The roots of creativity: Cognitive ability or personality trait?

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Originality and creativity are often taken to be cognitive traits, i.e., aspects or parts of intelligence. Thus intelligence tests are often divided into measures of convergent and divergent thinking, with the latter being more closely associated with originality and creativity. An alternative view, which is taken in this article, is that originality and creativity are not by themselves aspects of intelligence, but rather are traits of personality, i.e., non-cognitive. Great achievement, on this account, would be due to a combination of high intelligence and the appropriate personality configuration. This view, which was originally put forward by Spearman (1927) requires empirical support, and such support has recently been forthcoming in a series of studies, most of which were conducted by British psychologists.

Some of this work took its origin from the widely held hypothesis that genius and madness may be closely allied. This common observation suggests that people who are highly original and creative may differ from the ordinary run of people by showing personality qualities often associated with schizophrenia and other psychotics. A number of genetic studies have indeed supported such a view. Heston (1966) studied offspring of schizophrenic mothers raised by foster-parents, and found that although about half showed psychosocial disability, the remaining half were notably successful adults, possessing artistic talents and demonstrating imaginative adaptations to life to a degree not found in the control group. Karlsson (1968, 1970) in Iceland found that among relatives of schizophrenics there was a high incidence of individuals of great creative achievement. Mcvail (1971) showed that there was a high occurrence of mental illness in highly creative adopted children and their biological parents, discovering that the mental illness rates in the adoptees and in their biological parents were positively and significantly related to the creativity level of the adoptees. Findings such as these clearly support speculations, such as those by Hammer and Zubin (1968) and by Jarvik and Chadwick (1973) to the effect that there is a common genetic basis for great potential and for psycho-pathological deviation.

Recently, Eysenck & Eysenck (1976) have published in book form a account of their investigation into the personality trait of psychoticism. They base their work on the hypothesis that there is a continuum between normality and psychosis (Eysenck, 1950, 1952) and that it should be possible to measure this dimension by means of a questionnaire. A long period of development resulted in a clarification of this concept, and the production of a psychoticism inventory which was found to correlate maximally with the other major dimensions of personality such as extraversion-introversion and stability-neuroticism. The development of this questionnaire, and the attempts to establish its reliability and validity are dealt with in detail in the book, and need not detain us here. The questionnaire, published under the title of Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975) has been experimented with and validated in many different countries, and it has been found that the three major personality dimensions of psychoticism, E (extraversion-introversion), and N (neuroticism-stability) emerge very strongly from an analysis of intercorrelations of questionnaire items in all these countries (Eysenck & Eysenck, 1982).

Assuming for the moment that the P scale does measure, at least to some extent, the essence of the continuum from normality to psychosis, and assuming for the moment that the hypothesis linking creativity and originality with mental abnormality possesses some virtue, then we should be able to test this hypothesis in a variety of ways. It was first tested, in a small unpublished study reported by Eysenck & Eysenck (1976), by D. W. Kidner. He administered several of the Wallach & Kogan (1965) tests of originality to male and female students, nurses and teachers, and found significant relationships between originality and creativity, on the one hand, and high P scores on the other. He also found that acceptance of culture, i.e., agreement with cultural cores, was negatively correlated with P, and also with creativity and originality. Other studies more marginally relevant to the hypothesis under investigation are reported in the book by Eysenck & Eysenck (1976), but we will turn now rather to a more recent study by Woody & Claridge (1977) which is particularly impressive.

The subjects of their study were 100 university students at Oxford, both undergraduate and graduate. The students constituted a wide sampling of the various fields of specialization at the university. They chose students as their subjects because of evidence that creativity is significantly related to IQ, up to about I.Q. 120, but that it becomes independent of IQ above this level (Canter, 1973). The tests used by them were the EPQ (Eysenck & Eysenck, 1975) and the Wallach-Kogan Creativity Tests, somewhat modified and making up five different tasks (instances, pattern meanings, uses, similarities, and line meanings). Each task was evaluated in terms of two related variables: the number of unique responses produced by the subject, and the total number of responses produced by the subject.

The Pearson product moment correlation coefficients between psychoticism and creativity scores for the five tests are as follows P with number of unique responses: Instances = 0.32; Pattern Meanings = 0.37; Uses = 0.45; Simi-
The only study of what most lay people were effectively no significant correlations partialled out from the correlations through the selection of subjects. There were effectively no significant correlations between E and N, on the one hand and creativity on the other. It is interesting to note, however, that the L score of the personality questionnaire, which up to a point is a measure of social conformity, showed throughout negative correlations with creativity scores, seven out of ten being statistically significant. L is known to correlate negatively with P (Eysenck & Eysenck, 1976).

Studies not using the P scale have come up with traits of creative persons not dissimilar to those characteristic of the high P scorer. Getzels and Jackson (1962) found that divergers were unconventional and independent of judgment. (See also Torrance (1962)). Hudson (1966, 1968) also noted the conformity of the converger, and the rebelliousness of and failure to fit in of the diverger.

It might be said in criticism of the studies so far reviewed, that they deal with psychological tests of creativity and originality in normal and not very distinguished people, and that what is normally understood by originality and creativity demands something more than that. The objection is a reasonable one, although it should not be taken to inform the remarkable success achieved by Woody & Claridge's empirical testing of divergers.

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We must now turn to scores on psychoticism. Here the results are very clear; male artists have much higher P scores than male non-artists, and female artists have much higher P scores than female non-artists. As Gotz and Gotz point out, these results suggest that certainly many artists may be more tough-minded than non-artists. Some traits mentioned by Eysenck & Eysenck may also be typical for artists, as for instance they are often solitary, troublesome and aggressive, and they like odd and unusual things. (p. 322).

The work of Gotz & Gotz (1979a, b) thus offers important support for the results of Woody and Claridge, and the other authors cited above, in that this more recent work uses actual artistic achievement as a criterion for the measurement of creativity and originality. In doing so they give credence to the validity of divergent thinking tests as measures of creativity and originality, and the fact that both in the artistic and in the non-artistic population studied by other investigators significant correlations are found between psychoticism and creativity and originality very much more strongly than for artists (Hudson, 1966). Neuroticism, however, is clearly more associated with the arts than the sciences (Wankowski, 1973; Eysenck, 1978). It is unfortunate that most empirical studies have used interviewing techniques and tests which do not always enable the reader to make clear distinctions between P, E and N; the use of standard tests like the EPQ would seem to make strict comparisons between studies possible, in a way that the random use of different inventories does not. Nevertheless, the major trends are unmistakable.

Of course it should not be assumed that this personality trait of P, even when found in conjunction with high N and low E, can by itself produce original work of consequence. A certain reasonably high amount of intelligence and/or artistic ability is obviously required in order to enable a person possessing high creativity and originality to produce anything worthwhile. It is obviously important to separate the successful use of personality traits such as those mediating creativity and the unsuccessful use degenerating into mere oddity and possibly psychotic deterioration. For the future study of gifted children, it seems desirable that personality tests such as the Junior EPQ (Eysenck & Eysenck, 1975) should be included in order to measure the influence that personality traits have on the manifestations of creativity and originality. Creativity and originality are such important aspects of human endeavor that a better understanding of their relation to both temperament and cognition seems vital, and no doubt future research will clarify these relations even further.

For the moment, bear in mind these results in looking at the education of original and creative children. The findings (Crutchfield, 1962); they were also below par in sociability and self control. Responses on tests like word association were odd and unusual, almost like those of schizophrenics.

Most important, the creative studied by the I.P.A.R. group consistently showed greater psychopathology on the Minnesota Multiphasic Personality Inventory depression, hypochondriasis, hysteria, psychopathy and paranoia scales than did the controls. Lytton (1971) concludes that: It is difficult...to deny that there is more than a chance association between psychiatric difficulties and creative powers. (p. 65). This psychopathology is countered, however, by greater ego-strength, as also shown on the MMPI scales.

The position of Introversion and Neuroticism in the creativity field needs a little further discussion. Introversion seem to be implicated both for artists and for scientists (Gotz & Gotz, 1979a, b; Cattel & Drevdahl, 1955; Roe, 1952, 1953; Andreani & Orio, 1972), although perhaps more for scientists than for artists (Hudson, 1966). Neuroticism, however, is clearly more associated with the arts than the sciences (Wankowski, 1973; Eysenck, 1978). It is unfortunate that most empirical studies have used interviewing techniques and tests which do not always enable the reader to make clear distinctions between P, E and N; the use of standard tests like the EPQ would seem to make strict comparisons between studies possible, in a way that the random use of different inventories does not. Nevertheless, the major trends are unmistakable.
discussed in this paper suggest that such children will be particularly difficult to deal with; they will be troublesome, unusual, difficult to reach, behaving in possibly odd ways that may not appeal to the teacher, or their peers; their very originality may upset the even running of the classroom, and may produce difficulties for the teacher trained to insist on standard responses. Getzels and Jackson (1962) noted that their creative children were not particularly popular with teachers; this is perhaps not to be wondered at in view of what has been said above. Possibly more important than special methods of educating original and creative children would be special ways of educating their teachers in the appreciation of the value of originality and creativity, and in the ways that children are likely to behave (or misbehave!). Essentially such children tend to go their own way, and in a culture geared to uniformity this is a pattern not easily accommodated in school. All the more important, then, the teacher should make allowances, and should learn to value the independence shown by such children.

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