

Thus, approximately two-thirds of the variance in artistic creativity may be due to genetic factors.

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THE ROLE OF GENETIC FACTORS IN THE CHILD DRAWING BEHAVIOR

A Preliminary Twin Study

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The Draw-A-Family Test has been administered to a sample of 59 (27 MZ and 32 DZ) same-sexed twin pairs, aged 6 to 12 years, in an effort to contribute to the assessment of the role of genetic factors in the child drawing behavior—a fairly important expression of the child personality development.

The drawings were analysed with respect to graphic-structural factors (such as line, hand pressure, area of the drawing, dimensions of the pictures, distribution, and shading) and contents (space representation and cotwin valuation). Significantly higher concordance values were found in MZ than DZ twins.

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TWINS: RELATIONSHIPS BETWEEN CHARACTERISTIC BEHAVIORS AND MENTAL STATUS DURING INFANCY

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Ratings on Bayley's Infant Behavior Record (IBR) and mental test scores were analyzed for 60 female and 50 male infants

at 6, 12, 18, and 24 months of age. Significant relationships were found between certain behaviors and mental test scores. Composite scores were calculated for two behavioral clusters — one composed of behaviors relating to *Primary Cognition* and the other to *Extraversion* — and these composite scores were correlated with both concurrent and subsequent mental test scores. The Primary Cognition composite was strongly associated with concurrent mental test scores for both sexes and it furnished good predictive correlations with later-age scores. By contrast, the Extraversion composite was related to concurrent mental scores only for females, and it had no predictive power for later age scores.

When a zygoty analysis was performed for the behavior entering into each composite, it was found that MZ twins were more concordant than DZ twins during the first year for almost all behaviors. In the second year, however, MZ twins were more concordant only for the behaviors entering into the Primary Cognition composite. The results are discussed in terms of developmental changes in the behaviors assessed by the Infant Behavior Record, and their susceptibility to environmental influence.

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HERITABILITY OF PERSONALITY AND BEHAVIOR PATTERNS AND THEIR CORRELATIONS WITH RISK FACTORS FOR CORONARY HEART DISEASE

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As part of the National Heart and Lung Institute multi-center study of twins, 190 twin pairs (93 MZ, 97 DZ) residing in California and aged 44-55 years were comprehensively studied for all risk factors for

coronary heart disease and for Behavior Pattern Type A or B. Psychological tests included MMPI, California Psychological Inventory, 16 Cattell PF, Gough Adjective Check List (ACL), Thurstone Temperament Schedule (TTS). Heritability at statistically significant levels was found only for scales of TTS.

Twelve scales of ACL and five scales of TTS showed significant correlations with Behavior Pattern Type A-B as well as with several risk factors, including blood pressure

and serum lipids. Multiple regression equations were constructed for those characteristics accounting for significant and unique portions of the total variance of Type A-B Behavior. The use of certain scales of ACL and TTS may provide a new questionnaire for screening purposes in the assessment of Behavior Pattern Type A-B.

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3. Mental Disorders

CHARACTERISTICS OF THE TWINS OF SCHIZOPHRENICS AS FALLIBLE INDICATORS OF SCHIZOIDIA

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Further advances in research into the etiology of schizophrenia will depend on the identification of an unambiguous indicator of the genotype associated with the development of schizophrenia. Such an indicator would permit accurate assessment of the relatives of probands as "affected" or not, so that the data generated in twin and family studies could be tested for the best fit to various genetic models that have been proposed. Schizoidia or schizoid personality has been considered by clinicians to be such an indicator, but it has been beset by semantic and logical difficulties. Most troublesome has been the extent to which the concept implies (merely) a phenotypic resemblance to schizophrenia, or a genotypic connection with it, or, as Essen-Möller (1946) believed, both.

We present four different but overlapping meanings for the concept of schizoidia, in an effort to clarify the semantics and logic involved. Following Popper's notions about the testability and refutability of theories, the authors, identified with both monogenic and polygenic theories, apply the definitions to their first-hand observations of the co-twins in the Maudsley-Bethlem Schizophrenic Twin Study. Pushing the concept to

its limit, 91% of 22 MZ pairs and 45% of 33 DZ pairs contained "disordered" co-twins. In the absence of objective criteria for schizoidia and the consequent lack of epidemiological or family studies of such conditions, we cannot claim that we have defined an improved phenotype for population genetic studies. Our hopes lie with a less fallible endophenotypic biological indicator.

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ETIOLOGICAL IMPLICATIONS OF STUDIES OF IDENTICAL TWINS DISCORDANT FOR SCHIZOPHRENIA

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Our model of the development of schizophrenia in one twin, and not the other, emphasizes differential parental interaction with the schizophrenic-to-be, lack of cognitive and communication clarity, and contradictory and incompatible role expectation. Initially, the constitutionally (or perhaps neurologically) less favored twin is "selected" to be the dependent member of the twinship. This continuing role as the "weak" twin is eventually incompatible with the kinds of demands for accomplishment and independence he encounters in the home, school, or community. Because