

An empirical verification of Mednick's associative theory of creativity*

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According to Mednick's (1962) theory of creativity, high-creative (HC) persons have flatter associative hierarchies than low-creative (LC) persons. The implication is that HC Ss should show less difference in the learning of strong and weak associates than LC Ss. To test this, 30 Ss were given a PA list with both strongly and weakly associated stimulus-response pairs, followed by a test of creativity. The results supported Mednick's hypothesis: HC Ss showed less of a learning difference between strong and weak pairs than did LC Ss.

Mednick (1962) proposed that the process of creative thinking involved the rearrangement of already existing associative elements into new combinations. The ease with which these rearrangements could be made is mainly dependent on the relative associative strength a given response maintains in the response hierarchy. The steeper the hierarchy of associations to a given stimulus, the easier it is to come up with one of the strong associates and the more difficult it is to emit a weak associate. Because a creative response is usually defined as one with a low probability of occurrence, Mednick postulated that creative persons had flat associative hierarchies (enabling easy access to unusual responses), while noncreative persons had steep associative hierarchies (making it difficult to emit infrequent responses).

Although Mednick used this hypothetical distinction as an operational basis for generating his test of creativity—the Remote Associates Test, or RAT—this distinction has not been experimentally verified. The purpose of the present study is to see whether these differences in hierarchical slope actually exist between creative and noncreative people. To test creativity, the RAT was administered. To check the associative hierarchy, a paired-associate (PA) list was given, with half of the pairs highly associated and half weakly associated. If highly creative people have a flatter hierarchy, then their ability to learn items of divergent associative strengths should vary less than that of the noncreative person, who should find the stronger associated pairs distinctly easier to learn than the weaker associated pairs. Thus, Mednick's theory would predict an interaction of creativity type and item type in the learning task.

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METHOD

Design

The experiment consisted of two parts: PA learning followed by the RAT (college, adult, Form 1). To create the PA list, 20 stimulus words were chosen from the Jenkin's norms (Postman & Keppel, 1970) which had responses in both the 32% to 77% range (high associates, or HA) and the 1% to 2% range (low associates, or LA). If more than one response occurred within a given range for a stimulus word, one was chosen randomly for inclusion in the experiment. From these responses, two separate 20-pair lists were generated. The two lists were constructed such that each stimulus had its high associate in one list and its low associate in the other. The assignment of response to list was random, with the restriction that an equal number of high and low associates occur in each list.

Procedure

The Ss were first given one of the PA lists (determined randomly). An anticipation procedure was used, at a 2:2-sec rate, with a 4-sec intertrial interval. All Ss were taken to a criterion of one perfect anticipation. Immediately after this, they were given the RAT and allowed up to 40 min to complete it.

Subjects

Thirty introductory psychology students at Northwestern University were used. Participation was in partial fulfillment of a course requirement.

RESULTS AND DISCUSSION

On the basis of the RAT scores, the Ss were divided in half into high-creative, or HC (14 correct or better), and low-creative, or LC (13 correct or poorer), Ss. An examination of first-trial performance on HA and LA items for both groups separately revealed that the expected interaction was present, although not significant [$F(1,28) = 2.69, p > .05$]: HC Ss showed less difference between the item types (81.3% vs 74.7% for HA and LA, respectively) than the LC Ss (84.0% vs 68.7%). However, when data was combined across the first two PA trials, a significant interaction emerged [$F(1,28) = 4.90, p < .05$], with the HC Ss getting 84.1% and 83.5% (HA and LA, respectively) and LC getting 87.2% and 76.9% correct.

These results, then, support Mednick's notion that high- and low-creative persons have different response hierarchies: high-creative persons have flat hierarchies in which associative strengths among items do not differ as much as among items in the steep hierarchies characteristic of low-creative persons. The result of this is that high-creative persons show less difference in ability to retrieve, and learn, responses of high and low associative strengths. Although the interaction did not

achieve significance until the first two trials were considered together, this can be justified by the reiteration that what is being measured is learning, and, therefore, any learning-dependent trends may take several trials to emerge.

Postman and G. Keppel (Eds.), *Norms of word association*. New York: Academic Press, 1970.
Mednick, S. A. The associative basis of the creative process. *Psychological Review*, 1962, 69, 220-232.

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ERRATA

Levine, D. M., Wachspress, S., McGuire, P., & Mayzner, M. S. Visual information processing of numerical inputs. *Bulletin of the Psychonomic Society*, 1973, 1, 404-406. (1) Subjects section—"New Uouk University" should be "New York University." (2) Apparatus section—"ARS-33 Teletype" should be "ASR-33 Teletype." (3) Results and Discussion section, Paragraph 1—Last two sentences should read: "The ANOVA showed clearly that Factor A (processing ability) was moderately significant ($F = 10.77$, $df = 1/6$, $p < .025$), while Factors B (on-time) and C (numbers) were highly significant ($F = 37.6$, $df = 4/24$, $p < .001$, and $F = 14.29$, $df = 9/54$, $p < .001$, respectively). One interaction term, i.e., B by C, was also significant ($F = 2.094$, $df = 36/216$, $p < .001$)." (4) Same section, last paragraph—Third sentence should read: "For this sample of eight Ss, W was highly significant (0.677 ; $\chi^2 = 48.744$, $df = 9$, $p < .001$)."