experiment, but mean sweating in the small-room/argue condition dropped to exceptionally low levels, levels lower than those reported by Johnson (1968), Dabbs et al. (1968), or Martens (1969). Dabbs et al (1968) argue that sweating will decrease when Ss' attention is directed away from the environment and toward inner concerns (i.e., when they withdraw).

It might seem inconsistent to conclude that withdrawal is conducive to argument, since argument requires an active confrontation between individuals. But there are no measures to indicate that argument was intensified (e.g., that it was louder) in the small room, and it may not have been particularly "arousing." Certainly it is possible for an intellectual argument to be less arousing than an exchange of personal feelings.

In summary, the effects of proximity were largely negative, as in the study by Albert & Dabbs (1970). The nearness of another person did not increase overall arousal or facilitate communication. Ss were dissatisfied with proximity, tended to withdraw from interaction with their partners, and responded well to an argument upon which they could focus their attention.

REFERENCES

- ALBERT, S., & DABBS, J. M., JR. Physical distance and persuasion. *Journal of Personality & Social Psychology*, 1970, 15, 265-270.
- ARGYRIS, C. The incompleteness of social-psychological theory: Examples from small group, cognitive consistency, and attribution research. *American Psychologist*, 1969, 24, 893-908.
- BAREFOOT, J. C., & KLECK, R. E. The effects of race and physical proximity of a co-actor on the social facilitation of dominant responses. *Mimeo*, 1970.
- BREHM, J. W. *A theory of psychological reactance*. New York: Academic Press, 1966.
- DABBS, J. M., JR., JOHNSON, J. E., & LEVENTHAL, H. Palmar sweating: A quick and simple measure. *Journal of Experimental Psychology*, 1968, 78, 347-350.
- JOHNSON, J. E. Measurement of the surgical patient's welfare. *USPHS final progress report*, 1968.
- JOHNSON, J. E., DABBS, J. M., JR., & LEVENTHAL, H. Psychosocial factors in the welfare of surgical patients. *Nursing Research*, 1970, 19, 18-29.
- JOHNSON, L. C., & LANDON, M. M. Eccrine sweat gland activity and racial differences in resting skin conductance. *Psychophysiology*, 1965, 1, 322-327.
- MARTENS, R. Palmar sweating and the presence of an audience. *Journal of Experimental Social Psychology*, 1969, 5, 371-374.
- McBRIDE, G., KING, M. G., & JAMES, J. W. Social proximity effects on galvanic skin responses in adult humans. *Journal of Psychology*, 1965, 61, 153-157.

- MONTAGUE, J. D., & COLES, E. M. Mechanism and measurement of the galvanic skin response. *Psychological Bulletin*, 1966, 65, 261-279.
- SCHACHTER, S. The interaction of cognitive and physiological determinants of emotional state. In L. Berkowitz (Ed.),

Advances in experimental social psychology, Vol. 1. New York: Academic Press, 1964.

- STOTLAND, E. Exploratory investigations of empathy. In L. Berkowitz (Ed.), *Advances in experimental social psychology*, Vol. 4. New York: Academic Press, 1969.

Preference for high variability in young children*

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Eighty-eight children from 41 to 84 months of age were presented with random shapes containing 5, 10, 20, and 40 independent turns in a paired-comparison design experiment. The raw data (i.e., preferences) were transformed into scale scores for the different levels of variability for each child. Analyses of variance showed: (1) a linear increase in preference with increasing variability, (2) a linear increase in preference for variability in increasing age, and (3) that boys had a slightly higher preference for variability than did girls.

In infants, preference for variability increases with age (Brennan, Ames, & Moore, 1966; Munsinger & Weir, 1967), while adults prefer stimuli of intermediate variability (Munsinger & Kessen, 1964). Studies of variability preferences in young children have produced inconsistent results. Thomas (1966) found an increasing preference for variability in Ss from 6 years of age to midadolescence. However, Munsinger, Kessen, & Kessen (1964) found a decreasing preference for variability in Ss 6 years and older, while Kaess & Weir (1968) found no difference in stated preference for diverse levels of variability in Ss 29-66 months of age.

Young children (3½-7 years of age) were used in the present study in an attempt to clarify the level of variability preferred by this age group.

METHOD

There were 88 Ss, 44 of each sex, ranging in age from 41 to 84 months. There were four boys and four girls in each 4-month age interval. The

children were brought voluntarily by a parent to the testing session.

Pairs of random shapes (Munsinger & Kessen, 1964) were back-projected onto a 4 x 4 ft translucent screen. The projected stimuli were 12 x 12 in. and 4 in. apart. There were three examples of each of the four stimulus levels (5, 10, 20, and 40 turns), paired in all combinations of stimulus complexity and left-right position. When one figure was paired with a figure of a different stimulus level, both were removed from the exemplar pool and were not available for pairing with other stimuli. The resulting 12 pairs were shown in the same random order during four presentations for a total of 48 presentations per testing session.

The testing was held in a small college classroom. The child was seated about 20 in. from the center of the screen. The S was told to look at the stimuli and choose the one he liked best in each pair. The E observed the S's eye movements through a 2 x 5 in. one-way glass in the screen to be certain the S was attending to the stimuli.

The 48 separate preference scores for each S were transformed into scale values of preference for each level of variability, using the method of least squares for paired comparisons

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Fig. 1a. Scale scores for preference for random shapes of varying number of turns for youngest three age groups.

(Torgerson, 1958). In order to obtain workable data, a slight modification was introduced. If a null score and a perfect score were obtained for two paired levels of variability, 0.5 was added to the null score and subtracted from the perfect score before proceeding with the calculations. Due to the small number (four) of stimulus levels used in this experiment, this manipulation is preferable to the traditional procedure for estimating scale values for paired comparisons with incomplete matrices, i.e., matrices containing some null and some perfect scores.¹ Calculations resulting from the latter procedure would yield an obvious misalignment of some scaling orders and an inability to estimate scale values for some Ss.²

Fig. 1c. Scale scores for preference for random shapes of varying number of turns for the four oldest age groups.

RESULTS

The scale scores for the 88 children were subjected to a repeated-measures analysis of variance. The S effect is eliminated in this case because the sum of the scale values for each S is zero. The variability effect was found to be highly significant ($p < .005$). A partitioning of the variability component showed a significance due to linearity ($p < .005$). The departure from linearity portion was not significant.

Since the variability effect was entirely linear, the slope value of the straight line of best fit was determined, for each individual, from graphs of the scale values plotted against variability. A two-way analysis of variance was performed on the slope values to determine any effects due to sex and/or age. The age effect is highly significant ($p < .005$). A partitioning of the age component indicates this effect is entirely linear ($p < .005$), with no significant effect in the departure from linearity portion. From Figs. 1a-1c, it is apparent that the preference for greater variability increases linearly as age increases.

The effect due to sex is significant ($.025 < p < .05$). In this regard, Fig. 2 shows that the boys had a slightly higher preference for variability than did the girls.

DISCUSSION

The results of this study support the hypothesis that stated preference of children (3½-7 years of age) is an increasing linear function of the variability of the stimuli (random shapes of 5, 10, 20, and 40 turns). This is in agreement with Munsinger & Weir (1967) and Thomas (1966), who found that preference for variability increases in Ss 9-41 months of age and 6 years to midadolescence, respectively. In addition, the present study revealed that stated preference for variability increases linearly with age in children 3½-7 years old. These results are contrary to those of Munsinger et al (1964) and Kaess & Weir (1968), who found a decreasing preference for variability in Ss 6 years of age and older and no difference in stated preference for variability with age in Ss 29-66 months of age, respectively.

A difference due to sex, though not highly significant ($.025 < p < .05$), was found in the present study. It should not be inferred that this result holds for the entire 3½- to 7-year-old population.

REFERENCES

- BRENNAN, W. M., AMES, E. W., & MOORE, R. W. Age differences in infants' attention to patterns of different complexities. *Science*, 1965, 151, 354-356.

Fig. 1b. Scale scores for preference for random shapes of varying number of turns for the four intermediate age groups.

- KAESS, D. W., & WEIR, M. W. Response technique as a factor in determining children's preference for complexity. *Psychonomic Science*, 1968, 11, 367-368.
- MUNSINGER, H., & KESSEN, W. Uncertainty, structure, and preference. *Psychological Monographs*, 1964, 78(Whole No. 586), 1-24.
- MUNSINGER, H., KESSEN, W., & KESSEN, M. L. Age and uncertainty: Developmental variation in preference for variability. *Journal of Experimental Child Psychology*, 1964, 1, 1-15.
- MUNSINGER, H., & WEIR, M. W. Infants' and young children's preference for complexity. *Journal of Experimental Child Psychology*, 1967, 5, 69-73.
- THOMAS, H. Preferences for random shapes: Ages six through nineteen years. *Child Development*, 1966, 37, 843-859.
- TORGERSOON, W. S. *Theory and methods of scaling*. New York: Wiley, 1958.

NOTES

1. G. A. Baker, personal communication.
2. A. H. Stevenson, unpublished data.

Fig. 2. Scale scores for preference for random shapes of varying number of turns for boys and girls.