

THE ACQUISITION OF SESOTHO DOUBLE OBJECT CONSTRUCTIONS*

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Abstract: The mechanisms underlying the acquisition of verb argument structure, including the restrictions on postverbal word order in Double Object constructions, has long been a topic of debate. Part of the controversy regarding how these constructions are learned concerns the potential role of construction effects (e.g., Tomasello 1992). The acquisition of Double Object applicative constructions in the Bantu language Sesotho, where postverbal word order is the same for all verbs, but varies depending on the animacy of the objects, provides an ideal test case for shedding light on this debate. This study examines children’s knowledge of Sesotho word order constraints on Double Object applicative constructions in a forced choice elicited production task. It finds lexical construction effects for four- to twelve-year-olds, but not for adults. The implications of these findings, both for learning the argument structure of verbs, and for language acquisition in general, are discussed.

1. Introduction

Researchers have long debated the mechanisms by which verb argument structure is acquired (e.g., Waryas & Stremel 1974, Cook 1976, Osgood & Zehler 1981, Roeper, Lapointe, Bing & Tavakolian 1981, Mazurkewich & White 1984, Pinker 1984, 1989, Gropen, Pinker, Hollander, Goldberg, & Wilson 1989, Randall 1992, Snyder & Stromswold 1997). Much of the research has focused on languages like English, where lexical semantics plays a role in determining, for example, which verbs undergo dative shift. This has led some researchers to propose that young language learners have early access to semantic verb classes and thematic linking rules (e.g. Pinker 1989). Such proposals have been recently challenged by other researchers suggesting that children have no productive verb syntax or semantics until much later in development. Rather, they propose that young language learners are very conservative, using individual verbs only in the syntactic frames in which they have been heard, and acquiring knowledge of verb argument structure slowly, verb by verb (e.g., Tomasello 1992).

Some of the controversy surrounding these issues may arise from the language specific lexical characteristics of English, where clues to a verb’s argument structure are embedded within the lexical semantics of the verb itself. That is, there are few morphological clues as to the semantic class of the

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verb.¹ In contrast, many languages overtly mark grammatical function changing operations with a specific morpheme. For example, Bantu languages have a productive applicative (or benefactive) morpheme which adds another argument to the verb. This is shown in examples from the southern Bantu language Sesotho, where the animate object must be ordered immediately after the verb (1b).²

- (1) a. *Bana ba-pheh-a nama*
children AGR-cook-FV meat
'The children are cooking meat'
- b. *Bana ba-pheh-el-a mme nama*
children AGR-cook-APL-FV mother meat
'The children are cooking meat for my mother'

In languages where grammatical relations are overtly marked on the verb, lexical learning about word order restrictions should not be necessary. Rather, language learners should be able to apply appropriate word order across the entire class of verbs that is marked with a particular morpheme. We should therefore expect early and error-free use of such constructions across the entire class of verbs to which they apply.

Examining the acquisition of verb argument structure in languages that overtly mark argument structure relations provides an ideal test case for evaluating the hypothesis that young language learners are conservative, learning word order restrictions on an item by item basis. Rather, we predict that learners will make early and robust syntactic generalizations, and applying these across the board, regardless of lexical item. One of the most studied and best understood constructions in Bantu languages is the Double Object Applicative – one which has received intensive crosslinguistic examination (cf. Bresnan & Moshi 1990 for review). The purpose of this study is therefore to assess children's early awareness of the postverbal word order restrictions on Sesotho Double Object Applicative constructions to determine 1) when they begin to make syntactic generalizations regarding postverbal word order, and 2) if there is any evidence of lexical learning effects.

The rest of the paper is organized as follows: Section 2. provides a brief introduction to Sesotho Double Object Applicatives and discusses findings from previous studies. Section 3. outlines the experimental procedures used to examine children's knowledge of postverbal word order in Sesotho Double Object Applicatives. Section 4. presents the experimental results. Section 5. discusses the implications of the findings for learning the argument structure of verbs, and for language acquisition theory more generally. The paper concludes in Section 6.

2. The Acquisition of Sesotho Double Object Applicatives

Double Object Applicative constructions have been extremely well studied across a variety of Bantu languages (e.g. Sesotho – Morolong & Hyman, 1977, Machobane, 1989; Haya – Duranti & Byarushengo, 1977, Hyman & Duranti, 1982; Chichewa – Marantz, 1984, Baker, 1988, Alsina & Mchombo, 1990; Kichaga – Bresnan & Moshi, 1990; Chishona – Harford, 1993). Although there are differences amongst Bantu languages as to whether both objects or only the applicative object can

¹ A possible exception would be those verbs that do not undergo the dative alternation in English. These are largely derived from Latinate stems that are typically multisyllabic.

² A modified (more phonetically transparent) version of Lesotho orthography has been used. Glosses are as follows: ADJ = adjectival agreement, AGR = subject agreement, APL = applicative, CAUS = causative, FUT = future, FV = final vowel, OBJ = object marker, PERF = perfect. Well-formed target utterances are provided in parentheses as needed (i.e., in children's utterances).

show true object properties of passivization and becoming an object clitic, most languages exhibit the same postverbal word order, with the Benefactive argument occurring immediately after the verb, followed by the Theme. However, in Sesotho, it is the Animate object that must occur immediately after the verb. If the animacy of the objects is the same – i.e. both Animate or Inanimate, either order of objects is permitted, with resulting ambiguity (cf. Morolong & Hyman, 1977, Machobane, 1989). The challenge for the language learner is then to determine that Animate, rather than Benefactive arguments, must be placed immediately after the verb. Importantly, these word order effects apply to all ditransitive applicative verbs.

A search of the Sesotho Corpus (98 hours of child-adult spontaneous speech) found that Sesotho-speaking two- and three-year-olds occasionally use Double Object Applicatives, and when they do so, they use correct word order (cf. Demuth 1998, Demuth, Machobane & Moloji 2000).

- (2) H (2;8) > K (1st author)

kilo nkela NtSelleng letsopa
 (ke-ilo-nk-el-a NtSelleng letsopa)
 AGR-FUT-take-APL-FV NtSelleng clay
 ‘I’ll grab some clay for NtSelleng.’

- (3) N (2;8)

ebileng ke-tla-rek-el-a Tsebo le-leng
 even AGR-FUT-buy-APL-FV Tsebo ADJ-another
 ‘I’ll even buy another one for Tsebo.’

- (4) N (3;1) > K (1st author)

ke-ilo-lok-is-ets-a ngwana dikobo|
 AGR-FUT-get_ready-CAUS-APL-FV children blankets
 ‘I am going to get the blankets ready for the children.’

- (5) N (3;1)

mme o-itse o-tla-rek-el-a ausi MantSo masale
 mother AGR-say/PERF/FV AGR-FUT-buy-APL-FV sister MantSo earrings
 ‘Mother said she will buy sister Mantsho earrings.’

In addition, previous study found that although three-year-olds performed at chance (50% correct), four-year-olds were significantly above chance in placing the Animate object immediately after the verb in forced choice elicited production tasks (Demuth, Machobane & Moloji in submission). However, they also performed significantly worse than adults, only exhibiting correct word order 64% of the time. These findings indicate that children have some understanding of the Sesotho-specific rule that requires the Animate (rather than Benefactive) argument to be placed immediately after the verb. However, there still remains the question of why their performance was not perfect. If learners know the rule for Sesotho, why is it not applied across the board?

One possibility is that there is individual variation, with some learners having learned the rule, and others not. However, this hypothesis was not borne out. Another possibility is that learners did better on some lexical items and worse on others. And this was in fact the case for the three-year-olds, with non-significant tendencies in this direction for four-year-olds as well. Regression analysis showed worse performance on the more frequent verbs. That is, there was a negative frequency effect. Although the direction of the effect was initially unexpected, it was less surprising once it was considered that most ditransitive applicatives used in everyday discourse have one of the arguments realized as a pronominal clitic. That is, although ditransitive applicatives occasionally surface as Double Object constructions (6a), they are much more frequently realized with the Benefactive argument cliticized to the verb (6b).

- (6) a. *Bana ba-pheh-el-a mme nama* SVOO
 children AGR-cook-APL-FV mother meat
 ‘The children are cooking meat for my mother’
- b. *Bana ba-mo-pheh-el-a nama* SObj-VO
 children AGR-OBJ-cook-APL-FV meat
 ‘The children are cooking her some meat’

Thus, the more frequently a ditransitive applicative verb is used, the more frequently it occurs in the surface syntactic frame with a cliticized pronomial (6b) rather than as a Double Object construction (6a). Results from Demuth et al. (in submission) show that Sesotho-learners are sensitive to the distributional properties of the input, and that their expectations regarding the surface syntactic frames in which specific verbs will occur apparently effects their performance on the elicited production task. Such findings provide support for the hypothesis that language learners are conservative, learning verbs and their argument structures on a case by case basis.

These findings must be treated with caution, however, since this previous study used only five verb stimuli. The purpose of the present study was to replicate the previous study, but with a larger number of verb tokens. If it is still found that there is worse performance on high-frequency applicative verbs (which typically occur in the alternative surface syntactic frame in the input), this would provide additional support for the proposals that language learners are conservative. If, on the other hand, learners show no lexical frequency effects, this would indicate that they are applying a syntactic rule across the board.

3. Forced Choice Elicited Production Task

The experimental methods used in this study were the same as those used in Demuth et al. (in submission). The only differences were that three other conditions were included to examine learners knowledge of animacy hierarchy effects. Since these conditions were not part of the original study they will not be discussed here. A fourth condition involved two inanimate objects. Since either order of objects is permitted, this condition will also not be discussed here. The other difference was that the present study included 12 verbs for each condition rather than 5. It was hoped that this increase in the number of verb tokens would permit a more in depth examination of possible lexical effects.

Subjects

The experiments were conducted in the southern African country of Lesotho. Child subjects were drawn from Sesotho-medium pre-schools and primary schools in the capital city Maseru and the university area in Roma, and included 64 children between the ages of 4 and 12 (see Table 1). Twelve adults were also tested at the National University of Lesotho in Roma and included lecturers, students and staff. The children were all monolingual speakers of Sesotho, English being introduced as a subject only in first grade. The adults were generally bilingual in Sesotho and English. Each age group was balanced for gender.

Table 1. Subjects

Number	Age group	Mean Age	Age Range
16	4-year-olds	4;6 yrs.	(4;0-5;5)
16	6-year-olds	6;1 yrs.	(5;6-6;11)

16	8-year-olds	8;3 yrs. (7;6-8;11)
16	12-year-olds	12;5 yrs. (12;0-12;11)
12	Adults	42 (33-58)

Stimuli

The stimuli contained two sentence pairs for each verb, one with grammatical Animate + Inanimate word order, and one with ungrammatical *Inanimate + Animate word order (e.g. ‘I cooked the child the meat’ vs. *‘I cooked the meat the child’). All stimulus sentence pairs were composed of common Sesotho verbs used in the applicative. These were constructed to be as short as possible to facilitate processing and production by the younger children. The stimuli therefore contained null-subject sentences with 8-11 syllables, where the verb was inflected only for the applicative (i.e. no other verbal extensions such as perfect aspect, passive, causative, or reciprocal were used) (cf. Demuth 1998; Idiata 1998).

The order of objects was counterbalanced across stimulus sentence pairs (e.g. half had the Animate + Inanimate order of objects mentioned first). These stimulus sentence pairs were then randomized along with the stimuli from the other four conditions (not discussed here) and divided into two blocks. Both blocks of stimuli were then audio recorded by the second author.

Procedure

The experiments took place in a quiet room at schools for the children and at the University for the adults. Subjects sat at a desk with the tape recorder, stereo speakers, a recording microphone and two or three experimenters. Subjects were then familiarized with two hand puppets (a sheep and a panda bear whose mouths opened), and were explained the rules of the ‘game’. They were told that both puppets came from another country and were learning Sesotho. Sometimes they spoke good Sesotho and sometimes not. The subjects were asked to listen carefully as each puppet said a sentence. The prerecorded stimuli were played for the subjects out of speakers placed in front of them on a table. Each puppet was animated in turn by one of the experimenters - usually the third author, while a second experimenter played the next sentence pair from the audio tape. Subjects were asked to point to the puppet that spoke Sesotho the best. The experimenter then asked the subjects *O-itseng?* ‘‘What did it say?’’. After five practice trials, the test sentence-pairs were presented. All subject responses were recorded on a second tape recorder and marked by the second experimenter on a coding sheet. Half of the subjects (balanced for gender) heard the first block of stimuli first, and half heard the second block first. The younger children were given a break between the two blocks of stimuli. The child subjects were given an orange at the conclusion of the experiment. The entire procedure took approximately 20 minutes – sometimes less for the adults and longer for some of the younger children. The children generally enjoyed the task, especially the interaction with the puppets. Any child who could not carry out the task (i.e. produce one of the modeled stimuli) after a repeat of the five practice trials was discarded from the study.

Coding

Each subject’s elicited production responses were audio recorded and manually marked on a scoring sheet by a second experimenter. The first author was present at approximately ten percent of the sessions, and also manually coded subject responses. Intercoder reliability was 96%. The tape recording was consulted in the few cases where residual questions remained. Responses that contained Animate + Inanimate word orders were coded as ‘correct’, and those with Inanimate + Animate word order as ‘incorrect’.

Occasionally subjects did not repeat either of the sentence stimuli. If an object was changed but the animacy remained the same (e.g. *banana* ‘girls’ changed to *ngwana* ‘child’), the response was analyzed for grammaticality along with the rest of the responses. However, if the animacy of the

objects was changed these responses were classified as non-compliant errors and were excluded from the analysis. An analysis of errors in provided is Table 2. Although the younger children had more errors than the older children or adults, the total number of errors was low (only 14 out of a total of 336 stimulus responses, or 4%). That is, subjects performed very well on this task. This was expected since the animacy characteristics of the Benefactive and Theme arguments used in these stimuli were those most frequently encountered in everyday

Table 2. Number and Types of Non-Compliant Errors (out of a total of 336 stimuli)

Age group	Grammatical Repairs	Ungrammatical Repairs	Incomplete	Total
4-year-old	1	2	3	6
6-year-olds	3	–	1	4
8-year-olds	–	–	1	1
12-year-olds	–	1	1	2
Adults	1	–	-	1
Total	5	3	6	14

speech. However, three types of errors did occur. There were six cases where subjects did not complete the sentence, only providing one object. These were classified as ‘incomplete’. The remaining errors consisted of ‘repairs’, where changes to the objects resulted in grammatical or ungrammatical word orders. The grammatical repairs were the most frequent, and were of two types: The inanimate Theme was either changed to a inanimate Locative (e.g. *re bulela basali lemanti* ‘we’re opening the door for the women’ > *re bulela basali lemanti_{ng}* ‘we’re opening at the door for the women’) or to an animate noun (*re etsesa baeti matlo* ‘we’re making the visitors a house’ > *re etsesa batho baeti* ‘we’re making the people some visitors’). Both repairs result in grammatical sentences with appropriate word order, but in one the thematic role was changed, and in the other the animacy of the Theme was changed. The ungrammatical repairs, which were few, exhibited similar types of changes, but resulted in ungrammatical word order (i.e. placing an Inanimate object before an Animate object). All three types of errors were therefore excluded from the analysis.

Predictions

Since the experiment involved a forced choice between two options, chance performance was 50%. Performance at this level therefore shows no preference for postverbal word order in Sesotho Double Object Applicatives. However, if subjects performed above chance, this would indicate some knowledge/preference for a certain word order. We therefore predicted that, if subjects were aware of the animacy effects on word order in Sesotho Double Object Applicatives they would perform above chance (above 50%). This would indicate that they had learned the Sesotho grammatical rule for placing the animate object after the verb. However, if subjects performed significantly better on some lexical items than others, this would provide support for a more conservative, lexical approach to learning the argument structure of Sesotho Double Object applicatives.

Results

The results are presented in Table 3. As predicted, all age groups performed significantly above chance (50%). Interestingly, both the four-year-olds and the six-year-olds showed better performance than that reported in the earlier study (four-year-olds: 64%; six-year-olds: 72% (Demuth, et al. in submission)). We suggest that the increase in number of stimuli (from 5 to 12) provided a more

accurate picture of children’s competence with these constructions. The fact that the standard deviation in the data is low, and there were very few non-compliant errors overall, provides additional support for this position. It thus appears that the task was taping children’s underlying knowledge of Double Object Applicatives.

Table 3. Mean Percentage (and Standard Deviation) of Animate Benefactive Arguments Correctly Placed Immediately after the Verb.

Age Group	Percent Correct Word Order
4-year-olds	0.80 (0.04)**
6-year-olds	0.82 (0.02)**
8-year-olds	0.83 (0.04)**
12-year-olds	0.94 (0.02)**
Adults	0.99 (0.01)**

**significantly greater than chance (0.50), $p < 0.0001$

Despite the younger children’s better performance, however, there were still significant differences found between child age groups, indicating that the younger children were still not performing as well as adults. A one-way ANOVA (5 age groups) showed significant differences in performance between groups on this condition ($F(4,71)=7.58$, $p < 0.0001$). Post-hoc tests (Bonferroni) show that twelve-year-olds performed significantly better than four-year-olds ($p=0.008$), and the difference between twelve-year-olds and six- and eight-year-olds approached significance ($p < 0.1$ for both groups). However, no significant difference was found between the four-, six- and eight-year-olds. Adults performed significantly better than all child age groups except twelve-year-olds ($p < 0.01$ for all groups). Thus, it would appear that by the age of 12 children have begun to show adult-like levels of performance on placing the Animate object immediately after the verb in Sesotho Double Object Applicatives. This confirms the findings of Demuth et al. (in submission) who suggested that learning the word order restrictions on Sesotho Double Object Applicatives takes several years to master, and that eight-year-olds are not yet adult-like in their performance.

The second question addressed in this study was the possibility of lexical effects on performance: would subjects perform better on some stimulus verbs than others? And if so, would this be related to the relative frequency of the base verb stem or applicative verb stem in the everyday input that Sesotho learners typically hear? Regression analysis showed a marginally significant negative effect on performance when all the child data was taken together ($F(1,10)=3.49$, $p=0.0912$). This is shown in bold in Table 4. However, this effect was extremely small, showing a decrease in performance of 9% for each occurrence of the applicative verb ($|t|=1.869$, $p=0.091$), and accounted for relatively little of the variance in performance ($R^2=0.26$). Regression analysis also showed a marginally significant negative effect on performance when only four-, six- and eight-year-olds were considered together ($F(1,10)=4.08$, $p=0.0711$) but again this effect was quite small - a decrease in performance of 11% per occurrence of the verb in the applicative ($|t|=2.019$, $p=0.071$), again accounting for relatively little of the variance in performance ($R^2=0.29$). These results are again very similar to the findings from Demuth et al. (in submission), where there was a marginally significant negative effect of applicative verb frequency for younger children.

Table 4. Mean Percentage of Animate Benefactive Arguments Correctly Placed Immediately after the Each Verb Stimulus.

Verb Frequencies = frequencies of each verb stem and applicative verb stem in the Sesotho corpus. Age groups in bold show significant negative correlations with the frequency of the applicative verbs stems in the Sesotho.

Verb		Verb Frequencies		Number Correct by Age Group				
		Stem	Appl. 4	6	8	12	Adult	
batla*	‘to seek’	71	17	0.94	0.88	0.88	1.00	1.00
bina	‘to sing’	293	27	0.93	0.81	0.94	1.00	1.00
bula	‘to open’	128	36	0.75	0.67	0.94	0.94	0.92
ebola	‘to peel’	122	18	0.75	0.94	0.88	0.88	1.00
etsa	‘to do’	2450	90	0.88	0.75	0.81	1.00	1.00
kha	‘to pick/draw’	82	20	0.69	0.80	0.94	0.94	1.00
ngwatha	‘to feed’	123	95	0.73	0.73	0.75	0.93	1.00
nka	‘to take’	1742	22	0.79	0.94	0.67	0.81	1.00
pata	‘to hide’	234	3	1.00	0.87	0.88	1.00	1.00
roba	‘to break’	121	17	0.80	0.69	0.81	0.94	1.00
seha	‘to cut’	114	16	0.67	0.88	0.75	1.00	0.92
tSela	‘to pour’	409	80	0.63	0.94	0.69	0.81	1.00

**batla* can mean both ‘to seek’ and ‘to want’.

5. Discussion

Although four- and six-year-olds performed better in this study than they did in Demuth et al. (in submission), they still exhibited somewhat worse performance on those applicative verbs that most frequently occur in the input. Why should this be the case? Demuth et al. (in submission) proposed that the more an applicative verb is used, the more frequently it appears with a pronominalized preverbal clitic rather than in a Double Object construction. That is, the higher the applicative verb frequency in the input the greater the competition between pronominalized and Double Object surface syntactic frames. This appears to pose greater the parsing difficulty for children.

We suggest that it is this parsing difficulty that gives rise to worse performance on the most frequent applicative verbs. Thus, the greater the expectation that a particular applicative verb will occur in different surface syntactic frame, the worse the performance on the Double Object elicited production task. Although rarely considered in language acquisition research, such ‘competition’ effects have been long recognized in the adult and infant psycholinguistic processing literature, where lexical frequency effects are well-known (e.g. Luce, Pisoni, & Goldinger 1990, Jusczyk & Luce 1994). It should not be surprising, then, to find that they also occur in the course of child language acquisition.

These findings pose a problem for current theories of language acquisition which are polarized between proponents of rule-based syntactic learning (where individual lexical items play no role) versus advocates of lexical learning/construction grammar (where syntactic generalization is delayed). Rather, these data point to an intermediary position, where there is evidence of both productive syntax and lexical construction effects. Although the present study was concerned with learning the argument structure of verbs, we suggest that lexical learning/construction effects are

wide spread. Theorists have long tried to tap children's syntactic competence through comprehension tasks, act out tasks and grammaticality judgement tasks (cf. McDaniel, McKee & Cairns 1996, Crain & Thornton 1998). Many of these tasks use only a very few sentence types, and a very few lexical items, drawing broad-based conclusions about children's linguistic competence based on relatively impoverished data. In addition, much of this testing is done in a linguistic vacuum, where issues of the discourse use of the test constructions (in both the input and the experiment) and the existence of surface syntactic competitors in the input, is largely ignored. Early work on relative clauses suffered from these shortcomings until Hamberger & Crain (1982) realized that the appropriate use of restrictive relative clauses required the existence of a contrastive set. In addition, much of the early work on passives neglected to set up discourse conditions felicitous to eliciting passive constructions, concluding that children had little competence in this area (Horgan 1978). Furthermore, although children are generally reported to have mastered Principle A of the binding theory by an early age, Matthei (1981) found poor performance when the reflexive anaphor was *eachother*. It was suggested that children might perform better on more frequent reflexives such as *herself*. And finally, some studies have noted that verbs that undergo Dative Shift most frequently occur in that form when the Recipient is a pronoun (e.g. *I gave her the book* vs. *I gave Sue the book*) (cf. Waryas & Stremel 1974). Others have noted lexical effects in learning these same constructions (e.g. Roeper, Lapointe, Bing & Tavakolian 1981). All of these findings suggest not only that learners are highly sensitive to the distributional properties of the input, but that we as researchers must be as well. Only by taking into account the larger linguistic context in which certain linguistic constructions are used can we more effectively design experimental stimuli and more accurately interpret the results. This is essential for providing breakthroughs in our understanding of language-learners' linguistic competence.

6. Conclusion

This study examined four- to twelve-year-olds knowledge of word order effects in Sesotho Double Object applicative constructions using a forced choice elicited production task. It found that all age groups performed significantly above chance in placing the animate object immediately after the verb, showing strong evidence of rule-based learning. However, the study also found a weak negative correlation with the frequency of the applicative verb in the input: the more frequent the verb, the worse the performance, especially for the younger children. These findings are less surprising once it is considered that ditransitive applicatives in everyday Sesotho discourse generally occur with the Benefactive argument realized as a preverbal clitic rather than a postverbal NP. Learners appear to be very sensitive to the distribution of lexical items in these alternate surface syntactic frames, and apparently expect verbs to occur in the frames in which they are normally heard. Thus, although subjects showed that they 'know' that the animate object should be placed immediately after the verb in Double Object constructions, their performance was worse with verbs that generally occur in an alternate surface syntactic frame. It would therefore appear that rule-based syntactic knowledge can be effected by competition from alternate surface syntactic forms. That is, both rules and lexical effects influence learners' performance on tests of grammatical competence.

Much of the language acquisition literature has been concerned with how and when children begin to make syntactic generalizations, with much of the focus on 'when' a particular linguistic structure has been 'learned'. There has been little attention given, however, to the process needed to attain 'mastery' of a construction, nor to how to interpret levels of performance that may only reach 70% or 80%. We suggest that lexical and/or

construction effects of the kind found in this study, which may lead to processing and production difficulty, are responsible for much of the less than perfect performance on many experimental tasks. After all, if adults show slowed reaction times to less predictable stimuli, why shouldn't children show degraded performance as well?

The findings from this study hold both methodological and theoretical implications for the field. First, they suggest that we as researchers must become more aware of the larger linguistic context (syntactic, discourse) in which the constructions we investigate are typically used. We should then be able to design more effective experiments, and be able to interpret the results in a more parsimonious way, attributing greater rule-based knowledge to children, while at the same time realizing possible lexical and/or construction effects (Naigles 1996). Thus, although proposals that there is a lack of early rule-based learning may be too strong (Tomasello 1992), the fact that learners are very sensitive to aspects of the input, and are using this to construct their early grammars, needs to be taken seriously (cf. Demuth 1989, Lievin, Pine & Baldwin 1997). We know, of course, that children often generalize beyond the input they receive (e.g. Bowerman 1974, 1990), and recent research indicates that this sometimes happens in unexpected ways (e.g. Hyams 1999, Roark & Demuth 2000, Strömqvist & Ragnarsdóttir 2000). Future research will need to examine children's acquisition of language more closely in an attempt to explain the course of language learning, and the factors that contribute to developing grammars over time.

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