically and efficiently explore the process of acquisition of different "second languages" in diverse learning environments. Such a research program is an enormous undertaking, but its potential for both theory and practice is even greater. It would bring us a little closer to deciphering the structure of a child's mind and in so doing, would provide the basis for the development of second language curricula that closely follow the child's own strategies for language acquisition.

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