- BROSSARD, L. M., & DECARIE, T. G. Comparative reinforcing effect of eight stimulations on the smiling response of infants. *Journal of Child Psychology & Psychiatry*, 1968, 9, 51-59.
- RHEINGOLD, H. L., GEWIRTZ, J. L., & ROSS, H. W. Social conditioning of vocalizations in the infant. *Journal of Comparative & Physiological Psychology*, 1959, 52, 68-73.
- ROUTH, D. K. Conditioning of vocal response differentiation in infants. *Developmental Psychology*, 1969, 1, 219-226.
- TODD, G. A., & PALMER, B. Social reinforcement of infant babbling. *Child Development*, 1968, 39, 591-597.
- WEISBERG, P. Social and nonsocial conditioning of infant vocalizations. *Child Development*, 1963, 34, 377-388.
- NOTE
1. Nor does it increase through the use of noncontingent reinforcement (Weisberg, 1963).

The effect of expected difficulty on psychophysical judgment*

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The effect on psychophysical judgments of pretask instructions that indicated the degree of task difficulty was studied. Prior to estimating the midpoints of various line lengths, one experimental group was told that the judgment task was difficult and to expect large errors, while another group was instructed that the task was easy and to expect few judgment errors. The average deviations of midpoint judgments from the measured midpoint of various line lengths was reliably larger for the group instructed to expect large deviations.

The social psychologist, who often deals with phenomena about which Ss hold preconceived notions and who manipulates various situational cues in an attempt to deceive Ss about the true purpose of his experiment, has recently become sensitized to the extraneous influence of Ss' expectations. For example, as independent variables, Ss' suspiciousness of E's intent (McGuire, 1969) and the demand characteristics of the experimental situation (Orne, 1969) have aroused considerable theoretical, as well as methodological, interest. The expectation produced by experimental instructions has been shown to influence Ss' performance on various tasks in an experiment involving beliefs about sensory deprivation (Orne & Scheibe, 1964) and to bias perceptual motor skills in a business setting (Jastrow, 1900).

Unlike earlier investigations, the present study investigated the effect of pretask instructions in a psychophysical experiment involving few explicit social cues and little interpersonal interaction between S and E. Ss were required to estimate the midpoint of printed lines of various lengths, to measure the lines and

determine the actual midpoint, and to calculate the difference between these two values. One experimental group (Group HARD) was instructed that the task was difficult and to expect large errors; another group (Group EASY) was told that the task was easy and to expect few errors.

METHOD

Two experimental psychology laboratory sections, each composed of 17 undergraduate juniors and seniors of Southern Illinois University, served as the experimental groups. Group HARD comprised 15 males and 2 females; Group EASY consisted of 13 males and 4 females.

The E distributed to each S a sharp pencil, a millimeter scale, and 10 sheets of paper upon which were printed lines of varying lengths. Each page contained a 25-, 50-, 75-, 100-, 125-, and 150-mm line. The lines were printed in irregular positions and arranged in a different random order on each page. E instructed each group to estimate the midpoint of each line, then measure each line to find the true midpoint, and record the difference between the estimated and true midpoints for every line. After answering all questions, E made a distinct statement to each experimental group indicating the degree of difficulty of the task and what

Fig. 1. Average variable error as a function of line length for Group HARD and Group EASY.

results to expect. Specifically, Group HARD was told to expect large differences between the estimated and the measured midpoint, since students typically have found the task to be quite difficult. Group EASY was told that other students had found the psychophysical judgment task to be easy and therefore to anticipate quite accurate midpoint estimations.

Within 1 h all Ss had obtained observed and measured midpoints of all the line lengths and had calculated the deviations. The average variable error for each particular line length was determined by dividing the absolute sum of the deviations for all trials of a particular line length by the number of trials.

RESULTS AND DISCUSSION

Figure 1 depicts, for each instruction condition, the average VE for each line length. For both conditions, the mean VE varied directly with the length of the stimulus line. Group HARD, expecting large errors, had a reliably larger VE for each line length than did the group told to expect few errors (Group EASY). A *t* test at every line length indicated that the group differences were significant beyond the .02 level.

Consequently, the results of the present study indicated that psychophysical judgments were sensitive to variation in pretask instructions. Similarly, Jastrow (1900) reports that perceptual-motor coordination may become impaired due to an expectancy that the ensuing task will be difficult and that failure is probable. He gives a detailed account of the effects of task-difficulty anticipations on card-punching performance for the United

*The study was performed at Southern Illinois University.

States Census Bureau in 1890. Under the expectation that the task was extremely difficult, individual workers reached a maximum output of about 550 cards per day. However, workers who were hired later and not warned of the task's difficulty performed more efficiently at the task.

The extraneous effect of S's anticipations and suspicions in the experimental situation have been most extensively studied as an influential factor in attitude change (McGuire, 1969), and the effects of demand characteristics that

influence S's expectations has been most often demonstrated in situations implicating social beliefs or cues (Orne, 1969). Since the results of the present study demonstrated a pronounced effect of S's expectations in a psychophysical judgment situation, perhaps the human-performance researcher should become as sensitized as the social psychologist to the effects of experimental demand characteristics.

REFERENCES

JASTROW, J. *Fact and fable in psychology*. Boston, Houghton Mifflin, 1900.

MCGUIRE, W. J. Suspiciousness of experimenter's intent. In R. Rosenthal and R. Rosnow (Eds.), *Artifact in behavioral research*. New York: Academic Press, 1970. Pp. 13-53.

ORNE, M. T. Demand characteristics and quasi-controls. In R. Rosenthal and R. Rosnow (Eds.), *Artifact in behavioral research*. New York: Academic Press, 1970. Pp. 143-179.

ORNE, M. T., & SCHEIBE, K. E. The contribution of nondeprivation factors in the production of sensory deprivation effects: The psychology of the "panic button." *Journal of Abnormal & Social Psychology*, 1964, 68, 3-12.