

# Some developmental aspects of preferred adjective ordering

J. E. MARTIN and DENNIS MOLFESE

The Pennsylvania State University, University Park, Pa. 16802

Developmental normative data on the preferred adjective ordering phenomenon are reported. The ages considered range from college age to 9 years of age. The results show that the ordering phenomenon is well established by the ninth year. The results also show that the variance of the scale values of the adjectives on the dimension of preferred order is greater for older Ss than for younger Ss.

Martin (1969) has presented normative data on the preferences of college students for the ordering of pronominal adjectives. The technique used was direct. Ss were given adjective pairs and asked to indicate the order they preferred for each pair.

Bever (1970) reported that he and Epstein have found evidence for order preferences in preschool children. For the adjectives they used, Bever and Epstein inferred that children have the same order preferences as adults (personal communication). However, Bever and Epstein's procedure was very indirect. It involved the inference that a S possessed an order preference if he omitted, or substituted, an adjective or noun in an attempt to recall a noun phrase in which the adjectives were in nonpreferred order (personal communication). Clearly, the presence or absence of order preferences is not unambiguously implied by the presence or absence of such data.

The purpose of the present study was to assess adjective ordering in children as far down the age scale as feasible, using the same adjectives and the direct assessment procedures which Martin (1969) had used. This procedure allows for scaling of the adjectives in terms of order preference and direct statistical comparison among the order preferences of the various age groups.

## MATERIALS

The adjectives used were all of a set of 20 adjectives used by Martin (1969) and designated Set A in that paper. Each of the 190 possible pairings of adjectives was made. Each pair was placed in the two possible orders to the left of the noun *thing*, forming two noun phrases with pronominal adjectives. All pairs of phrases were placed on presentation sheets.

## SUBJECTS

The Ss were 62 ninth-grade students, 84 seventh-grade students, 120 fifth-grade students, and 115 fourth-grade students. All Ss were students at schools in the area surrounding University Park.

## RESULTS

Scalings of the adjectives in terms of order for each grade and for college students, from Martin (1969), are given in Table 1. The intercorrelations among these scale values are given in Table 2.

The variances of the scale values were greater as age increased. The variances were 0.0118, 0.0163, 0.0199, 0.0280, and 0.0449 for the fourth-grade, fifth-grade, seventh-grade, ninth-grade, and college students, respectively. The variance for the fourth-grade Ss was significantly less than that for fifth-grade Ss,  $t(18) = 2.44, p < .05$ . The variance for the fifth-grade Ss was significantly less than for the seventh-grade Ss,  $t(18) = 2.13, p < .05$ . The variance for the seventh-grade Ss was significantly less than for the ninth-grade Ss,  $t(18) = 5.12, p < .001$ . The variance for the ninth-grade Ss was significantly less than for the college-age Ss,  $t(18) = 5.05, p < .001$ .

## PROCEDURE

The Ss were instructed to read "to themselves" both members of each pair of phrases, i.e., the Ss were told to read each pair of adjectives in both orders. They were told to indicate which phrase "sounded better" to them by marking on answer sheets.

The ninth-grade Ss were each given a complete set of 190 pairs of phrases. The seventh-grade Ss were each given 95 pairs of phrases. Forty-two complete sets of pairings were distributed among the 84 Ss. The fifth-grade Ss were each presented 76 pairs of phrases. Forty-eight complete sets of pairings were distributed among the 120 Ss. The fourth-grade Ss were each given 76 pairs of phrases. Forty-six complete sets of pairings were distributed among the 115 Ss.

## DISCUSSION

The results clearly indicate the remarkable consistency of the ordering phenomenon across the assessed ages. Apparently ordering preferences are solidly established by the ninth year. The major difference among the groups, the variance of the scale values, may have had two possible sources. First, it is possible that there

Table 1  
The Average Proportion of Times Each Adjective Was Preferred Closer to the Noun Than the Rest of the Adjectives for Each Group

Adjectives	Average Proportion for Each Group				
	Fourth Grade	Fifth Grade	Seventh Grade	Ninth Grade	College
good	0.312	0.267	0.259	0.234	0.172
small	0.313	0.286	0.270	0.258	0.204
short	0.406	0.396	0.337	0.348	0.269
soft	0.419	0.386	0.368	0.332	0.302
beautiful	0.393	0.391	0.427	0.396	0.351
cold	0.475	0.519	0.474	0.446	0.385
smooth	0.464	0.442	0.469	0.425	0.408
safe	0.483	0.444	0.431	0.426	0.414
loud	0.507	0.444	0.422	0.401	0.417
thick	0.496	0.492	0.476	0.464	0.427
clean	0.481	0.481	0.505	0.484	0.431
useful	0.537	0.550	0.526	0.571	0.548
wide	0.458	0.501	0.489	0.477	0.566
sturdy	0.592	0.550	0.546	0.565	0.571
dry	0.500	0.558	0.572	0.539	0.586
round	0.498	0.545	0.575	0.616	0.666
broken	0.636	0.637	0.633	0.626	0.667
red	0.650	0.661	0.687	0.754	0.825
silken	0.712	0.709	0.782	0.827	0.852
Chinese	0.664	0.756	0.741	0.822	0.940

Table 2  
Intercorrelations Among the Scale Values of the Adjectives for All Groups

	Fifth Grade	Seventh Grade	Ninth Grade	College
Fourth Grade	0.96	0.95	0.94	0.92
Fifth Grade		0.98	0.98	0.97
Seventh Grade			0.99	0.97
Ninth Grade				0.98

was greater precision and care in the responding of the older Ss than in that of younger Ss. Second, it may be the case that younger Ss are not as sensitive to the ordering phenomenon as are older Ss. Either or both of these factors could result in a greater variance in the scale values for the older Ss than for younger Ss.

Direct assessment of order preferences at younger ages than those tested presents considerable methodological and logistic problems. However, it would seem worth the effort to attempt to develop

techniques with more face validity than Bever and Epstein's. The more direct the procedure, the more meaningful will be comparisons between the results of such a procedure and the results reported here.

#### REFERENCES

- BEVER, T. G. The cognitive basis for linguistic structures. In J. R. Hayes (Ed.), *Cognition and the development of language*. New York: Wiley, 1970. Pp. 279-362.
- MARTIN, J. E. Semantic determinants of preferred adjective order. *Journal of Verbal Learning and Verbal Behavior*, 1969, 8, 697-704.

factor are maximally separated, and the direction alternates. An attempt to order the scales systematically here would have prejudged the outcome of the investigation, since the factorial structure was not known.

#### PROCEDURE

The experiment was explained to the Ss as "an investigation of your reactions to 6 h of sensory monotony," and the general conditions of the experiment were described. The Ss underwent a personality and cognitive testing procedure (unconnected with the results reported here), lasting just over 1 h. They were then taken into a sound-deadened deprivation cubicle (approximately 6 x 10 ft) and made comfortable in an adjustable chair. Electrodes were attached for the continuous recording of GSR. All Ss wore earphones delivering 25 dB white noise, and all wore goggles. Half the Ss were confined in the dark and half in the lighted cubicle wearing translucent goggles. They were instructed to remain still, quiet, and awake. They were continuously monitored through the substation of an intercom.

After 6 h, the E entered the chamber, removed the goggles and earphones, and administered a standard form of interview. The interview was designed to elicit any idiosyncratic responses and to give the Ss time to reorientate themselves. In practice, few Ss made idiosyncratic responses and none appeared disoriented. The interview was not intended to be a major source of data. Finally, the Ss filled in the rating scale blank under the following written instructions: "Below are some pairs of opposites. I want you to look back on the time you spent in the cubicle and try to decide where the experience falls between the two extremes. If it fell at one of the extremes, put a tick in the space next to the word. If the experience was neutral, put a tick in the central space. Use the other four spaces to make up an imaginary scale on which you would rate the time you spent in the cubicle. E.g., a scale might run: extremely good, very good, fairly good, neutral, fairly bad, very bad, extremely bad. Try to make the gaps in the scales equal, i.e., the difference between 'neutral' and 'fairly' should be the same as the difference between 'extremely' and 'very.' You do not have to use the whole scale if you do not feel that the experience was extreme, nor does it matter if many of your answers fall in the extreme categories."

#### RESULTS AND DISCUSSION

The responses made by the Ss in the light and dark conditions did not differ, and, therefore, the data from both groups have been pooled.

## Dimensions of subjective response to short-term sensory deprivation\*

G. R. S. CONGREVE

Addiction Research Foundation, Toronto, Ont., Canada

A semantic differential type of rating procedure was applied to sensory deprivation by a population (N = 26) which underwent 6 h of sensory restriction. The results of cluster analysis on a matrix of correlations between the 29 scales showed that judgments of the unpleasantness of deprivation were quite highly related to judgments of its boringness, but that both these clusters were only slightly related to two clusters interpreted as measuring stress. Some possible consequences of these data for the theoretical analysis of sensory deprivation are discussed.

A reliable effect of sensory deprivation is that Ss report that it is unpleasant, boring, and mildly stressful. There has, however, been rather little work examining the nature of subjective response other than by analysis of postdeprivation interview data. Myers and his associates (Myers, 1969) have developed and used an Isolation Symptom Questionnaire (ISQ) and have reported the existence of three correlated factors: tedium stress, unreality stress, and positive contemplation. Their data have been obtained mainly from long-term studies, and the ISQ, as its name implies, focuses upon symptoms of deprivation, rather than on subjective affects per se. Zuckerman (Zuckerman, Levine, & Biase, 1964) has used his Multiple Affect Adjective Check List (MAACL) (Zuckerman & Lubin, 1965) in the sensory deprivation situation and has reported reliable changes in affective responses arising from a number of deprivation situations. [Zuckerman (1969a) reviews and summarizes this work]. The MAACL is designed to measure

experimentally induced affects in general, and it would seem possible that some qualitative aspects of the response to sensory deprivation might not be measured by it.

The work to be reported here specifically investigates the broad nature of subjective response to sensory deprivation, with a view to offering a more complete description of it.

#### SUBJECTS

The Ss were 26 male undergraduates at the Welsh College of Advanced Technology. Their ages ranged from 18 to 24 years (M = 19.8 years), and they were paid £1/10 (\$3.60) for their participation.

#### TEST

A subjective rating test was made up of 29 bipolar, 7-point rating scales. One pole of each scale was an adjective which had been reported in previous work to have been applied to sensory deprivation. The other pole was an opposite selected by E, usually from Roget's *Thesaurus*. The scales were listed in a randomly determined order, and the direction of the scale (i.e., whether from good-bad or from bad-good) was also randomized. This procedure departs from the semantic differential method described by Osgood, Suci, & Tannenbaum (1957), where scales loading on the same

\*From a thesis presented by the author to the University of Wales for the PhD degree. The author wishes to thank Dr. J. O. Robinson for his encouragement and help in supervising the work.