A developmental study of the pragmatic communication rule for prenominal adjective ordering*

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First-, fourth-, and eighth-grade children and college undergraduates indicated preference for either normal or inverted orders of prenominal adjectives (for example, *the large red car* or *the red large car*, respectively) to describe a pictorial referent. Preference for the normal order of adjectives first appeared with the fourth graders. When communication context was varied by presenting a nonreferent that required a color adjective for discrimination from the referent, college students increased their preference for the inverted order. This separation of the acquisition of a linguistic rule from its utilization in communication was discussed.

Prenominal adjectives are ordered according to some rule or convention. For example, the phrase *the large red car* is generally preferred to the phrase *the red large car*. Recently, there have been a number of laboratory demonstrations that adjective order preferences in English do exist and that the ordering is not random (Danks & Glucksberg, 1971; Martin, 1969b). Additionally, Martin and Molfese (1971) found that children as young as 9 years of age preferred basically the same prenominal ordering of adjectives as did adults. Schefflin (1971) found that 5-, 6-, and 7-year-old children produced noun phrases with the adjectives normally ordered even after hearing similar phrases with the orders permuted to include all possible orders. Unusual adjective ordering occurred in only 12% of the phrases in which multiple adjectives were used to describe an object. There is also some evidence that children as young as 3 and 4 years exhibit specific adjective order preferences (Bever, 1970; Martin & Molfese, 1972), although it is not clear that their preferences are precisely the same as those exhibited by older children and adults.

While both children and adults exhibit preferences for certain orderings of prenominal adjectives, the basis for these preferences is not easily specified. Schefflin (1971) has noted that English grammar books written for teachers of native English speakers typically ignore the problem of adjective ordering. Martin (1969a, b) has commented on the failure of efforts to account for adjective ordering with syntactic rules. The search for a semantic rule to account for the phenomenon of adjective ordering has met with some success. Ratings of

accessibility, absoluteness, and definiteness of adjectives all correlate well with preferred adjective ordering (Martin, 1969a, b).

Since Martin's dimensions were highly correlated, Danks and Glucksberg (1971) incorporated the dimensions of absoluteness and definiteness into a single dimension termed "intrinsicness." Based in part on Martin's operationalization of his absoluteness dimension, they speculated that the most intrinsic attributes of a noun object would be least likely to be used to discriminate that object from nonreferent items. The more intrinsic the relationship between adjective and noun, the more redundant is the information carried by the adjective. From a communication perspective, placing the most discriminating adjective first in a string of prenominal adjectives would facilitate correct identification of the referent by the listener. Normal ordering is a regularization of the principles that some adjectives are generally more useful for discriminating one object from another and that the more informative adjectives should reach the listener first.

Support for such a pragmatic communication rule was obtained by Danks and Schwenk (1972), who found that by manipulating the context in which a descriptive phrase was uttered they could alter the adjective order preferences of adults. When a referent object could be discriminated from nonreferent objects solely on the basis of size, normal adjective order was preferred significantly more often than in a control condition where neither size nor color adjectives were necessary to identify a referent object. When a referent object could be discriminated from nonreferent objects solely on the basis of color, inverted adjective order was preferred significantly more often than in the control condition. These findings were significant only when there was contrastive stress on the first adjective, although the trend was similar when no contrastive stress was used.

The pragmatic-communication rule requires that adjective ordering be partially determined by the speaker's awareness of the informational needs of the listener. The speaker places the adjectives which are

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Table 1
Examples of Slide Types

Type	Position	
	Left (Criterion)	Right
Color Relevant	large yellow pencil	large green pencil
Size Relevant	large gold clock	small gold clock
Either Relevant	small green fish	large gold fish
Neither Relevant	small blue table	large black scissors

most useful for identifying one object from another first in a series of adjectives. Danks and Schwenk (in press) found that phrases following the pragmatic-communication rule facilitated listeners' comprehension. Since it has been frequently found that children have difficulty adjusting their communications to the needs of the listener in many tasks (Glucksberg & Kraus, 1967), it seemed possible that adjective ordering in young children might not be influenced by the pragmatic-communication rule. This experiment to determine the extent to which children's adjective order preferences could be manipulated by differing communication context, thereby determining whether the pragmatic communication rule was a strategy useful for children in adjective ordering.

METHOD

Subjects

The Ss were 160 native English speakers. First-, fourth-, and eighth-grade children were pupils at an elementary school and a junior high school in a suburban school system. Two classes at each grade level were tested. Adult subjects were undergraduates enrolled in the introductory psychology course at Kent State University. All undergraduates received points convertible to course credit for their participation in the experiment. In order to obtain 20 Ss in each experimental group, the data of some Ss were randomly eliminated. Forty Ss at each grade level remained in the sample. The mean ages of the four groups of Ss were 7:2, 10:5, 14:0, and 20:3 years.

Materials

Colored line drawings of four versions of 10 objects were used to construct 40 slides. These were the same drawings used by Dank and Schwenk (1972). The objects were a car, a pencil, a key, a clock, a cup, a button, a fish, a hammer, scissors, and a table. Each object was drawn in two different sizes and two different colors in order to obtain four unique versions of the object. The pictures of the same objects differing in size also differed on other characteristics. For example, the large car was a sedan and the small car was a sports car. Forty slides consisting of two objects side by side were constructed. The object on the left was designated the criterion object. There were four different slide types. See Table 1 for examples of each slide type.

The two experimental slide types were called color relevant and size relevant. In the 10 color relevant slides, the referent (criterion) object was a different color than the nonreferent object, but both objects were the same in all other respects, including size. In the 10 size relevant slides, the criterion object was a different size than the nonreferent object, but both objects were the same color.

Two slide types represented control contexts for the experiment. Ten slides composed of two different objects,

differing in both size and color, comprised the neither relevant condition, since neither adjective was needed to discriminate between the two objects. Ten slides composed of the same object differing in both size and color comprised the either relevant condition. Either adjective was sufficient to discriminate between the objects on these slides.

Each slide type depicted each of the 10 different objects only once. All four versions of the object appeared once as a criterion object. On half of the slides of each type, the small version of the object was the criterion. Colors of the criterion objects were also varied within each slide type.

Test Construction and Procedure

The testing was conducted in groups in the classroom. Ss were introduced to the task by showing them 10 slides depicting all four versions of each object. The color and size differences were commented upon, and each object was labeled. Four additional neither relevant slides were used as warm-up slides for the main task. The 40 test slides appeared in modified random order with no two slides containing a criterion object from the same set occurring in succession, no more than two slides with the same color criterion objects occurring in succession, and no more than three slides with the same size criterion objects occurring in succession.

While briefly viewing each slide, Ss heard two tape-recorded descriptions of the criterion object, designated by a large X pasted above the left side of the screen. The descriptions always consisted of a determiner, two adjectives, and a noun. In one description, adjective order was normal, *the large red car*, and in the other, it was inverted, *the red large car*. The order of the two types of descriptions was counterbalanced across all conditions.

Ss were told to imagine that they were trying to describe the criterion object to a friend who could not see the X, telling him which object was correct. They were to select the description which better communicated to the friend the nature of the correct object. They indicated by circling a "1" or a "2" on the answer sheet the better description. Special care was taken to insure that the younger Ss understood the task. Questions were answered carefully; the Ss were informally quizzed about the procedure; and parts of the instructions were repeated.

Intonation was varied between Ss. A stress intonation group at each age level ($N = 20$) heard phrases with heavy stress on the first adjective, a large juncture between the two adjectives, but no juncture between the second adjective and noun, for example, *the RED/ large car*. The list intonation group at each age level ($N = 20$) heard phrases with light stress on both adjectives and the noun and with small junctures between each word. The stress was not as strong nor the juncture as large in the list condition as in the stress condition. The intonation patterns were used regardless of the adjective order presented.

RESULTS

The proportion of each S's responses indicating a preference for inverted adjective order was calculated for each of the four slide types. Proportions rather than frequencies were used because individual Ss occasionally failed to respond to all items. The mean proportion for each slide type and grade level is given in Table 2.

An analysis of variance on the proportion scores showed significant main effects of age, $F(3,152) = 44.55$, $p < .001$, and slide type, $F(9,456) = 8.51$, $p < .001$, which can only be interpreted in terms of the significant Age by Slide Type interaction, $F(9,456) = 4.76$, $p < .001$. The first graders preferred inverted adjective order approximately 40% of the time across all slide types. They did not respond

differentially in different communication contexts. Neither did the fourth graders respond differentially in different communication contexts, but their preference for inverted adjective order was much less than the first graders. They preferred it approximately 12% of the time across all conditions. While eighth graders showed the smallest preference for inverted adjective order, they seemed to prefer it most in the color relevant contexts and least in the size and either relevant contexts. However, this slight sensitivity to differential context was not significant with a Newman-Keuls test. College students showed a slightly greater tendency to prefer inverted order than did the eighth graders, yet they preferred it most in the color relevant and least in the size relevant conditions. There was little difference in the proportion of preference for inverted order in the control contexts, but the proportion was smaller than that in the color relevant context. Newman-Keuls analyses indicated that performance in the color relevant conditions was significantly different from performance in the control conditions.

The Age by Intonation interaction was also significant, $F(3,152) = 4.86$, $p < .01$. Stress seemed to increase college students' preference for inverted order and decrease it for fourth graders in all contexts. Intonation had little consistent effect on the preferences of first graders and eighth graders for inverted adjective order.

Because the overall frequency of preference for inverted adjective order differed among the different age groups, difference scores were also calculated by subtracting from the proportion of errors on the niether relevant control the proportion of errors on the different slide types. The pattern of these differences was the same as for the proportion scores. Newman-Keuls analyses indicated that the differences in preferences for inverted adjective orders according to communication context was significant only for college students.

Whether individual Ss were influenced by the pragmatic communication rule was tested by categorizing each S according to the following criterion. Ss whose proportion of inverted order preference to color relevant slides was .2 greater than that to either relevant and whose proportion preference to size relevant slides was less than or equal that to either relevant slides were said to be influenced by the nonreferent context. These frequency data are shown in Table 3. An overall chi-square test of these data was significant.

Table 2
Mean Proportion of Preference for Inverted Adjective Order

Grade	Relevant Adjective			
	Size	Color	Either	Neither
First	.41	.40	.38	.38
Fourth	.11	.12	.11	.12
Eighth	.02	.09	.02	.04
Adult	.04	.28	.08	.10

Table 3
Frequency of Ss Following Pragmatic Communication Criterion

	Grade			
	First	Fourth	Eighth	Adult
Pragmatic Effect	2	1	3	13
No Pragmatic Effect	38	39	37	27

$\chi^2(3) = 22.16$, $p < .001$. Only 5% of the children were so categorized, but 32% of the college students followed the pragmatic communication rule, at least according to this criterion.

DISCUSSION

The pragmatic communication rule seems to describe best the performance of about one-third of the adult Ss. They were found to prefer inverted adjective ordering more often when color was the attribute discriminating one object from another than in control conditions. Also, adults tended to prefer normal adjective ordering more often when size was the attribute discriminating one object from another. Eighth graders showed slightly greater preference for inverted adjective order in the color relevant condition than in any other, but this difference did not approach significance.

Neither first nor fourth grade children responded in the manner which would be predicted by the pragmatic communication rule. They did not order adjectives differentially depending upon communication context. Conscious use of the rule may require skills that are not well developed in children age 10 and below (Flavell, 1968; Glucksberg & Krauss, 1967). It may be that the younger Ss were unable to see that altering normal adjective order could facilitate communication in some contexts. Since this task required that they imagine themselves in a communication situation rather than actually putting them in a real communication situation, their egocentrism may have been particularly dominant here.

Since the Schefflin (1971) study showed that 7-year-olds preferred normal adjective order in a production task, it seems strange that they should show a preference for inverted order approximately 40% of the time in this experiment. There are several possible explanations for this finding. Our first graders may not have understood the task and may have been responded at random. The fact that their preference for inverted adjective order was so close to 50% supports this idea. However, it is also possible that the first graders were unable to perceive the difference between the two descriptions of the criterion object because the two descriptions sounded so much alike. This would suggest that normal ordering is not well established yet. Another possibility is that, although the children perceived a difference between the two descriptions, they were unable to remember them long enough to respond differentially. Whatever the exact reason, the general

difficulty of our task probably led to the rather poor performance by the first grade Ss.

That stress intonation facilitated preference for the inverted adjective order only in the college students supports the importance of intonation in the use of the pragmatic communication rule. Danks and Schwenk (1972) found that communication context significantly influenced preferences for adjective order only when a stress intonation was used in the descriptive phrases. In both experiments, then, adult speakers did not apply the pragmatic communication rule to adjective orders unless they were marked by contrastive stress. Since the children were not using the pragmatic communication rule, intonation had no effect on their performance.

In conclusion, the acquisition of adjective ordering and its utilization in communication is a two-stage process. Initially, the rule for the normal ordering of prenominal adjectives is acquired. Our data indicated that this acquisition occurs between ages 7 and 10 years. However, since previous studies have indicated substantially lower ages for this acquisition (Bever, 1970; Martin & Molfese, 1972; Schefflin, 1971), the determination of this minimum age may be quite task dependent. Secondly, once the normal ordering rule has been acquired, it is incorporated under a more general pragmatic communication rule. Then, the normal order can be manipulated by the speaker to insure better listener comprehension in a particular communication context. The use of pragmatic functioning is evidently acquired quite late—after 14 years in the present data. This age is consistent with Glucksberg and Krauss (1967), who found that ninth graders (approximately 15 years old) failed to perform as well as adults in a communication task. Thus, the acquisition of linguistic

rules can be isolated from their utilization for maximally effective communication.

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