GENERALITY OF CREATIVITY ON TWO TASKS

DIANE JONES AND RUSSELL EISENMAN

Temple University

One of the most fascinating aspects of creativity research is the finding that a person's perceptual preferences are associated with other important aspects of his personality. Barron (3) has shown that preference for complexity in line drawing is related to creativity. Why should a person's perceptual preferences have anything to do with other modes of behavior? According to Adler, the child develops a well-determined scheme of apperception which influences the way he views the world (1, p. 182). Thus, a person develops a cognitive style which should show generality across several different modes of behavior.

Creativity research has been hampered by the inability to find creativity tests that (*a*) are independent of intelligence, thereby suggesting that little or nothing new is being added to the already well-known concept of "intelligence" (14), or (*b*) correlate with each other, suggesting that they may be tapping different things and cannot be subsumed under the "creativity" rubric (2, 8, 10, 11).

The present study is concerned with responses to polygons varying in complexity-simplicity for which more positive findings can be reported. Taylor and Eisenman (12) found that preference for polygon complexity was related to creativity in art students, and Eisenman and Robinson (7) found complexity preference uncorrelated with Stanford-Binet IQ. Eisenman (5) also found that complexity-simplicity preferences related to personality in a meaningful way, but showed only modest support for some of Barron's (3) creativity notions. The present research was carried out to see if complexity preference would be related to a letter formation task scored for unusual or original behavior. It was hypothesized that these two measures would show generality.

METHOD

The *S*s were 88 undergraduate students, tested individually by the first author. They were first presented with a photograph of 12 polygons—9 from Vanderplas and Garvin (13) which had originally been constructed by connecting points randomly on a grid, and 3 from Birkhoff's symmetrical shapes (4) which had been previously utilized by Eisenman (6). The asymmetrical Vanderplas and Garvin shapes were taken from their 4-, 12-, and 24-point categories, while the symmetrical Birkhoff shapes contained 4, 8, and 10 points, respectively. Two photographs were employed—in one the shapes were arranged randomly, in the other, in increasing order of complexity. Since no differences were found, the results were combined. *S*s were asked to choose their three most preferred and three least preferred polygons, and a complexity score was obtained by subtracting the total number of points on the three least preferred shapes from the total number of points on the three most preferred shapes. In this way *S*s obtained either a plus or a minus score, with a possible range of scores from − 60 to + 60. For example, if *S* chose three of the 4-point shapes as his most preferred, and the three 24-point shapes as his least preferred, his complexity score would be 12-72 = − 60.

This was followed by the letter formation task. *S*s were given two curved and two straight pieces of colored paper. The curved pieces were U-shaped, and when combined with the straight pieces could easily form the letter "B." The width of the curved shape was one-half the length of the straight piece. *S*s were told to make as many letters in as many different ways as they could; that there was no time limit; and to call out the letter as they made it. Most *S*s approached the task in a rather unoriginal fashion trying only to make the alphabet once, and not realizing that a better score could be obtained by producing different forms of a given letter.

RESULTS

*S*s were categorized into high and low groups on the letter formation task, the highs ranging from 30 to 55 letters, the lows from 4 to 29 letters, and their performance on the polygon preference task was examined. The results are shown in Table 1.

TABLE 1. PERFORMANCE ON THE POLYGON PREFERENCE TASK IN TERMS OF TOTAL + OR − SCORES, BY PERFORMANCE ON THE LETTER FORMATION TASK IN NUMBERS OF LETTERS FORMED. N = 88.

Polygon complexity preference	Letter formation low (4-29)	Letter formation high (30-55)
+	30	23
−	28	7

Of the 30 *S*s scoring high on letter formation, 23 scored plus on complexity preference and 7 scored minus ($\chi^2 = 8.53$; df = 1; $p < .01$). On the other hand, of the 58 *S*s scoring low in letter formation, 30 scored plus and 28 minus on complexity preference, which is of course random. If we are willing to equate both measures with the construct of creativity, we can say that the hypothesis of the generality of creativity obtains support among high creativity *S*s, but not among low creativity *S*s, as defined by the letter formation task.

However, if we look at creativity in terms of polygon complexity preference, we see from Table 1 that *S*s low in creativity in polygon preference are also low in creativity as measured by the letter formation task. Of the 35 *S*s scoring low in complexity preference, 28 scored low on letter formation. On the other hand, of the 53 *S*s scoring high on complexity preference, 23 scored high and 30 low on letter formation, which can be expected to be random. In this case the hypothesis of generality of creativity obtains support among low creativity *S*s, but not among high creativity *S*s.

If we conceptualize these findings in analysis of variance language, we may say, the interaction between the measures is weaker than the anticipated generality, but stronger than the finding which would emerge if there were absolutely no relationship. Further study is needed to elucidate the exact nature of this "quasi-generality."

Discussion

Perhaps previous studies have failed to find generality of creativity because they failed to look for subgroup differences. When all groups are combined, subgroup differences are obscured. This may explain why correlations among creativity tests are often no higher than the .30's.

This raises another issue. Perhaps eminent people as in Barron's (3) study will show relationships that less eminent people will not show. Thus, Barron's findings on cognitive style of eminent people may not always be replicable with general college students or similar non-eminent *S*s. On the other hand, we may expect that in other studies there may have been relationships among particularly uncreative *S*s which may have been absent among the more creative ones.

Be this as it may, the results suggest the usefulness of the complexity-simplicity dimension, which may be studied in terms of its relation to other measures, or in its own right as Munsinger and Kessen (9) have done.

In addition, the current findings suggest that the letter formation task may also be a useful device, worthy of further study. High scoring on this task would appear to be related to creativity through breaking the well-ingrained set of the alphabet as a limited number of letters, and allowing oneself, instead, to produce different examples of the same letter. Thus, whereas most *S*s achieved scores in the 20's, some were able to go beyond this everyday way of looking at letters and scored in the 30's and 40's. The ability to overcome sets may be part of openness to experience, which seems to be an integral part of creativity.

SUMMARY

Eighty-eight *S*s were individually tested for (*a*) perceptual complexity preference and (*b*) a letter formation test constructed for this research. Generality between the two tests was found at the .01 level for *S*s who scored high on the letter formation task, but not for those scoring low. Conversely, generality was found for those scoring low on the complexity preference task, but not for those scoring high. More fruitful investigations of creativity may occur when important subgroups are singled out than when they are lumped together.

REFERENCES

1. ADLER, A. *The Individual Psychology of Alfred Adler.* Edited by H. L. & Rowena R. Ansbacher. New York: Basic Books, 1956.
2. BARRON, F. The disposition toward originality. *J. abnorm. soc. Psychol.*, 1955, 51, 478-485.
3. BARRON, F. *Creativity and psychological health.* Princeton, N. J.: Van Nostrand, 1963.
4. BIRKHOFF, G. D. *Aesthetic measure.* Cambridge, Mass.: Harvard Univer. Press, 1933.
5. EISENMAN, R. Personality and demography in complexity-simplicity. *J. consult. clin. Psychol.*, 1968, 32, 140-143.
6. EISENMAN, R. Semantic differential ratings of polygons varying in complexity-simplicity and symmetry-asymmetry. *Percept. mot. Skills*, 1968, 26, 1243-1248.
7. EISENMAN, R., & Robinson, N. Complexity-simplicity, creativity, intelligence, and other correlates. *J. Psychol.*, 1967, 67, 331-334.
8. KARLINS, M. Conceptual complexity and remote-associative proficiency as creativity variables in a complex problem-solving task. *J. Pers. soc. Psychol.*, 1967, 6, 264-278.
9. MUNSINGER, H., & KESSEN, W. Uncertainty, structure, and preference. *Psychol. Monogr.*, 1964, 78(9, Whole No. 586).
10. OHNMACHT, F. W. Achievement, anxiety, and creative thinking. *Amer. educ. Res. J.*, 1966, 3, 131-138.
11. OHNMACHT, F. W. Relationships among personality and cognitive referrents of creativity. *Psychol. Rep.*, 1967, 20, 1331-1334.
12. TAYLOR, R. E., & EISENMAN, R. Perception and production of complexity by creative art students. *J. Psychol.*, 1964, 57, 239-242.
13. VANDERPLAS, J. M., & GARVIN, E. A. The association value of random shapes. *J. exp. Psychol.*, 1959, 57, 147-154.
14. WALLACH, M. A., & KOGAN, N. *Modes of thinking in young children.* New York: Holt, Rinehart, & Winston, 1965.