

trace interval was obtained for either TC3 or number of Ras. However, within the design, the TC3 data indicated faster acquisition with shorter signals (and ISIs) for the delay groups. This finding appears consistent with those interpretations which invoke the laws of classical conditioning to account for temporal effects of associating the signal and the aversive stimulus (e.g., Mowrer, 1960). Also noteworthy in this regard are the recent findings of Perlmutter, Funk, Taylor, & Kimble (1969) that voluntary instructed responding was inversely related to ISI.

In the present study, avoidance latency proved more sensitive than the indices of avoidance behavior just discussed. Avoidance latency was directly related to ISI. In general, as ISIs increased, either by increasing signal duration or trace interval, longer avoidance latencies occurred. If latency is regarded as indicating strength of conditioning, then stronger conditioning occurred with shorter ISI. Furthermore, the shortest latencies were associated with the delay procedure. Apparently, the delay procedure leads to stronger conditioning than does the trace procedure, even when ample opportunity is given for response-produced signal termination. However, an analysis of different avoidance latencies on the basis of response shaping (Prokasy, 1965) suggests that longer latencies are more frequently reinforced with longer ISIs. Regardless of interpretive mode, the present latency data are strikingly similar to those reported by Behrend & Bitterman (1962, 1964) with fish.

Also of interest, Ss typically acquired the Ra in a fashion resembling one-trial learning. In addition, Ss usually failed to extinguish having once acquired the Ra. These aspects of the present results are consistent with other findings from our laboratory (Meyer, in press; Miller, Kalin, Eckenroth, & Meyer, 1970).

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Cognitive style in the organization and articulation of ambiguous stimuli

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This investigation assessed the relation between the abilities to organize and articulate ambiguous stimuli and the global-analytic continuum of cognitive style postulated by Witkin in his theory of psychological differentiation (Witkin et al, 1962). Thirty-five Ss served in the study. Cognitive style was measured by the rod and frame test; the Obscure Figures Test (OFT) was used to measure organizing or structuring ability. Articulation was operationally defined in terms of memory for the OFT figures as indexed by recognition and identification measures. Consistent with predictions from Witkin's theory, significant correlations were obtained between cognitive style and the abilities of organization and articulation.

Witkin's theory of psychological differentiation (Witkin et al, 1962) attempts to deal with individual differences in information processing, i.e., cognitive style. The theory proposes a continuum of cognitive style characterized by global and analytic polarities. According to the theory, individuals located at the analytic pole are superior to those at the global pole in analyzing, organizing, and articulating their experiences.

Analysis refers to the classic dimension of field dependence, field independence; global individuals are field dependent, while analytic individuals are field independent. According to Witkin, those with an analytic cognitive style are more able to attend to relevant aspects of stimulation—are less susceptible to confounding contextual cues—than are those with a more global cognitive style. To date, an impressive array of evidence is available to support this notion across a variety of situations involving perceptual, social, and intellectual functions (see reviews by Dember, 1960; Moore, 1969; Witkin, 1964). By contrast, evidence regarding the dimensions of organization

and articulation is equivocal.

As used by Witkin, organization refers to the ability to structure ambiguous or poorly organized stimuli, while articulation refers essentially to the degree of clarity in recollection of experiences. Several studies, using Rorschach cards as ambiguous stimuli, have demonstrated a significant relation between the degree of analytic ability and organization (Hertzman in Witkin et al, 1954; Phillips, 1957; Witkin et al, 1962). However, these results have not been replicated when other techniques were used (Witkin et al, 1962). Similarly, a number of experiments, using memory for form and retroactive inhibition paradigms, have been performed to assess Witkin's notion of articulation, but with inconclusive results (Gardner & Long, 1961; Gollin & Baron, 1954; Witkin et al, 1962).

The present investigation was designed to provide a further test of the theory of psychological differentiation with respect to the abilities of organization and articulation. The Obscure Figures Test (OFT), an instrument which employs simple line drawings to measure S's innovativeness in imposing organization on ambiguous stimuli (Acker & McReynolds, 1965; McReynolds & Acker, 1965) was

used. On the basis of Witkin's theory, it was expected that analytic individuals would demonstrate superior organization of the OFT figures relative to more global individuals and that analytic individuals would also be superior in tasks involving recognition and identification of OFT figures previously observed and named.

METHOD

Thirty-five male volunteers from students at the University of Cincinnati served as Ss. They ranged in age from 20 to 38 years, with a mean of 23. All Ss had normal or corrected-to-normal vision and were experimentally naive.

A Research Media, Inc., rod and frame (RFT, Witkin et al, 1962) was used to measure cognitive style. This apparatus has been described completely by Moore (1969). All Ss received four consecutive blocks of four trials each with the RFT. The intertrial interval within each block was 3 sec, while the interblock interval was 60 sec. On each trial, the rod and frame were tilted independently away from true physical vertical, and S was instructed to "adjust the rod so that it is perpendicular to gravitational horizontal." The initial settings of the apparatus for each block of trials were those recommended by Rudin (1968). The mean displacement (in degrees) of S's alignment of the rod from true physical vertical across the 16 trials was taken as the index of cognitive style. According to Witkin et al (1962), the larger the mean displacement, the more global and the less analytic is the S's cognitive style.

Thirty of the 40 figures comprising Form I of the OFT were used to obtain a measure of structuring ability in the present study.¹ The figures were selected on the basis of ease of reproduction. Each of the 30 figures was reproduced as a black figure on a white ground in a photographic slide and shown by means of a Kodak Carousel projector. Instructions to the Ss were those developed by McReynolds & Acker (1965). Essentially, the S was informed that the figures were purposely vague and indefinite and that he was to describe what each figure looked like to him. The response was recorded verbatim by the investigator.

Two judges independently scored each S's responses to the OFT on the basis of a 5-point scale ranging from 0 (no response or nonscorable response) to 4 (highly imaginative response in which the stimulus configuration is organized into an unusual and creative representative concept). Responses were assigned ratings according to a scoring system presented by McReynolds & Acker (1965). The mean of the ratings scored by both judges across all

30 figures was used as the index of S's performance on the structuring task. Both judges made blind analyses of the 35 experimental OFT protocols. Scoring of these protocols was done after each judge had familiarized himself with the scoring system by scoring 10 practice OFT protocols. Interjudge reliability in scoring the experimental protocols was .92.

All Ss participated in one experimental session lasting approximately 55 min. Administration of the RFT preceded that of the OFT in all sessions. Upon completing the OFT, each S was presented with a booklet containing the 30 OFT figures plus 50 figures of the same type not previously observed (the remaining 10 figures of Form I of the OFT plus the 40 figures of Form II). The S was required to indicate those figures that were previously seen and also to identify such figures by indicating what he had called them originally. The percentages of figures correctly recognized and identified were used as measures of memory (articulation) for the OFT figures experienced in the study.

RESULTS AND DISCUSSION

The present results provide support for the theory of psychological differentiation with regard to the abilities of organization and articulation. A significant product-moment correlation of $-.44$ ($df = 33$, $p < .02$) was obtained between performance on the RFT and the index of structuring ability provided by the OFT. This result is consistent with the hypothesis that analytic Ss are superior to global Ss in organizing or structuring stimulus information and that this relation is not limited to structuring indices based upon Rorschach responses. The present results, however, can be considered as only an initial step in establishing the empirical validity of this relation. Further studies using other quantifiable indices of structuring ability and of global-analytic cognitive style are needed, using female as well as male Ss.

Product-moment correlations between RFT scores and an arcsin transform of the percentages of OFT figures correctly recognized and identified were also statistically significant. These values were $-.39$ ($df = 33$, $p < .05$) and $-.43$ ($df = 33$, $p < .02$), respectively. These correlations accord with Witkin's notion that analytic Ss display greater articulation of experience than do those with a global cognitive style. In addition, the theory of psychological differentiation implies that an individual who is more able to organize his experiences should also be able to recollect (articulate) them more efficiently. This notion was supported in the present

data by a significant correlation between OFT scores and performance in the recognition task ($r = .43$, $df = 33$, $p < .02$). The correlation between OFT scores and the percentage of OFT figures correctly identified was in the expected direction but lacked significance ($r = .21$, $df = 33$, $p > .05$).

Witkin has presented data to suggest that the relation between articulation and cognitive style as assessed by memory measures can be demonstrated only on tasks involving a long time-span paradigm, e.g., 2-3 years (Witkin et al, 1962). By contrast, the present investigation, together with studies by Gollin & Baron (1954) and Gardner & Long (1961), indicate that this relation can also be demonstrated under conditions in which the time span is short.

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NOTE

1. Inasmuch as the OFT was reduced in length from 40 to 30 items in this study, a split-half reliability coefficient was determined using an odd/even division of the test items. The product-moment correlation, corrected by the Spearman-Brown prophecy formula, was .77. This value is comparable with previous split-half reliability measures for the OFT reported by Acker & McReynolds (1965) and McReynolds & Acker (1965). These values were .93 and .81, respectively.