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Sentential Devices for Conveying Givenness and Newness: A Cross-Cultural Developmental Study

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Child and adult speakers of English, Hungarian, and Italian described nine triplets of pictures whose elements varied along the pragmatic dimension of givenness vs newness. In the first picture of each series, all elements were new. In the second and third pictures, one element increased in newness and the remaining elements increased in givenness. The devices analysed were ellipsis, pronominalization, emphatic stress, the indefinite article, the definite article, and initialization. The results indicated (a) marked differences between the languages, (b) early learning of the functions of the devices, (c) some changes with age, (d) a relation between changes in givenness and newness and use of each of the devices, and (e) baseline effects in the use of the devices.

Proponents of linguistic functionalism (Dezsó, 1972; Firbas, 1964; Halliday, 1967; Mathesius, 1939; Sgall, Hajičova, & Benešova, 1973) have focused attention on ways in which discourse relations can work to determine the use of sentential devices. They have argued that devices such as word order and pronominalization cannot be adequately described unless we pay attention to the shape of the discourse of which the sentence is a part as well as the shape of the communicative context in which the discourse is embedded. In particular, researchers have been interested in

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investigating ways in which sentential devices are related to *givenness* of information, on the one hand, and *newness* of information on the other. The present study submits to experimental verification several linguistic claims regarding the role of givenness vs newness as determinants of the use of certain sentential devices.

Givenness vs Newness

Although the area of givenness vs newness has been the subject of much attention, students of discourse pragmatics have not yet succeeded in reaching a consensus regarding the exact definitions of these constructs. The interested reader may find discussions of various alternative characterizations of givenness and newness in the recent reviews by Bates and MacWhinney (1978), Chafe (1976), Clark and Clark (1977), and MacWhinney (1977).

The present report views givenness and

newness as a system formed by the combination of at least three types of newness. Verbal material is here considered to be new whenever the speaker uses it to produce a modification in the shape of the information the listener has in working memory or consciousness (Chafe, 1974). Material is considered to be given when it leads to no such modification. Thus newness refers, in general, to the extent to which the speech signal alters the listener's conscious knowledge. There are at least three ways in which information may serve to modify the listener's conscious knowledge. This is to say that there are at least three basic operations that can be involved in the modification of information. These three operations are *addition*, *contrast*, and *replacement*.

Addition occurs whenever the listener processes information by adding it to working memory or consciousness. Thus the speaker of (1a) is presupposing that the listener must add information about "a rat" to his consciousness, whereas in (1b) the speaker presupposes that information about the identity of "the rat" is already present and need not be added.

1. (a) A rat crawled through the gate.
- (b) Then the rat ran into the strawberry patch.

The second type of newness involves the formation of an explicit contrast between two pieces of information. For example, "the cat" in (2c) contrasts with "the dog" in (2b).

2. (a) A cat and a dog ran into the backyard.
- (b) The dog fell into the hole.
- (c) Then the cat fell into the hole.

In (2b) the listener encodes a link between "fell into the hole" and "dog." Sentence (2c) takes two pieces of information already present in consciousness and links them into a new relation. This new relation between "the cat" and "fell into the hole" places "the cat" into contrast with the information "dog" that had already been linked with "fell into the hole."

The third type of newness involves the

replacement of information. The simplest type of replacement occurs as a result of self-corrections, such as (3a) or (3b).

3. (a) The cat, I mean, the dog fell into the hole.
- (b) A cat, I mean, a dog fell into the hole.

These two sentences show that replacement can occur either with or without addition. In (3a), "the dog" must be [-addition], since it has a definite article. However, in (3b), "a dog" is [+addition]. Thus, in (3b) replacement occurs together with the addition of an item to working memory. No particular contrast is involved in either (3a) or (3b), because the speaker never really gets the chance to say that the cat fell into the hole. In other words, no relational link is formed between "the cat" and "fell into the hole."

In Sentence (4), on the other hand, replacement occurs with contrast. In that sentence, the speaker forges a link between "the dog" and "chased the cat." He then attempts to add a new contrasting link and at the same time break the old link.

4. A dog chased the cat, I mean, a raccoon chased the cat.

In the process of comprehension, replacement of information inevitably involves some noise. The speaker's instruction to delete information from memory can only be obeyed partially and some trace of the replaced material remains in consciousness even after the replacement.

The combination of contrast with replacement and addition that occurs in Sentence (4) is only one of the eight possible combinations of the three types of newness. Table 1 illustrates each of these eight possible combinations by an example. The combination of [+addition], [+contrast], and [-replacement] is illustrated by "a raccoon" in the sentence "a dog chased a cat and then a raccoon chased a cat." Combinations at the top of the table have the greatest overall newness, while those at the bottom have the greatest overall givenness.

TABLE 1
VARIETIES OF NEWNESS

[+addition +contrast +replacement]	"a raccoon"	A dog chased a cat, I mean, a raccoon chased a cat.
[+addition +contrast -replacement]	"a raccoon"	A dog chased a cat and then a raccoon chased a cat.
[+addition -contrast +replacement]	"a raccoon"	A dog, I mean a raccoon, chased a cat.
[+addition -contrast -replacement]	"a raccoon"	A dog chased a raccoon.
[-addition +contrast +replacement]	"the raccoon"	The dog chased the cat, I mean, the raccoon chased the cat.
[-addition +contrast -replacement]	"the raccoon"	The dog chased a cat and then the raccoon chased a cat.
[-addition -contrast +replacement]	"the raccoon"	The dog, I mean the raccoon, chased the cat.
[-addition -contrast -replacement]	"the raccoon"	The dog chased the raccoon.

The Manipulation

In the experiment to be reported here, subjects saw triplets of pictures like the ones described by the sentences in (5).

5. (a) A bunny is crying.
- (b) A bear is crying.
- (c) A monkey is crying.

The pictures were presented one at a time and the children were asked to describe each picture in sequence. The first picture will be called the first frame; the second picture will be called the second frame; and the third picture will be called the third frame. In the series given in (5) above, the subject (bunny, bear, monkey) begins in the first frame (i.e., in 5a) as [+addition, -contrast, -replacement] and becomes [+addition, -replacement]. Thus, the subject increases in newness. The verb, on the other hand, begins as [+addition, -contrast, -replacement] and becomes [-addition, -contrast, -replacement]. Thus, the verb

increases in givenness. Moreover, repeated mention of the verb in (5c) leads to a continued increase in its givenness. The manipulation therefore involves an increase in newness for some elements and an increase in givenness for others. This technique is essentially the same as one developed by Hornby and Hass (1970).

So far, we have considered three basic operations affecting givenness and newness and we have presented an experimental paradigm which manipulates overall givenness and newness. Next, we will examine the ways in which changes in givenness and newness have been found to affect the use of six different sentential devices. The six devices to be examined in this study are ellipsis, pronominalization, emphatic stress, the indefinite article, the definite article, and initialization. The next six subsections discuss the relation of givenness and newness to use of the six devices. The discussion of each device begins

with a brief consideration of the linguistic status of the device. Then the relevant psycholinguistic studies of the use of the device are discussed. Finally, a basic prediction is offered regarding the effect the manipulation should have on the use of the device.

Ellipsis

Material that is not only fully given, but also fully predictable from the discourse context, is often subject to omission or ellipsis. For example, (6b) is fully acceptable as a reply to Sentence (6a) and the nonelliptical form (6c) seems rather stilted.

6. (a) Who messed up the carpet with his muddy paws?
 (b) Spotty.
 (c) Spotty messed up the carpet with his muddy paws.

When a simple answer like (6b) suffices, use of a reply like (6c) seems unnecessarily verbose. At the same time, communication also places clear constraints on the extent to which material may be omitted. Thus, both ellipsis (omission) and lexicalization (inclusion) are subject to specific pragmatic constraints. In general, it appears that material that has the feature [+addition] and/or the feature [+contrast] is likely to be lexicalized, whereas material that is deleted is generally given. These general remarks suggest the following general prediction:

Prediction 1. Ellipsis will increase with increased givenness and will decrease with increased newness.

This general prediction, like the other five which follow, is subject to certain qualifications. First it should be noted that there are certain clear cross-linguistic differences in the rules governing the use of ellipsis. For example, languages with full verb paradigms like Italian or Hungarian tend to tolerate frequent ellipsis of the subject because the person and number of the subject are marked overtly on the verb. Moreover, Hungarian verb morphology also provides some information

on the definiteness and person of the direct object. Thus, Hungarian tends to permit object ellipsis in cases where other languages would not. In general, where the rules of a language limit ellipsis, it will be less frequent. However, these limitations are not nearly as restrictive as is often imagined.

Second, it should also be noted that naturalistic observations (Greenfield & Zukow, 1978; Keenan, 1974; Rodgon, 1976) indicate that ellipsis declines with age. Whereas younger children attempt to communicate by using as few words as possible, older children have learned that certain types of ellipsis are unacceptable. This is to say that both older children and adults seem to have learned the conditions governing obligatory lexicalization.

Pronominalization

Pronouns are used to refer to information that is given (i.e., information that is [-addition]). When a listener hears a pronoun, he attempts to relate it to some information still in his working memory for the situation. Often there are several possible referents with which the pronoun may be identified as in the case of "he" in Sentences (7) and (8).

7. John kicked Bill and then he kicked him.

8. The lion chased the gorilla and then he fell in a hole.

In the comprehension of such sentences, choice of one referent over another can be based on the use of either natural predispositions (Maratsos, 1973), stress (Maratsos, 1973), or details of presuppositional structure (Garvey, Caramazza, & Yates, 1975).

In production, Osgood (1971) found that speakers tended to use pronouns frequently for the second mention of an object when it participated in two or more events. However, they only did so when the events were so completely contiguous in time and space that they were perceived as a single complex event. Thus, when Ball A hit Ball B, causing Ball B to hit Ball C, the second reference to Ball B was often pronominal. In such cases the move-

ment of the three balls was perceived as a unitary complex event.

Another variable affecting the perceived givenness of a reference is the listener's general familiarity with the topic under discussion. Delis and Slater (1977) found that speakers used more ellipsis and pronominalization when their listeners were familiar with the subject matter than when they were not. Presumably, speakers assume that knowledge of a subject matter helps the listener in matching referents. The increased use of both pronominalization and ellipsis in this case can be viewed as evidence supporting a relation between the use of both devices and increases in givenness.

The general prediction deriving from these studies is fairly clear.

Prediction 2. Pronominalization will increase with increased givenness.

The overall levels of pronoun use will vary from language to language. Moreover, pronominalization will interact with ellipsis as an expression of givenness. This is because elements that are not present in a given utterance cannot be pronominalized.

Emphatic Stress

Bolinger (1961) suggested that varying levels of intonational stress could be related to varying levels of semantic contrast. He argued that:

... in a broad sense every semantic peak is contrastive. Clearly in "let's have a *picnic*," coming as a suggestion out of the blue, there is no specific contrast with "dinner party," but there is a contrast between picnicking and anything else the group might do. As the alternatives are narrowed down, we get closer to what we think of as "contrastive stress." (p. 87)

Thus, Bolinger seems to have identified intensity of emphatic stress with the intensity of contrast with underlying expectations. When the speaker uses emphatic stress in this way, he is attempting to draw the listener's attention to some contrast between pieces of information. Although it is true that stress can be used to mark replacement as well as con-

trast, the present study only examines the use of stress to mark contrastivity.

Wieman (1976) observed the distribution of stress patterns across sentence elements in the first sentences of English-speaking children. Her findings support the view that children are capable of expressing newness through stress from the very beginnings of language development. However, because the study was purely observational, there was no clear control over the ways in which newness determined use of stress.

Experimental evidence in support of this hypothesized relation between stress and contrastivity was found in production data gathered by Hornby (1971) and Hornby and Hass (1970). Hornby (1971) asked his children to correct a series of incorrect picture descriptions that were given to them by the experimenter. In 93% of the cases, children did this by producing sentences in which the correction was marked with emphatic stress. In such sentences, the correction supplied by the child was in contrast with the erroneous material produced by the experimenter. The correction was also a replacement for the erroneous material. Hornby and Hass (1970) also obtained high levels of use of emphatic stress when they asked 4-year-olds to describe sequences of pictures such as Picture A followed by Picture B.

Picture A: A picture of a girl riding a bicycle.

Picture B: A picture of a boy riding a horse.

Children tended to stress "boy" in the sentence they used to describe Picture B more often than "girl" in the sentence describing Picture A. Here again stress seemed to be used as a marker of contrastivity.

The general prediction deriving from Bolinger's analysis and the studies by Wieman, Hornby, and Hass is as follows:

Prediction 3. Use of emphatic stress will increase with increased newness.

This prediction makes no mention of a relation

between stress and increased givenness. This is because there should not be any decrease in emphatic stress with increased givenness unless a decrease in contrast is also involved. Since the present manipulation involves no such decrease in contrast, no decrease in use of emphatic stress is predicted. Additionally, it should be noted that some languages use devices other than stress to mark contrast. These languages will show lower overall levels of emphatic stress use.

Indefinite Article

The English indefinite article is placed before nouns when the speaker is presupposing that the listener is not able to achieve a match between the noun and some particular referent in working memory. In other words, nouns preceded by indefinite articles must have the feature [+addition]. Thus, "a peach" cannot be used in Sentence (9) if the speaker is requesting some particular peach. If the speaker thinks that the listener already has some particular peach in mind, he must use Sentence (10). In Sentence (10), the speaker is definitive in his specification of the peach he is requesting. Thus, in (10) the peach is assumed to be [-addition].

9. Would you please get a peach out of the basket?

10. Would you please get the peach out of the basket?

The relation of the indefinite article to the feature [+addition] suggests this prediction:

Prediction 4. Use of the indefinite article will decrease with increased givenness.

However, languages differ markedly in their use of articles. For example, Hungarian uses the numeral "one" as an indefinite article when the speaker is drawing attention to non-plurality or nongenericness. In other cases of indefiniteness, the Hungarian noun appears without an article. These factors should lead to different levels of indefinite article use in different languages.

Definite Article

The English definite article "the" is placed before nouns when the speaker is presupposing that the listener can match the noun to some particular referent in working memory. In other words, nouns preceded by definite articles must have the feature [-addition]. The listener can achieve this match in any of three ways. First he may match the noun to a referent in his working memory of the conversation. Thus, "the beaver" in Sentence (12) can be matched to "a fat beaver" in sentence (11).

11. A fat beaver was sitting by our tent.

12. Suddenly the beaver started to gnaw at our tentpoles.

Second, the listener may find the referent directly in the situation. Thus, "the peach" in Sentence (10) may be in clear view of both speaker and listener. Karmiloff-Smith (1977) argues that the earliest uses of definite articles are of this type. In her terminology, early definite articles are exophorically deictic (pointing to the situation) rather than anaphorically deictic (pointing to previous discourse). This analysis of definite article use would seem to predict that the correlation between anaphoric givenness and definite article use would be stronger in adulthood than in early childhood.

In a third use of the definite article, the referent may be uniquely identifiable by implication as is "the heart" in Sentence (13).

13. The doctor opened up a corpse and took out the heart.

The reason that "the heart" is uniquely identifiable in (13) is because every corpse has just one heart. In their studies of the descriptions of apartments, Linde and Labov (1975, p. 935) found that major rooms such as "the living room" are preceded by definite articles even when they occur for the first time. Here, again, the living room can be uniquely identified because every apartment has just one living room. In cases such as (13), definite articles may indicate information that is [+addition]. However, in uses like that in (12), they indicate information that is [-addition].

The acquisition of articles by children has been described by a large number of diarists (MacWhinney, 1978). In most European languages, articles emerge between 2;0 and 3;0. However, in Bulgarian (Gheorgov, 1905), where the article is a suffix, it emerges well before 2;0. In Italian, articles appear as early as the one word stage, as "schwas" preceding nouns. MacWhinney (1978) argues that these cross-linguistic differences are at least partly related to morphophonological and intonational factors. In English, Brown (1973), Maratsos (1974, 1976), and Warden (1976) have devoted considerable attention to article acquisition. Maratsos (1974, Experiment 2; 1976) found that American children as young as 3-year-olds made correct use of the definite article to mark referents that were uniquely given in previous discourse. Other experiments (Bresson, 1974; Maratsos, 1974, Experiment 1; Warden, 1976) have indicated certain differences between adult and child article use in cases where the child must make fairly complex computations about the exact state of the listener's working memory. The manipulation used in the present study attempts to simplify some of these problems by focusing attention on the role of repeated mention in a fairly simple task where computation of the state of the listener's memory involves nothing more than memory for the preceding picture.

Investigating descriptions of simple events by adults, Osgood (1971) found an increase in the use of the definite article to name objects when those objects recurred in simple perceptual events. In initial appearances, use of the definite article averaged around 15%. In subsequent appearances, use of the definite article rose to around 55%. What is perhaps most striking about these results is that use of the indefinite article remained high even when an object had been previously seen. This may have been a function of Osgood's task, since subjects were required to close their eyes between each perceptual event. Perhaps subjects reasoned that a new object could have

been substituted for the old while they had their eyes shut. Grieve (1973) used a task much like the one in the present study and found that adults used virtually nothing but indefinite articles for first mention and nothing but definite articles for second mention.

The finding which has been fairly consistently supported in this literature is summarized in this "prediction."

Prediction 5. Use of the definite article will increase with increased givenness.

Note that it is not predicted that use of the definite article will decrease with increased newness. In order to see why no prediction is made regarding decreased use of the definite article with increased newness, first consider that subjects can be divided into those who use the definite article in the first frame and those who did not. Subjects who did not use the definite article in the first frame cannot show any decrease in use of the definite article since they did not use the definite article in the first place. However, subjects who did use the definite article in the first frame must have been using it to express exophoric deixis rather than anaphoric deixis, since none of the items in the first frame were anaphorically given. Because there is no reason for exophoric deixis to decrease across frames, no prediction is being made regarding decreased use of the definite article for items that increase in newness. For similar reasons, Predictions 2 and 4 say nothing about increased use of either pronouns or the indefinite article with increased newness.

Initialization

Initialization is a process which determines the selection of material as the starting point or first element of a sentence. For example, the starting point of the sentence, "the dog chased the boy" is "the dog." Prague School functionalism has placed a great deal of emphasis on givenness as a possible determinant of initialization. For example, Mathesius (1939, p. 171) holds that the starting point is that

element "which is known or at least obvious in a given situation and from which the speaker proceeds." Travníček (1962, p. 166) suggests that the starting point of a sentence is "the sentence element which links up directly with the object of thought, proceeds from it, and opens the sentence thereby."

Several studies demonstrate a preference for starting points that are given. Thus Hupet and Le Bouedec (1975) found that adult subjects preferred sentences like (14) to ones like (15) and ones like (16) to ones like (17).

14. I thought that the gangster had injured a policeman.
15. I thought that a policeman had been injured by the gangster.
16. I thought that the policeman had been injured by a gangster.
17. I thought that a gangster had injured the policeman.

Here the subjects preferred sentences in which the first nouns had a definite article, even if the sentence was in the passive. Thus one possible "use" of the passive (Anisfeld & Klenbort, 1973) might be to initialize given material as in Sentence (16). Bock (1977) has demonstrated a general preference for ordering of the given before the new in adult speakers of English, and a series of studies (Carroll, 1958; Osgood, 1971; Tannenbaum & Williams, 1968; Turner & Rommetveit, 1967) have shown that passives can be elicited by setting up a discourse context in which the object is anaphorically given and the agent is anaphorically new. However, passives cannot be elicited simply by making the object exophorically given in some visual context and the agent exophorically new (see MacWhinney, 1977, pp. 159-161 for details).

There also exist a number of developmental studies of the pragmatic bases of initialization. Some of these studies (deLaguna, 1927; Greenfield & Zukow, 1978; Sechehaye, 1926; Vygotsky, 1962) indicate that single word utterances tend to express new information, while omitting given information. Two other studies (Lindner, 1898, O'Shea, 1907, p.

116) found that early sentences tend to place important information before information that is less important. Another set of studies have pointed to the high frequency of verb initial-ization in early sentences in SVO (Subject-Verb-Object) languages such as English (Braine, 1963, p. 282), German (Park, Note 2), and Italian (Bates, 1976; Fava & Tiron-dolla, Note 1) as well as in SOV languages such as Garo (Burling, 1959) and Hungarian (Dezso, 1970; Meggyes, 1971; Viktor, 1917; MacWhinney, Note 3). Together, these studies suggest a preference for the ordering of the new before the given in early syntax insofar as the predicate of a sentence typically carries new information. However, two other studies (Gruber, 1967; Menyuk, 1969, p. 31) find exactly the opposite pattern in which children tend to order the given before the new. Yet, it should be noted that the accounts from Gruber and Menyuk are based on extremely small numbers of utterances.

The reports reviewed above were confined to children who were producing mostly one- or two-word utterances. As children progress into the three-word stage, evidence for initialization of material because of newness falls off sharply when the target language uses SVO or SOV ordering as its basic order (MacWhinney, Note 3; Meggyes, 1971). Even within the early two-word stage many children show little evidence of verb fronting (Bowerman, 1973; Gvozdev, 1949).

How can these diverse findings on the relation between givenness and initialization be reconciled? The adult results point to a preference for initialization of the given, whereas the very early child results indicate a preference for initialization of the new. One possible explanation would view these findings as evidence for a developmental shift. Prediction 6 expresses this approach.

Prediction 6. Very young children will initialize elements more when they are new, whereas older children and adults will initialize elements more when they are given.

Although this prediction is a correct representation of what the present literature on discourse pragmatics would lead us to suspect, there are some reasons to doubt its generality. In particular, MacWhinney (1977) has suggested that initialization of major sentence constituents may be determined by factors on at least three different levels. The highest level is the intersentential or discourse level where initialization can be determined by topicality or contrastivity. The second level is the propositional level where initialization can be determined by agentiality or relational unmarkedness. The lowest level is the item-based level where initialization of certain items may be determined by the degree of attentional focus or perspective commanded by that item. Thus, initialization of an item may be a result of intersentential factors in some cases and intrasentential factors in others.

METHOD

Stimuli

Table 2 describes each of the nine sets of pictorial stimuli in terms of simple sentences. For example, Series 2 consists of three pictures of the same boy, which can be described by the sentences in (20),

20. (a) A boy is running.
 (b) A boy is skiing.
 (c) A boy is swimming.

As noted above, the three pictures in each series will be called *frames*. For example, (20a) is the first frame and (20c) is the third frame. In this particular series the subject increases in givenness across the frames whereas the verb increases in newness. In Table 2, these abbreviations are used for the major elements of a sentence: S = subject, V = verb, O = direct object, L = object of the locative preposition, and I = indirect object. In Series 6 and 7, the verb is taken to include both the copular and the locative preposition. (In Hungarian the locative is a postposition or suffix rather than a preposition.)

Subjects

There were 120 subjects in this experiment: 40 Americans, 40 Hungarians, and 40 Italians. Within each language community, there were 10 3-year-olds, 10 4-year-olds, 10 5-year-olds, and 10 adults. The chief focus of attention was upon development in the 3-6 year period. The adult subjects were included as controls to see if any further major developmental changes might be present after age 6 in use of these devices. Each group of 10 subjects included five females and five males. The children were enrolled in nursery schools in Denver, Budapest, and Rome. There is every reason to believe that the children at each age were generally equal in terms of overall

TABLE 2
STIMULI^a

Series	Structure	
1	<i>SV</i>	A bear (mouse, bunny) is crying.
2	<i>SV</i>	A boy is running (swimming, skiing).
3	<i>SVO</i>	A monkey (squirrel, bunny) is eating a banana.
4	<i>SVO</i>	A boy is kissing (hugging, kicking) a dog.
5	<i>SVO</i>	A girl is eating an apple (cookie, ice cream).
6	<i>SVL</i>	A dog is in (on, under) a car.
7	<i>SVL</i>	A cat is on a table (bed, chair).
8	<i>SVOI</i>	A lady is giving a present (truck, mouse) to a girl.
9	<i>SVOI</i>	A cat is giving a flower to a boy (bunny, dog).

^a Elements in the second column that are in italics increase in newness through the series, whereas elements that are not in italics increase in givenness or familiarity.

linguistic ability since they were all normal, middle-class members of the majority culture and all resided in large metropolitan areas within what is commonly known as Western culture. Unfortunately, no cross-culturally valid measure of general linguistic ability is yet available, and is therefore difficult to show conclusively that the groups were equal in overall ability.

Procedure

Before a subject was tested, the pictures were placed into the order in which they were to be administered. The order of the nine series of pictures was randomized across the subjects within each group. The order of the three pictures within each series was also randomized. Following each series, a picture of a common object such as a bottle or a sailboat was inserted. This was done to break up any set (*Einstellung*) effects. Subjects were examined individually. Each subject was first seated next to the experimenter at a table. The subject was told that he would be asked to tell about what he saw in some pictures. Adults were told to describe the pictures in a simple, direct fashion. The experimenter showed the pictures to each subject one at a time in the sequence determined by the above randomization procedure. Two probes were used: "Tell me about this picture" and "What's happening in this picture?" Use of the two probes was also randomized. Each session was tape-recorded in its entirety.

Scoring

The first five devices were scored in the following way. Each of these first five devices were scored as either present or absent.

- (1) Sentence elements were judged to be ellipsed when they were not present in the response.
- (2) Elements were judged to be pronominalized when their first occurrence in the response was in the shape of a personal pronoun or a deictic pronoun.
- (3) Elements were judged to be

emphatically stressed if they met these two conditions: (a) they received more intonational stress than any other item in the response and (b) the amount of stress they received was decidedly more than would be given in a neutral (i.e., unmarked) rendition of the utterance.

- (4) Elements were judged to have an indefinite article whenever they were preceded by an indefinite article in their first occurrence in the response.
- (5) Elements were judged to have a definite article whenever they were preceded by a definite article in their first occurrence in the response.

Initialization was scored in the following way. For each of the pictures in the test, a basic or canonical word order was assumed. For English and Italian, this order was SVOI. For Hungarian this canonical order was SOVI. The initialization index was designed to measure deviations from this canonical order. For example, the canonical description for a picture taken from Series 9 is given in Sentence (21). However, the actual sentence produced by a child might be like Sentence (22).

21. The cat's giving the flower to the boy.
22. The boy's getting the flower from the cat.

In Sentence (21) the order of elements is SVOI. In Sentence (22) these same elements appear in the order IVOS. Thus, in (22) the indirect object of (21) is advanced before the subject, the verb, and the direct object which it follows in (21).

An element was given one point for each position it advanced from its canonical order. Thus, a given element could be given one of four possible scores:

- 0 = element occurring in its usual position or later.
- 1 = element advanced in front of the element usually before it.
- 2 = element advanced in front of two elements usually before it.
- 3 = element advanced in front of three elements usually before it.

For example, in Sentence (21) each of the four items receives an initialization score of "0," since each appears in its canonical position. In Sentence (22), "the boy" receives an initialization score of "3" because it appears before the subject, the verb, and the object. All the other elements in (22) receive an initialization score of "0," because they occur either in their usual position or later. In order to assign an initialization point, both the element being scored and the comparison element had to be lexicalized. For example, if the child responded to Series 9 with Sentence (23), the element "the boy" would be given an initialization score of "2." If the child responded with (24), the element would be given an initialization score of "0."

23. The boy's getting a flower.

24. There's a boy.

Of course, this is a fairly gross measure of the general tendency to initialize certain elements. This measure collapses information on a variety of different syntactic structures. However, each of these individual syntactic options occurred too infrequently to warrant separate treatment.

RESULTS AND DISCUSSION

The next six subsections examine the results for each of the six devices.¹ These results were based on a total of 126 ANOVA's. Each of these ANOVA's examined the results for one sentence element in one series for one of the six devices. The maximum number of possible ANOVA's for a given device was 27, since there were two series that had two sentence elements each, five series that had three elements each, and two series that had four elements each. Since ellipsis and emphatic stress could apply to any element, there were 27 ANOVA's for these two devices. The other four devices only had 18 ANOVA's each. This was because the devices of pronominalization, indefinite article use, and definite article use

¹ Complete tables of all cell means together with significance levels may be obtained by writing to the senior author.

could not be used with verbs and each of the nine series had one verb. In the case of initialization, only 18 ANOVA's were possible because none of the nine initial elements could be further initialized. In the discussion of the results it is important to bear in mind that 27 analyses were conducted for ellipsis and 27 for emphatic stress and that 18 analyses were conducted for each of the other four devices.

The results for the first five devices derive from dichotomous data and therefore represent proportions. However, the figures for initialization do not represent proportions. Rather, they derive from use of a 4-point scale whose structure was explained above. In each section, the effects are discussed in this order: Language effects, Age effects, Frame effects, and then Interaction effects. For most of the devices, the Language \times Frame, Age \times Frame, and Language \times Age \times Frame interactions were not significant. The majority of the significant interaction effects involved the interaction of Language with Age. Of the 162 Age \times Frame interactions, only two were significant. Both involved ellipsis.

The adult results are only included in the data on Language main effects, although the results with the adults excluded are quite similar. The adults are excluded from the data on Age main effects in order to provide a clearer measure of the extent to which significant development occurs in the 3- to 5-year-old range. The original intention was to present the data on Frame effects both with and without the adult data. However, the results with the adult data included were essentially the same as the results without the adult data. Therefore, for the sake of brevity, only the child data on Frame effects are given. At the same time, this mode of presentation provides the clearest measure of the use of the six devices in early childhood.

Ellipsis

Language. Hungarian and Italian showed higher levels of subject ellipsis than English. Collapsed across the nine series, the levels of subject ellipsis were: English (.08), Hungarian

(.18), and Italian (.12). These results seem to be related to the fact that, in both Hungarian and Italian, the conjugational suffixes on the verb root convey information regarding the person and number of the subject. In many contexts, this information is sufficient to permit full identification of the subject. This makes subject ellipsis a perfectly feasible device. Although there were also several significant effects for verb and direct object ellipsis, no clear pattern emerged across the nine series.

Age. The main effects of Age on ellipsis showed a very consistent drop in ellipsis with increasing age. Collapsed across the 27 analyses, the means were: 3-year-olds (.29), 4-year-olds (.17), and 5-year-olds (.09). Of the 27 analyses that were conducted, 12 showed Age effects that were significant at the $p < .001$ level and six showed effects that were significant at the $p < .01$ level. Since pronominalization was also on a decline during this period, it is clear that use of substantives was generally on the rise.

Frame. Prediction 1 held that ellipsis would increase with increased givenness and would decrease with increased newness. The first half of this prediction was tested in the 18 analyses for items that increased in givenness. In these 18 analyses, there were nine significant effects of which seven occurred with sentence subjects. These results supported the first part of Prediction 1 which held that ellipsis would increase with increased givenness. Collapsed across the 18 analyses for elements that increased in givenness, the means were: first frame (.15), second frame (.20), and third frame (.24).

Looking next at the data for the nine elements that increased in newness, there were three significant frame effects in which ellipsis decreased with increased newness. This was in accord with the second half of Prediction 1. In Series 1, 2, 3, 5, 7, and 9 it appeared that ellipsis of the new element occurred so infrequently in the first frame that it could drop no lower. In other words, children could not

increase their use of an element which nearly all of them had used in the first frame. This baseline effect tended to obscure the potential strength of the relation between increases in newness and decreases in ellipsis. In the first frame, children tended to lexicalize the subject and omit the verb. For the very youngest children this led to a description of some pictures in which they did little more than name the objects in the picture. However, this object-naming approach was not general even in the youngest group and seemed to decline sharply with age.

Interactions. There were 17 significant Language \times Age interactions for ellipsis. In these interactions, 3-year-olds differed in their use of ellipsis more than 5-year-olds. In particular, Hungarian 3-year-olds used more subject ellipsis, English 3-year-olds more verb ellipsis, and Italian 3-year-olds less direct object ellipsis. Four Language \times Frame interactions were significant at the $p < .05$ level. In Series 5 and 9, Italian increased ellipsis of the direct object across series, whereas Hungarian and English did not. In Series 6 only Hungarian increased subject ellipsis and in Series 8 only Hungarian decreased direct object ellipsis across frames. Only two Age \times Frame interactions were significant (Series 2 verb, Series 8 direct object). In both of these, the 3-year-olds showed larger amounts of ellipsis in the first frame. These various interactions suggested that children in these three language groups become more alike in their use of ellipsis between the ages of 3 and 5.

Pronominalization

Language. Looking first at subject pronouns, the data showed that English uniformly used significantly more subject pronouns than Italian or Hungarian. The means for subject pronoun use collapsed across the nine series were: English (.15), Hungarian (.06), and Italian (.03). These differences can be attributed to the fact that Italian and Hungarian seem to use subject pronouns mostly when

expressing information that is [+contrast], or [+replacement]. If the subject is not [+contrast] or [+replacement], Hungarian and Italian tend to ellipsis it, rather than to use a pronoun. In series 2, 3, 4, 6, 7, and 9 Hungarian and Italian used less subject pronominalization than English and they also used more ellipsis. In Series 1 and 8 Hungarian and Italian used less subject pronominalization and the levels of ellipsis were very close. Only in Series 5 did English use both more pronominalization and more ellipsis than Hungarian and Italian. On the other hand, Italian differs significantly from English and Hungarian in its greater use of indirect object pronouns in Series 8 and 9. This preference may be related to aspects of the system of pronominal clitics in Italian, according to which clitics are placed before the verb much like verbal prefixes (i.e., *io le amo* "I love him") (Duranti & Keenan, Note 4).

Age. As noted above, 18 ANOVA's were conducted for pronominalization. Of these 18 analyses, only six yielded significant effects for age. In each of these six, pronominalization decreased with age. This decrease in the use of pronominalization occurred between the ages of 3 and 4. Collapsed over the 18 analyses, the age group means were: 3-year-olds (.11), 4-year-olds (.06), and 5-year-olds (.07).

Frame. Of the 18 ANOVA's for pronominalization, 12 were for elements that were increasing in givenness and six were for elements that were increasing in newness. Thus, 12 ANOVA's tested Prediction 2 which held that pronominalization would increase with increased givenness. In these 12 analyses there were only two significant Frame effects for pronominalization. These two were for the subjects in Series 4 and 6. In both of these, pronominalization of the subject increased with increased givenness. These results were in accord with prediction 2. However, the size of the effect was not very impressive, since 12 effects were possible. In part, the effects of increased givenness on pronoun use may have been masked by the tendency to increase

ellipsis of given elements, since elements that are deleted cannot be pronominalized.

Six other ANOVA's examined the effects of increased newness on pronominalization. None of these six analyses yielded significant Frame effects. Thus, there was no evidence for a relation between pronominalization and increased newness.

Interactions. There were seven significant Language \times Age interactions for pronominalization. In the case of subjects, Italian made little use of pronouns at any age. In the case of direct objects in Series 4 and locatives in Series 6, English children increased their use of pronouns with age. The only significant Language \times Frame interaction was for subject pronominalization in Series 1. There, English showed a decrease in pronoun use with newness whereas Hungarian and Italian actually showed an increase. This interaction seemed to reflect the use of the subject pronoun in Hungarian and Italian to express specifically contrasting information.

Overall, the results on pronoun use seemed only loosely tied to givenness. It seems to be the case that givenness by itself is not enough to evoke pronoun use, as Osgood (1971) has noted. Although the stimuli were presented in rapid sequence, the fact that each event was portrayed in a separate picture may have tended to interfere with the integration of the actions into a single complex event or story frame.

Emphatic Stress

Language. In each of the nine series, there was a significant ($p < .001$) Language main effect for emphatic stress on the element which increased in newness. All of these effects showed that English used much more emphatic stress than Italian and Italian used more than Hungarian which used virtually no emphatic stress at all. Where Hungarian and Italian appear to have used word order or other devices to mark newness, English more often used stress. Collapsed across the nine elements that increased in newness, the means

were: English (.30), Hungarian (.00), and Italian (.06).

Age. Because one element in each of the nine series was increasing in newness, there were nine possible analyses in which a main effect for Age was conceivable. In fact, the three significant Age effects all occurred on items which increased in newness. In each case, older children used more stress than younger children. Thus, use of stress as a marker of contrastivity increased with age. However, the fact that only three of the nine possible age effects were significant indicates that this device was largely acquired by age 3. Collapsed across the nine elements that increased in newness, the means were: 3-year-olds (.07), 4-year-olds (.07), and 5-year-olds (.10).

Frame. Prediction 3 held that use of emphatic stress would increase with increased newness. The main effects of Frame on use of emphatic stress supported this prediction quite strongly. All of the nine elements that increased in newness over frames showed significant increases in the use of emphatic stress. Eight of these effects were significant at the $p < .001$ level. Collapsed across the nine elements that increased in newness, the means were: first frame (.01), second frame (.16), and third frame (.18).

Interactions. Three of the Language \times Age interactions on stress were significant, and two of these involved verbs that increased in newness across frames. On these, English showed a rise in use of stress with age, whereas Hungarian and Italian did not. Here, again, it appeared that Hungarian and Italian children learned to use devices other than stress to mark newness. One interaction showed a marked rise in stress on new objects over age in Italian. The causes of this interaction were not obvious. There were also seven significant Language \times Frame effects. Since Hungarian used so little emphatic stress, no strong effect of Frame on emphatic stress was possible. Thus the main effect of Frame on use of emphatic stress was concentrated mostly in English and Italian.

Indefinite Article

Language. The 18 main effects for Language on indefinite article use were all significant at the $p < .001$ level. They all showed Hungarian making far less use of the indefinite article than either English or Italian. The means collapsed across all 18 elements were: English (.56), Hungarian (.14), and Italian (.53). This is scarcely surprising since, instead of using an indefinite article to mark newness, Hungarian uses the noun with no article at all.

Age. As noted above, 18 ANOVA's were conducted for indefinite article use. Of these 18, there were 13 with significant effects for Age. Each of these 13 showed older children using more indefinite articles. Collapsed across the 18 elements, the means were: 3-year-olds (.27), 4-year-olds (.32), and 5-year-olds (.46). In large measure, this increased use of indefinite articles was facilitated by the decrease in both ellipsis and pronominalization with age. Since older children used more nouns, they also had more opportunities to use articles. In some cases, these opportunities led to use of a definite article or no article. In other cases, they led to use of an indefinite article.

Frame. Of the 18 ANOVA's for the indefinite article, 12 involved elements that were increasing in givenness and six involved elements that were increasing in newness. Thus Prediction 4 which held that use of the indefinite article will decrease with increased givenness was tested in 12 ANOVA's. For the elements that were increasing in givenness, 10 of these 12 possible effects were significant. These results showed clearly that use of the indefinite article decreased with increases in givenness, in accord with Prediction 4. When collapsed across the 12 elements that increased in newness, the means were: first frame (.45), second frame (.33), and third frame (.30).

The two exceptions to Prediction 4 were for the direct objects in Series 3 and 9. The absence of significant results on these two elements may have been due to children

having made the fairly reasonable assumption in Series 3 that different animals would eat different bananas and in Series 9 that the cat would give each of his friends a different flower. These results showed that these preschoolers evidenced a fairly high level of sophistication in using world knowledge to make judgments about newness.

For the six elements that were increasing in newness, only one significant Frame effect was observed.

Interactions. There were nine significant Language \times Age interactions. The pattern of each of these interactions indicated that the increase in use of the indefinite article with age was severely restricted in Hungarian. This was because the overall level of indefinite article use in adult Hungarian was lower than that in either English or Italian.

Definite Article

Language. Hungarians and Italians made far more use of the definite article than English-speakers. The averages collapsed across the 18 analyses were: English (.17), Hungarian (.42), and Italian (.32) with Italian showing the greatest variability. In both Hungarian and Italian, the indefinite has somewhat the sense of a numeral which identifies a single member of a larger class which has already been given. In fact, the tendency to confine use of the indefinite to numericality is so strong in Hungarian that most grammarians hold that Hungarian has no indefinite article. These restrictions on the use of the indefinite encourage use of the definite whenever possible. When an object is perceptually (i.e., exophorically) given but has not yet been mentioned in discourse, Hungarian and Italian are more likely to mark it as definite than is English. As noted in the discussion of Sentence (10) above, this can occur when the referent, while not yet mentioned, is clearly in the view of both speaker and hearer. Such perceptual or exophoric givenness clearly applied to the pictures used in this experiment.

Age. Like the indefinite article, the definite

article showed increased use with increasing age. Collapsed across the 18 analyses, the means were: 3-year-olds (.26), 4-year-olds (.31), and 5-year-olds (.35). This increase was accompanied by a decrease in both ellipsis and pronominalization. Thus, older children seem to have been using more definite articles because they were using more nouns. There were seven significant increases in the use of the definite article with age. There was also one significant decrease which occurred for the direct object in Series 9. Perhaps older children reasoned that the cat in that series would give different flowers to each of its different friends.

Frame. Of the 18 ANOVA's that were conducted for the definite article, 12 involved elements that were increasing in givenness and six involved elements that were increasing in newness. Thus, Prediction 5 which held that use of the definite article would increase with increased givenness was tested in 12 analyses. Of these 12 analyses, only two yielded significant results. These were for the subjects in Series 6 and 9. In both of these, increases in givenness resulted in increased use of the definite article. The mean data for these 12 analyses were: first frame (.27), second frame (.35) and third frame (.32).

Because so few effects were significant, there was only minimal support for Prediction 5. The absence of any strong relation between increased use of the definite article and increased givenness seemed to be related to the use of ellipsis and pronominalization to mark givenness. Elements that increase in givenness were less likely to be expressed by nouns and, when nouns were absent, use of the definite article was precluded.

Six other analyses examined the use of the definite article with elements that were increasing in newness. Only one of these six analyses yielded significant results. This was in Series 5 where increased newness led to decreased use of the definite article.

Interactions. Eleven Language \times Age interactions were significant. In these interactions, use of the definite article showed a more

marked rise with age in Hungarian than in English or Italian. The latter two languages seemed to reach ceiling levels earlier.

Initialization

Language. Out of a total of 18 ANOVA's for initialization, there were 16 significant effects of Language on initialization. Of these, 12 showed Hungarian using more initialization than either English or Italian. This is a reflection of the fairly free word order of Hungarian sentences. In Series 8 and 9, on the other hand, use of clefting in Italian led to a level of initialization for the direct and indirect objects that was much higher than that in Hungarian. The average figures for initialization were: English (.22), Hungarian (.46), and Italian (.45).

Age. Of the five significant Age effects for initialization, four showed the 3-year-olds using less initialization than the 4-year-olds or the 5-year-olds. Collapsed across the 18 analyses, the mean were: 3-year-olds (.33), 4-year-olds (.37), and 5-year-olds (.33). Only in the case of the direct object (ice cream, cookie, apple) in Series 5 was the trend reversed. In that series the youngest children showed a strong tendency to front the direct object. However, this effect might have been due to the nature of the foods pictured rather than the SVO sentence type itself. Foods like cookies and ice cream are, of course, quite attractive to young children. As Bates and MacWhinney (1978) have argued, very young children may tend to front items when they are interesting perceptually and only later learn to initialize items for less perceptual reasons.

Frame. Prediction 6 held that very young children would initialize elements more when they are new, whereas older children and adults would initialize elements more when they are given. The results for the child data showed that, out of 18 analyses, there were only five significant Frame effects on initialization. In four of these, initialization actually decreased with increased givenness. Collapsed across the 12 analyses of elements that

increased in givenness, the means were: first frame (.25), second frame (.20), and third frame (.17).

In the fifth significant main effect for Frame, initialization decreased with increased newness. Because there were no significant Age \times Frame interactions for initialization, this conflicting pattern of results cannot be viewed simply as a developmental shift. Moreover, the Frame results with the adult data included did not differ significantly from the results with the adult data excluded. Thus it appears that, even for adults and older children, Prediction 6 is wrong and that initialization does not mark givenness. Although initialization has a tendency to mark newness, that tendency is fairly weak.

Interactions. Eight of the Language \times Age interactions were significant. In these interactions, initialization of the verb and the direct object showed a particularly steep rise with age in Hungarian. English had a steep rise for indirect object initialization, whereas Italian showed a decline. Sentences (25) to (27) illustrate initialization of the verb, the direct object, and the indirect object, respectively, in Hungarian.

25. Adja a fiú a virágot a nyuszinak.
Gives the boy the flower the bunny-to.
26. Virágot ad a fiú a nyuszinak.
Flower gives the boy the bunny-to.
27. Nyuszinak adja a fiú a virágot.
Bunny-to gives the boy the flower.

SUMMARY

The focus of this study was upon a set of six predictions deriving from functionalist theory, on the one hand, and recent psycholinguistic research on the other. Each prediction dealt with ways in which a speaker would use a sentential device to refer to elements that were increasing in either givenness or newness. In particular, the question was whether pre-school children would use the six devices in the manner suggested by functionalist theory. Let

us consider first the effects of increases in newness and then the effects of increases in givenness.

Increases in newness were not predicted to show any relation to pronominalization (Prediction 2), indefinite article use (Prediction 4), definite article use (Prediction 5), or initialization (Prediction 6). In fact, no relation between increases in newness and use of any of these four devices was found. Some very weak relation between newness and initialization was found in direct contradiction to Prediction 6; however, the results in this regard were conflicting.

On the other hand, increased newness was predicted to have a clear effect on both ellipsis and emphatic stress. The second half of Prediction 1 held that ellipsis would decrease with increased newness. In three of the nine frames, this prediction held true. Thus the second half of Prediction 1 received weak support. Much stronger support was provided for Prediction 3 which held that use of emphatic stress would increase with increased newness. This prediction was uniformly supported in all nine frames. However, the effect was confined to English and Italian, because the Hungarian subjects used so little emphatic stress.

All of the devices except for emphatic stress were predicted to show changes with increased givenness. Prediction 1 held that ellipsis would increase with increased givenness. This effect was found to be significant in nine cases out of 18. Prediction 2 held that pronominalization would increase with increased givenness. This effect was found to be significant in two cases out of 12. Prediction 4 held that use of the indefinite article would decrease with increased givenness. This effect was found to be significant in 10 cases out of 12. Prediction 5 held that use of the definite article would increase with increased givenness. This effect was found to be significant in two cases out of 12. Finally, Prediction 6 held that subjects in this age range will initialize elements more when they are given.

However, as noted above, exactly the opposite effect was observed.

Summarizing the findings on the predictions for increased newness, the results showed first that increased newness resulted in somewhat decreased ellipsis in all three languages. Second, the results show that, in both English and Italian, emphatic stress was consistently used as a marker of increased newness. The low use of emphatic stress in Hungarian is probably related to the use of word order variation to place elements into positions receiving primary stress. More research on the role of emphatic stress in languages like Hungarian is needed.

Summarizing the findings on the predictions for increased givenness, the results showed that increased givenness was marked most clearly by increased ellipsis and the use of the indefinite article. Increased givenness also resulted in weak increases in pronominalization and definite article use. However, there was reason to believe that the subjects' use of ellipsis and pronominalization tended to preclude use of the definite article to mark increased givenness. Just as pronominalization was partially masked by frequent use of ellipsis, so use of the definite article was masked by both ellipsis and pronominalization. These observations suggest that both pronominalization and use of the definite article might show a clearer relation to newness in tasks that discourage use of ellipsis. As was noted earlier, Karmiloff-Smith (1977) has characterized early article use as a primarily exophoric. However, the present results suggest that even older children and adults may be using the definite article exophorically in this task. The absence of any significant Age \times Frame interactions for the definite article supports this view. Exophoric use of the definite article for the first mention of an object was also observed by Warden (1976, Experiment 3).

The negative findings on the relation between initialization and increased givenness are particularly important because so many writers have attempted to relate word order to

givenness. The fact that, in this task, word order showed no strong relation to givenness or newness provides support for the multi-factor analysis of initialization that has been proposed by MacWhinney (1977). As noted earlier, that analysis, like the one offered by Osgood and Bock (1977), suggests that control of initialization through givenness is not as powerful as the control of initialization by perceptual and intrasentential factors. Although children did increase their use of initialization with age, it appears that this increase was not directly related to givenness or newness. The control of initialization through perceptual and intrasentential factors was not examined in this study.

Apart from these basic results, the study also yielded a variety of data on baseline effects relating to language differences and Language \times Age interactions. Hungarian and Italian were found to use more subject ellipsis and this effect was most pronounced in the youngest group. Ellipsis baseline effects affected subjects more than verbs. Subject ellipsis was so low in the first frame that it could not decline across frames. Verb ellipsis, on the other hand, was high enough in the first frame to provide room for a significant drop.

Hungarian and Italian reserve use of subject pronouns for the expression of contrastivity rather than givenness. This ceiling on the use of subject pronouns led to both Language \times Age and Language \times Frame interactions. Similarly, the higher ceiling on use of emphatic stress in English led to significant Language \times Age and Language \times Frame interactions. Many of the differences between the languages on article use revolved about the fact that Hungarian has, in practice, no indefinite article. Moreover, as noted above, both Hungarian and, to a lesser extent, Italian make more use of the definite article than English. Several Language \times Age interactions reflect these language-related baseline effects. Hungarian and Italian also showed more initialization than English, and several Language \times Age interactions reflect the presence of a

higher ceiling for initialization in Hungarian and Italian.

Although this study yielded many strong main effects for age, the number of significant Age \times Frame interactions was remarkably low. Even more surprising was the fact that the data on Frame main effects with the adults included was not significantly different from the data with the adults omitted. It appears that, in this task and for these three languages, the fundamental relations between givenness and newness and ellipsis, pronominalization, emphatic stress, the indefinite article, and the definite article are acquired by age 3. Moreover, the presence of between-language differences in the baseline levels of usage of these devices by children indicates that the language-specific aspects of the use of these devices must be learned at a very early age. Of course, these results are specific to the particular task used in this experiment and full acquisition of the use of these devices in more complex tasks (Bresson, 1974; Maratsos, 1974; Warden, 1976) may occur considerably later.

The limitations of the present findings to a specific task, a small set of devices, and a group of only three languages must be underscored. By using a variety of sentence types, some generality for the findings has been obtained. However, much greater generality could have been established if the study had examined a variety of sentences within each sentence type. Clearly, this is a priority for future research. Although it is true that the present sampling of devices, sentence types, and languages was limited, nonetheless the results illustrate how speakers of different ages in different language communities use sentential devices to express certain fundamental functional relations. These results, therefore, provide support for a number of the predictions deriving from functionalist theory. In particular they indicate a weak relation between the devices of pronominalization, initialization, and definite article use and increases in givenness. They show a fairly strong relation

between increasing newness and the devices of ellipsis and stress and between increasing givenness and the devices of ellipsis and use of the indefinite article. They show that, in this task, initialization has no straightforward relation to givenness and newness. Finally, they show that there is a fair degree of consistency in the functional determination of the use of these sentential devices across both ages and languages.

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