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SENTENCES AS ISLANDS: ON THE BOUNDEDNESS OF A′-MOVEMENT IN AMERICAN SIGN LANGUAGE

0. INTRODUCTION

There are many psycholinguistic questions concerning the so-called 'Island Constraints' which restrict the range of A′-movement across languages. In this paper, I will discuss the boundedness of A′-movement in American Sign Language (ASL), and raise some of the psycholinguistic questions regarding the learnability and acquisition of these constructions. ASL is the visual-gestural language used by deaf people in the United States and parts of Canada. A′-movement in ASL is found, but it is bounded even more than A′-movement in English, as will be shown. However, ASL also allows null and overt resumptive pronouns to save potential island violations, so that many structures which might appear to be such violations are actually grammatical. In the first section of this paper, the facts of the boundedness of A′-movement in ASL will be discussed.

The learnability and acquisition questions raised by the facts discussed in section I will be addressed in section II. These include the following: (a) How and when do children learn that A′-movement is so bounded in ASL? (b) How and when do children learn that the null pronoun, like overt pronouns, can act as a resumptive pronoun saving island violations? In this paper, these questions are addressed from theoretical and empirical points of view.

Theoretically, the learnability questions can be answered by an analysis of A′-Movement in ASL which turns out making ASL the unmarked case. Thus, children learning ASL should be expected not to err in their early productions of the relevant structures; furthermore,

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children learning languages which differ from ASL will have abundant positive evidence for their target grammars.

Empirical evidence for this analysis was obtained from an experiment on the acquisition of ASL. Deaf, signing children from the ages of three to ten took part in an imitation test which examined their use of null and overt resumptive pronouns. The results indicated that all the children used null and overt arguments appropriately as resumptive pronouns, never violating the island constraints in spite of the many apparent exceptions which the resumptive pronouns sanction. This evidence is taken to provide support for the psycholinguistic reality of island constraints.

1. A′-MOVEMENT IN ASL

ASL is underlyingly SVO (see e.g., Liddell, 1980; Padden, 1983). In (1b) and (2b) are given examples of topicalization, which is prevalent in ASL.[1]

(1) (a) $_{a}$JOHN LIKE $_{b}$MARY.
(John likes Mary.)

t
(b) $_{b}$MARY$_{i}$, $_{a}$JOHN LIKE t_i.
(Mary$_i$, John likes t_i.)

(2) (a) $_{a}$JOHN $_{a}$GIVE$_{b}$ $_{b}$MARY $_{c}$BOOK.
(John gave Mary the book.)

t
(b) $_{b}$MARY$_{i}$, $_{a}$JOHN $_{a}$GIVE$_{b}$ t_i $_{c}$BOOK.
(Mary$_i$, John gave t_i the book.)

In (3), we see examples of wh-movement in ASL.

whq
(3) (a) $_{a}$WHAT$_{i}$ $_{b}$MARY EAT t_i?
(What$_i$ did Mary eat t_i?)

whq
(b) $_{a}$WHO$_{i}$ $_{b}$JOHN $_{b}$TELL$_{a}$ t_i $_{c}$BILL 'LIKE' $_{d}$MARY?
(Who$_i$ did John tell t_i that Bill has a crush on Mary?)

However, although syntactic movement is observed, as these examples show, in examples (4) and (5) we see that movement is constrained. These examples, like their English counterparts, violate Ross' (1967) island constraints.

t
(4) *$_{a}$MOTHER$_{i}$, $_{f}$PRONOUN DON'T-KNOW 'WHAT'$_{j}$ t_i LIKE t_j.
(*Mother$_i$, I don't know what t_i likes.)

t
(5) *$_{a}$MOTHER$_{i}$, $_{f}$PRONOUN $_{f}$HIT$_{b}$ $_{b}$SISTER, $_{c}$PRONOUN TATTLE$_{a}$
(*His mother$_i$, I hit my sister and he told t_i.)

(Padden, 1983)

So far, these examples show ASL behaving quite like English. But in (6) and (7) we see that ASL has an escape hatch quite different from English. Both overt and null pronouns can act as resumptive pronouns in ASL, and sentences using this escape hatch are judged perfectly grammatical (unlike the marginal status of resumptive pronouns in many dialects of English). In (6a) there is an overt resumptive pronoun, and in the first conjunct of (7) the overt pronoun is required. But what saves the apparent island violation in (6b), and why is the overt pronoun optional in the second conjunct of (7)?

t
(6) (a) $_{a}$MOTHER$_{i}$ $_{f}$PRONOUN DON'T-KNOW 'WHAT' $_{a}$PRONOUN LIKE.
(Mother$_i$, I don't know what she$_i$ likes.)

t
(b) $_{a}$MOTHER$_{i}$ $_{f}$PRONOUN DON'T-KNOW 'WHAT' $_{a}$SEND$_{i}$.
(Mother$_i$, I don't know what (she$_i$-) sent (-me).)

whq
(7) WHO $_{a}$MARY LIKE *($_{b}$PRONOUN) (BUT) $_{c}$JOHN $_{c}$HATE$_{b}$ ($_{b}$PRONOUN)?
(Who$_i$ does Mary like (him$_i$) but John hate (-him$_i$)?)

In (6b) and the second conjunct of (7), a null resumptive pronoun is available with the same rescue status as the overt resumptive pronouns in (6a) and the first conjunct of (7). In my earlier work I have argued that ASL allows syntactically real null arguments of two types. One type occurs with verbs which are marked for agreement with subject

and/or object. As long as agreement marking is present, a null argument is possible (although optional); in Lillo-Martin (1986b) I have argued that this null argument is *pro* (cf. McCloskey and Hale, 1984). Thus, *pro* acts as a resumptive pronoun saving the apparent island violations in (6b) and (7). In (8) and (9) are given further examples of null arguments occurring in ASL with verbs which mark agreement for subject and/or object.[2]

(8) YES, *pro* $_{a}$SEND$_{b}$ *pro*.
(Yes, (she-) sent (it) to (-her).)

(9) (a) $_{a}$MARY KNOW-WELL PAPER FINISH *pro* $_{a}$GIVE$_{b}$ *pro*.
(Mary$_i$ knows (she$_i$-) gave the paper to (-him).)

(b) $_{a}$MARY KNOW-WELL PAPER FINISH *pro* $_{b}$GIVE$_{a}$ *pro*.
(Mary$_i$ knows (he-) gave the paper to (-her$_i$).)

Null arguments also occur with verbs which are not marked for agreement, as illustrated in (10).

(10) $_{a}$DENNIS $_{a}$FLY$_{b}$ $_{b}$CALIFORNIA LAST-WEEK.
hn
ENJOY SUNBATHE[dur].
(Dennis flew to California last week.
(He's) enjoying a lot of sunbathing.)

However, I have argued (Lillo-Martin, 1986b) that these null arguments are generally *not* instances of *pro*. Rather, following Huang's (1984) analysis of null arguments in Chinese, I argued that these null arguments arise from topicalization of a null topic, which means that the empty category *in situ* will be a variable, not *pro*. This analysis is illustrated in (11a and b). Importantly, there is one exception to the generalization that null arguments of verbs which are not marked for agreement are variables. An empty embedded subject which is coreferential with a matrix subject is *pro*, illustrated in (11c). This will be an important distinction in the discussion of acquisition. These examples are merely illustrative; the reader is referred to Lillo-Martin (1986b) for argumentation and analyses of these structures.

(11) (a) [0$_i$] $_{a}$JOHN SAY $_{b}$BILL LIKE t_i.
(John$_j$ says Bill likes e$_i$.)

(b) [0$_i$] $_{a}$JOHN SAY t_i LIKE BILL.
(John$_j$ says e$_i$ likes Bill.)

(c) $_{a}$JOHN SAY *pro* LIKE BILL.
(John$_i$ says (he$_i$) likes Bill.)

So ASL does allow both null and overt resumptive pronouns as escape rafts from potential islands. However, the boundedness of ASL wh-movement is even more restricted. In (12)—(15) we see examples of topicalization which illustrate (a) that even sentences are 'islands' in ASL, and (b) that the same resumptive pronoun escape hatch can be used with sentence islands. Examples (12) and (13) show that extraction from a deeply embedded position is ungrammatical unless there is a resumptive pronoun; (14) and (15) show that this is true even for extraction from one level of embedding.[3,4]

(12) (a) *$_{a}$THAT $_{a}$COOKIE$_i$, $_{t}$PRONOUN HOPE $_{b}$SISTER
t
SUCCEED $_{b}$PERSUADE$_{c}$ $_{c}$MOTHER EAT t_i.

(b) $_{a}$THAT $_{a}$COOKIE$_i$, $_{t}$PRONOUN HOPE $_{b}$SISTER
t
SUCCEED $_{b}$PERSUADE$_{c}$ $_{c}$MOTHER EAT $_{a}$PRONOUN$_i$.
(That cookie$_i$, I hope my sister manages to persuade my mother to eat it$_i$.)

(13) $_{a}$EXERCISE CLASS$_i$, $_{t}$PRONOUN HOPE $_{b}$SISTER
t
SUCCEED $_{b}$PERSUADE$_{c}$ $_{c}$MOTHER TAKE-UP$_{a}$ t_i.
(Padden, 1983)
(The exercise class$_i$, I hope my sister manages to persuade my mother to take (-it$_i$).)

(14) (a) *$_{a}$THAT $_{a}$COOKIE$_i$, $_{b}$SISTER $_{b}$PERSUADE$_{c}$ $_{c}$MOTHER
t
EAT t_i.

(b) $_{a}$THAT $_{a}$COOKIE$_i$, $_{b}$SISTER $_{b}$PERSUADE$_{c}$ $_{c}$MOTHER
t
EAT $_{a}$PRONOUN$_i$.
(That cookie$_i$, my sister persuaded my mother to eat it$_i$.)

t

(15) $_{a}$EXERCISE CLASS$_{i}$, $_{b}$SISTER $_{b}$PERSUADE$_{c}$ $_{c}$MOTHER TAKE-UP$_{a}$ t_{i}.
(The exercise class$_{i}$, my sister persuaded my mother to take (-it$_{i}$).)

Wh-questions are similarly bounded in ASL. The escape rafts available do vary for some signers, however. Although none of the consultants I have checked with accept (16a) or (b) as ASL, some do allow a null or overt resumptive pronoun as in (c), and at least one dialect allows the wh-word *in situ*, as in (d). (In the following, I will be using the judgements of those who do accept (16d).)

whq

(16) (a) *$_{a}$WHO$_{i}$ $_{b}$BILL FEEL $_{c}$JOHN $_{c}$'LIKE'$_{a}$ t_{i}?

whq

(b) *$_{b}$BILL FEEL $_{a}$WHO$_{i}$ $_{c}$JOHN $_{c}$'LIKE'$_{a}$ t_{i}?

whq

(c) ?$_{a}$WHO$_{i}$ $_{b}$BILL FEEL $_{c}$JOHN $_{c}$'LIKE'$_{a}$ $_{a}$PRONOUN$_{i}$?

whq

(d) $_{b}$BILL FEEL $_{c}$JOHN $_{c}$'LIKE'$_{a}$ $_{a}$WHO?
(Who$_{i}$ does Bill think John has a crush on t_{i}?)

There is evidence that even when the wh-word is left *in situ*, movement takes place at LF (see Lillo-Martin, 1990). This movement is not bounded. In (17) and (18), we see examples of wh-questions which are bad with syntactic movement (the (a) examples); though when the wh-word is left *in situ* for movement at LF, the examples are fine (the (b) examples).

whq

(17) (a) *$_{a}$WHO$_{i}$ $_{b}$JOHN WONDER $_{c}$WHO LOVE t_{i}?

whq

(b) $_{a}$JOHN WONDER $_{b}$WHO LOVE $_{c}$WHO?
(Who$_{i}$ does John wonder who$_{j}$ t_{j} loves t_{i}?)

whq

(18) (a) *$_{a}$WHO$_{i}$ $_{b}$JOHN $_{b}$KISS$_{c}$ $_{c}$SALLY BEFORE t_{i} $_{a}$LEFT?

whq

(b) $_{a}$JOHN $_{a}$KISS$_{b}$ $_{b}$SALLY BEFORE $_{c}$WHO $_{c}$LEFT?
(Who$_{i}$ did John kiss Sally before t_{i} left?)

In Lillo-Martin (1990), I discussed two accounts for the boundedness of wh-movement in ASL. Here I will briefly outline these two accounts.

In the first account, the definition of 'barrier' is parameterized so that CP counts as a barrier for wh-movement in ASL. This parameterization would also predict that PP and NP are barriers in ASL, since whatever principled means would be used to make CP a barrier would not be able to exclude PP and NP without an *ad hoc* stipulation. I have had some problems determining whether PP and NP are indeed barriers for ASL, because the relevant structures seem to exclude extraction for independent reasons.

A second account for the boundedness of A′-movement in ASL is to suggest that in ASL there are no 'bridge' verbs. Tiedeman (1989) suggests that in English, verbs are marked for taking a +, −, or 'u' WH complement. Verbs marked |u WH| are bridge verbs; they do not allow a |+WH| element to remain in their embedded complementizer position, but this position is available for COMP-to-COMP movement out of an embedded clause. Under this model, in ASL all verbs would be marked either |+WH| or |−WH|; since there would be no |uWH| verbs, no extraction out of embedded clauses would be possible.[5]

In sum, ASL A′-movement of wh-words or topics is permitted only in matrix clauses; movement out of embedded clauses, like movement out of islands, is prohibited. However, ASL allows resumptive pronouns to 'save' all these island violations, and furthermore ASL allows null resumptive pronouns. Null pronouns are distinguished from null arguments of non-pronominal types by the presence of overt subject and object agreement morphology, which is marked on some (though not all) verbs.

2. LEARNABILTIY AND ACQUISITION

Since ASL shows that short extraction languages can be learned, on

learnability grounds assuming no negative evidence short extraction must come before long extraction. There will be abundant positive evidence that long extraction is available in languages like English, so the change from short to long extraction will be possible. However, if long extraction is the first hypothesis, there will not be positive evidence for the ASL setting. It might seem that the presence of constructions with an embedded wh *in situ* could serve as positive evidence. However, if this were the case, then there should be no languages which allow embedded wh *in situ* and allow long extraction. This seems to be counterexemplified by some dialects of French. Furthermore, since not all signers accept the wh *in situ* (though they still prohibit long distance movement), this form of evidence would not be available to all learners. Thus it seems that short extraction must come before long extraction. This conclusion would apply with either of the analyses for short extraction given above.

A further learnability question concerns the acquisition of the knowledge that resumptive pronouns can provide an escape raft. Since the correct use of resumptive pronouns in ASL requires the correct use of null pronouns, children might err by considering the null argument of even a verb which is not marked for agreement a null resumptive pronoun (cf. example 11). This would be an overgeneralization which would not be recoverable on the basis of positive evidence only.

The experiment that will be reviewed here did not test whether short extraction was the first hypothesis. Rather, it looked at the second question of children's knowledge of the escape rafts for islands in ASL. Given that the evidence for short extraction must be taken together with evidence that escape is possible, I wanted to know whether children would be conservative or overgeneral in their use of null and overt resumptive pronouns, or if they would show evidence of the correct use of these structures.

In order to test this, I wanted to give children the possibility of using the appropriate structures with and without verb agreement, with subject and object extractions, with null and overt pronouns. I decided to begin with an imitation test, in which the desired structures could be controlled by the experimenter. I don't believe that imitation tasks are the optimal way of tapping into the child's knowledge, but I think they can lend corroborative support to the results of other tests. In this case, I have performed an elicited production test which this imitation test corroborates with respect to null pronouns; I'm currently working on

elicited production tasks for extraction. The imitation task described here gives me the opportunity even with limited testing time to check children's production of complex structures.[6]

The idea of the imitation task was as follows. In most cases, pronouns can be overt or null without changing the grammaticality of a sentence. Thus, when presented with a sentence containing an overt pronoun, a child can often imitate this sentence without the overt pronoun and not change its grammaticality (or meaning). However, in crucial cases with verbs not marked for agreement, the overt pronoun is required, as illustrated above (cf. examples 12, 14). Thus, if the children have this grammatical knowledge, they may delete pronouns when doing so will not affect a sentence's grammaticality, but they should *never* delete a pronoun when this results in ungrammaticality. The sentences used in this test were designed with this possibility in mind.

The sentences given for imitation were sentences with topicalization from a sentential subject or an embedded sentence. Thus, these sentences would be either a sentential subject violation or a sentence island violation, except that the escape rafts available in ASL — overt or null resumptive pronouns — were used. Furthermore, the sentence island structures also apparently constituted crossover violations, since the matrix subject was coreferential with the moved element. However, here again the presence of a resumptive pronoun saves the sentence. Thus, all the target sentences were grammatical sentences; in addition, they were crucially varied on the use of verb agreement in the embedded clause, overt versus null pronouns in the extraction site, and subject versus object extraction out of the embedded clause. These variables are listed in (19).

(19) *Sentence Types*

I.	(a)	+ verb agreement	
	(b)	− verb agreement	(plain verb)
II.	(a)	+ overt pronoun	
	(b)	− overt pronoun	(null pronoun)
III.	(a)	+ subject extraction	
	(b)	− subject extraction	(object extraction)

Examples of the sentences given for imitation are given in (20).

(20) (a) $_{a}$SISTER, $_{a}$PRONOUN SURE $_{a}$PRONOUN DISLIKE $_{b}$BROTHER.
(As for sister$_i$, she$_i$ is sure she$_i$ doesn't like brother.)

(b) $_{a}$BILL, __ $_{a}$KISS$_{b}$ $_{b}$SALLY, LUCKY.
(As for Bill$_i$, that (he$_i$-) kissed Sally was lucky.)

Notice that a sentence of type Ib, IIb, IIIb (i.e., a sentence with no verb agreement, no overt pronoun, and object extraction) will be ungrammatical, so this sentence type was not included for imitation. However, type Ib, IIa, IIIb was presented as a test case. An example using the crossover structure is given in (21a).

(21) (a) $_{a}$BABY, $_{a}$PRONOUN FEEL $_{b}$NURSE LOVE $_{a}$PRONOUN.
(As for baby$_i$, he$_i$ feels the nurse loves him$_i$.)

If the embedded object resumptive pronoun is not imitated, this produces the ungrammatical sentence type corresponding to Ib, IIb, IIIb, as illustrated in (21b).

(21) (b) *$_{a}$BABY, $_{a}$PRONOUN FEEL $_{b}$NURSE LOVE __.
(*As for baby$_i$, he$_i$ feels the nurse loves t_i.)

Thus, by presenting sentences of the types outlined above, I could see whether children showed evidence of obeying the grammatical constraints in ASL or not.

The subjects for this test were 17 deaf children of deaf, signing parents; the children were learning ASL as their native language. The children ranged in age from three years, two months, to ten years, eight months; there were approximately two children in each year age range (two three-year-olds, two four-year-olds, etc.). An eighteenth child who was two years, eleven months was tested, but he was dropped from the final results because he could not do the task. The sentences were recorded on videotape by a deaf native signer and presented with instructions to each child individually by a deaf native signer as experimenter.

The children's responses were recorded on videotape for later analysis. They were transcribed and checked with a native signer when necessary. Of main interest was not whether the child had successfully imitated exactly what was presented; rather, I checked to see whether the topicalization structures were used, whether pronouns were deleted or added, and whether resulting changed sentences were grammatical or not.

In some cases, the sentences produced by the children were simplifications of the target sentences which eliminated the topicalization structure. An example is given in (22). (Throughout, the (a) examples are the targets, and the (b) examples are the responses.)

(22) (a) $_{a}$NURSE, $_{a}$PRONOUN FORGET $_{a}$PRONOUN $_{a}$FEED$_{b}$ $_{b}$BABY.
(As for the nurse$_i$, she$_i$ forgot she$_i$ fed the baby.)

(b) NURSE FORGET FEED BABY.
(The nurse forgot to feed the baby.)

This kind of response does not tell us whether the child has the correct grammar with regard to extraction constraints. However, although such simplifications happened occasionally, there were still many examples using the topicalization structures which were crucial for comparison.

Pronoun deletions did occur, with both subject and object extraction structures. Examples using the crossover sentences are given in (23–24).

(23) (a) $_{a}$SISTER, $_{a}$PRONOUN SURE $_{a}$PRONOUN DISLIKE $_{b}$BROTHER.
(As for sister$_i$, she$_i$ is sure she$_i$ doesn't like brother.)

(b) $_{a}$SISTER, $_{a}$PRONOUN SURE __ DISLIKE $_{b}$BROTHER.
(As for sister$_i$, she$_i$ is sure (she$_i$) doesn't like brother.)

(24) (a) $_{a}$JOHN, $_{a}$PRONOUN ANNOUNCE $_{b}$MARY $_{b}$HATE$_{a}$ $_{a}$PRONOUN.
(As for John$_i$, he$_i$ announced that Mary hates him$_i$.)

(b) $_{a}$JOHN, $_{a}$PRONOUN ANNOUNCE $_{b}$MARY $_{b}$HATE$_{a}$ __.
(As for John$_i$, he$_i$ announced that Mary hates (-him$_i$).)

In (23), an overt subject pronoun is deleted, even though the verb is not marked for agreement. Recall that under the analysis given above, an embedded null subject coreferential with the matrix subject is analyzed as *pro*, following Huang (1984). Overt subjects were deleted with and without verb agreement 57 times, by children throughout the age range tested.

In (24), an overt object pronoun is deleted, but the verb is marked for agreement. Such deletions occurred less frequently than subject pronoun deletions, but they still happened 10 times, by children from age 4;0 through 10;8.

The test case is whether children will delete an object pronoun with a verb not marked for agreement. This would result in a pair such as the one illustrated in (25).

(25) (a) $_{a}$BABY, $_{a}$PRONOUN FEEL $_{b}$NURSE LOVE $_{a}$PRONOUN.
(As for baby$_i$, he$_i$ feels the nurse loves him$_i$.)

(b) *$_{a}$BABY, $_{a}$PRONOUN FEEL $_{b}$NURSE LOVE __.
(*As for baby$_i$, he$_i$ feels the nurse loves t_i.)

This kind of deletion resulting in ungrammaticality *never* happened with the crossover type sentences, and happened only twice with the sentential subject sentences. The two errors were made by children aged 4;1 and 5;4, who were clearly having trouble processing the sentences and hesitated during their production. Unlike their productions of other sentences with and without pronoun deletions, the productions of these ungrammatical sentences were dysfluent, indicating that the children were possibly aware of their deviance. The target and ungrammatical response produced by these two children are given in (26).

(26) (a) $_{a}$MARY, $_{b}$JOHN 'LIKE' $_{a}$PRONOUN, OBVIOUS.
(As for Mary$_i$, that John has a crush on her$_i$ is obvious.)

(b) *$_{a}$MARY, $_{b}$JOHN 'LIKE' __, OBVIOUS.
(*As for Mary$_i$, that John has a crush on t_i is obvious.)

Two other children, confronted with this sentence, gave the response in (26c).

(26) (c) *$_{a}$MARY, $_{b}$JOHN 'LIKE' __.
(As for Mary$_i$, John has a crush on t_i.)

The response by these children (ages 3;2 and 8;1) is a simplification which keeps the topicalization, but eliminates the sentential subject structure, therefore making the object pronoun deletion grammatical.

In addition to simplifications and pronoun deletions, responses sometimes included pronoun or full NP additions. This happened much less frequently than pronoun deletions, and in every case resulted in a grammatical sentence. An example is given in (27).

(27) (a) $_{a}$SALLY, $_{a}$PRONOUN SAY __ REMEMBER $_{b}$BILL.
(As for Sally$_i$, she$_i$ says (she$_i$) remembers Bill.)

(b) $_{a}$SALLY, $_{a}$PRONOUN SAY $_{a}$PRONOUN REMEMBER $_{b}$BILL.
(As for Sally$_i$, she$_i$ says she$_i$ remembers Bill.)

In sum, although the children did make some changes from target to response, these changes involved grammatical uses of overt and null resumptive pronouns from the earliest age tested. The correct use of null resumptive pronouns entails the correct use of null pronouns in general, but there was no evidence in this test that any further learning is required. In fact, if it is correct that [+pro-drop] is the initial setting for the null argument parameter as some have suggested (e.g. Hyams, 1986), then children learning ASL need only learn the agreement morphology system to correctly distinguish between the two types of null arguments, and from there to distinguish between structures with appropriate null resumptive pronouns versus true island violations. In languages for which non-pronominal null arguments (or null arguments not sanctioned by agreement) can be used as resumptive pronouns,

again positive evidence will be available in the form of sentences using these resumptive pronouns.

3. CONCLUSION

The data from ASL show us that sentences can be islands, and that the constraints and escape rafts available for more well-known islands are also employed here. Psycholinguistically, the presence of sentences as islands raises learnability and acquisition questions, including: how do children know whether their language allows short or long distance wh-movement; and when do children obey the constraints and use the escape rafts correctly? The arguments and data presented here indicate that children must begin with the short-distance hypothesis rather than the long-distance hypothesis, with overt positive evidence available for the switch. Furthermore, at the earliest age tested, children correctly obeyed the constraints and used the escape rafts, indicating that this information is a likely candidate for innate knowledge of Universal Grammar.

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APPENDIX: NOTATION

SIGN — Upper case English glosses stand for signs with approximately the same meaning as the English word.

$_{a}$SIGN$_{b}$ — Subscripts from the beginning of the alphabet are used to indicate spatial locations. Nouns are marked with a subscript at the beginning of the gloss to indicate the locus with which they are associated. Inflected verbs are marked with a subscript at the beginning to indicate the onset location, and/or a subscript at the end to indicate the endpoint location. These spatial locations constitute agreement morphology.

_____t — A line on top of a sign or signs indicates that a specific grammatical facial gesture was used during the sign(s). 't' stands for the topicalization marker; 'whq' stands for the wh-question marker; 'hn' stands for an affirmative head nod.

NOTES

[1] A brief description of the notation used in these examples is given in the appendix.

[2] The so-called 'topicalization' structures with a resumptive pronoun are equivalent to left dislocation. Notice, however, that the same restrictions (and for some signers, the same escapes) apply to wh-movement as well.

[3] Note that EAT does not mark agreement with subject or object; while TAKE-UP marks agreement with its object. As noted in the appendix, agreement marking is indicated by subscripts at the beginning and/or end of a verb.

[4] A reviewer has suggested that the object agreement in examples like (13) and (15) might be licensing a real wh-trace, rather than *pro*. In this case, the wh-trace would be required to have such licensing, to rule out the examples without object agreement in (12) and (14). The problem with this analysis is that even without object agreement, wh-trace is sanctioned in matrix topicalization and questions, as illustrated in (1)—(3) above.

[5] Since topicalization is bounded in the same way as wh-movement, ASL verbs would presumably also be marked for +, −, and u TOP. Some kind of redundancy rule would be useful for capturing the generalizations across marking for WH and TOP, since the majority of verbs (perhaps all verbs) will have the same marking ([−]) for both WH and TOP. Although topicalization can be analyzed as a form of wh-movement, topicalized NPs will still not contain the feature [+WH] since they are not questions; hence, WH marking alone will not suffice.

[6] See Lillo-Martin (1986a) for information on the elicited production task, and for more details regarding the imitation task presented here.

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