Meaningfulness values for 52 CVCs for grade-school-aged children¹

Sydelle S. Shapiro
UNIVERSITY OF MASSACHUSETTS

Abstract

Multiple word associations to 52 CVCs were obtained from grade-school-aged children. Meaningfulness values (m) for each word, defined as the mean number of associations, were determined. While m values for the set of words increased with grade-age, the rank ordering of these values was essentially the same within each grade-age-sex group. Sex was not related to m values. Values of m when compared with Noble's m' showed significant agreement both for rank-order comparisons and values dichotomized into high and low categories.

Problem

Several recent studies (Archer, 1960; Noble, 1961) have presented indices of meaningfulness for consonant-vowel-consonant (CVC) trigrams. These indices were derived from sample data limited to college-aged Ss. Thus, any verbal studies using children and attempting to control for or vary meaningfulness have been hampered by a lack of such indices for the age-group employed. The present study undertook to develop indices for meaningfulness for a sample of CVC's for grade-school-age children. Of interest was the degree of agreement between the values obtained in the present study and those of Noble (1961).

Method

The Ss were 600 children, 100 boys and 100 girls in grades 4, 6, 8, aged respectively 107-120 mo., 132-150 mo., and 156-174 mo. They were tested in classroom groups.

The CVCs were 52 words selected from Noble's table of scaled meaningfulness (m'); they ranged from an m' of 2.64 for "Cog" to 4.78 for "Man." Noble obtained m' values by a procedure which used a 5-point rating scale. While his procedure differs from the restricted production method used in the present study, results can still be compared with m' values for college students.

Words were presented to the children in booklets, with one page for each different word. On each page the particular word was typed five times, in a column. Each instance of the word was followed by a line to the right on which the children wrote their associations. In order to counterbalance any order-sequence effects, six different random orders of words were prepared. An approximately equal number of booklets with each of the six different orders was distributed in each grade. Instructions were administered orally. The children were told they would see a list of words, one word at a time, to which they were to write as many associations as possible in the time permitted with a maximum of five different associations to each word. The words of the list were then presented, one page at a time with 18 sec.

allowed for responses to each page. At the end of each 18-sec. period E told the children to stop and to turn to the next page.

Meaningfulness values (m) were obtained for each word for each grade-sex group separately by counting the total number of different responses given by each S, summing over the 100 Ss in the group and then taking the mean.

Results and Discussion

The 52 CVC's were dichotomized into 26 representing high and 26 representing low Noble m' values.

Table 1 presents m values obtained for each of the six grade-sex groups; means of m increase from Grade 4 to Grade 8 for all 52 CVCs. However, within each grade the range and SD is approximately the same.

Table 1. Obtained m Values for List of Words

	M-4*	F-4	M-6	F-6	M-8	F-8
	High Noble m' (3.82-4.78)					
BAD	2.59	2.65	2.86	3.04	3.33	2.98
BIG	2.96	3.39	3.63	3.54	3.89	3.81
BOY	2.74	3.10	3.32	3.40	3.51	3.25
BUT	1.84	1.91	2.06	2.18	2.49	2.34
BUY	2.86	3.20	3.34	3.40	3.45	3.46
CAN	2.71	2.81	2.97	2.96	3.39	3.14
CAR	3.03	3.41	3.61	3.62	3.77	3.98
DOG	3.00	3.39	3.50	3.71	3.94	3.86
FAT	2.66	2.93	3.26	3.34	3.52	3.47
FOR	2.44	2.46	2.46	2.55	2.58	2.37
FUR	2.96	3.24	3.67	3.70	3.71	3.85
GUN	3.18	3.28	3.57	3.64	4.15	3.86
HIT	2.98	2.81	3.51	3.33	3.68	3.52
JET	3.03	3.10	3.57	3.67	3.78	3.76
MAD	2.13	2.59	2.77	2.87	3.13	3.17
MAN	2.93	3.21	3.39	3.55	3.55	3.47
MAY	2.86	2.96	3.09	3.39	3.50	3.48
NEW	2.71	3.03	3.07	3.04	3.33	3.32
PAY	2.81	3.11	3.41	3.20	3.73	3.62
RAN	2.75	3.29	3.43	3.49	3.52	3.57
RED	3.09	3.43	3.47	3.78	3.93	3.92
SAD	2.38	2.69	2.85	3.13	3.28	3.05
SAT	2.73	2.93	3.34	3.18	3.67	3.55
SUN	3.23	3.48	3.82	3.89	4.01	4.15
TAN	2.78	3.04	3.44	3.65	3.84	3.88
WIN	2.78	2.91	2.95	3.08	3.50	3.20

(continued on the next page)

Table 1. (cont.)

	M-4*	F-4	M-6	F-6	M-8	F-8
Low Noble m' (2.64-3.81)						
COB	2.14	2.34	2.76	2.74	2.87	2.64
COG	0.84	0.97	1.14	1.10	2.09	1.49
COY	0.97	1.14	1.24	1.39	2.06	2.35
DIM	1.81	2.26	2.52	2.66	3.17	2.99
DIP	2.24	2.47	2.45	2.68	3.01	3.00
FAR	2.50	2.63	2.54	2.86	3.21	3.11
FEW	2.23	2.36	2.55	2.65	3.04	2.89
GAY	2.66	3.19	3.19	3.16	3.51	3.44
HAS	2.15	2.45	2.47	2.57	3.00	2.71
HOP	2.66	3.00	3.01	3.35	3.49	3.59
HOT	3.07	3.29	3.81	3.60	3.91	3.64
HUT	2.65	2.94	3.21	3.17	3.53	3.56
JAB	2.09	2.07	2.69	2.93	3.11	3.04
LIP	2.62	2.76	3.00	3.01	3.32	3.11
LUG	1.93	2.38	2.57	2.64	3.27	3.00
MOW	1.59	1.89	2.04	2.41	3.02	2.94
NAP	2.83	3.33	3.14	3.56	3.61	3.64
NOT	2.23	2.47	2.53	2.41	2.76	2.56
RAW	2.18	2.34	2.65	2.74	3.11	3.00
RIB	2.15	2.31	2.90	2.89	3.25	2.99
TUB	2.99	3.51	3.39	3.56	3.59	3.88
WAG	2.66	2.84	2.79	3.07	3.23	3.26
WAN	1.14	1.01	1.12	1.25	1.75	1.97
WAS	2.27	2.33	2.49	2.58	2.82	2.68
WAX	2.50	2.77	3.03	3.30	3.61	3.44
WET	2.94	2.96	3.44	3.49	3.82	3.73

*M = Male; F = Female 4, 6, 8 = Grade level

An analysis of variance on m with words as the unit yielded significant effects for Grade-Age ($F = 44.72$; $df, 2/300$; $P < .01$), and for Noble m' level ($F = 80.99$; $df, 1/300$; $P < .01$). Sex was not significant nor were any of the interactions.

The significant F for grade-age reflects an increase in the number of responses from Grade 4 to Grade 8.

The increase in range and depth of experiences with increasing age is the presumed basis of the increase in the number of associations with increasing grade-age.

Relationships between m and m' values were also determined by means of rank-order coefficients of correlation and are shown in Table 2. For each of the six groups separately, these values ranged from .52 to .66 ($P < .01$; $df, 50$). Also shown in Table 2 are rank-order coefficients of correlations for m values for all pairs of groups. These range from .88 to .96 ($P < .01$; $df, 50$).

Table 2. Rank-Order Coefficients for Comparisons of Noble m' Values and m Values and for all Pairwise Comparisons of m Values

	M-4	F-4	M-6	F-6	M-8	F-8
Noble m'	.66	.58	.62	.58	.55	.52
M-4		.93	.91	.93	.89	.88
F-4			.90	.94	.88	.92
M-6				.95	.96	.93
F-6					.94	.95
M-8						.95

Thus, although number of associations increase with age, the rank orders of CVCs with respect to m are very stable. In subsequent assessments of m for 4-8 grade Ss, if only rank order of words in terms of m is of interest, one grade-age group can be used.

References

- ARCHER, E. J. A re-evaluation of the meaningfulness of all possible CVC trigrams. *Psychol. Monogr.*, 1960, 74, No. 10 (Whole No. 497).
- NOBLE, C. E. Measurements of association values (a), rated associations (a'), and scaled meaningfulness (m') for 2100 CVC combinations of the English alphabet. *Psychol. Rep.*, 1961, 8, 487-521. (Monogr. Suppl., 3-V8)

Note

1. Supported in part by Public Health Service Fellowship MPN-18624 from the National Institute of Mental Health.