

## SCHIZOTYPAL ESTIMATORS IN ADOLESCENCE: THE CONCURRENT VALIDITY OF THE RISC

---

JOHN RUST AND HERBERT CHIU  
*University of London*

The validation of questionnaires intended to identify the position of a person along a normal/schizotypal/schizophrenic continuum has always been problematic. Schizophrenic patients are not good at completing questionnaire, and validation has to depend on the identification of "at risk" groups. Watt, Grubb, and Elenmeyer-Kimling (1982) found that the adolescent offspring of schizophrenics show the negative schizophrenic symptomology of interpersonal disharmony and emotional instability. In the study reported here, using a sample of 174 adolescents of both sexes, we consider the validity of the Rust Inventory of Schizotypal Cognitions (RISC), a psychometric questionnaire for the positive cognitive symptoms of the schizotypal personality. It was shown that the negative schizophrenic symptoms of social dysfunction and emotional instability as measured by the Minnesota Counselling Inventory are positively and significantly correlated with positive schizotypal symptomology as measured by the RISC.

*Keywords:* Rust Inventory of Schizotypal Cognitions, concurrent validity, adolescents.

It has long been argued that the bizarre idea systems of the schizophrenic, the odd ideas of the schizotypal personality, and normal cognition lie on a continuum (Chapman, 1966; Chapman & Jean, 1980; Heston, 1970; Kraepelin, 1919; Spitzer, Endicott, & Gibbon, 1979). If this is the case then the position of an individual on this continuum should be psychometrically measurable, and scales or diagnostic interviews have been designed for this purpose (Baron, Asnis, & Gruen, 1981; Chapman, Chapman, & Raulin, 1976, 1978; Claridge & Broks, 1984; Eysenck et al., 1985; Golden & Meehl, 1979; Rust, 1987, 1988). The validation of these scales has generally depended on either discrimination between schizophrenic and schizotypal patients and other patients or normals, or family studies which takes as their base the well established genetic risk in the relations of schizophrenics (Gottesman & Shields, 1982, Medenick, Schulsinger, & Schulsinger, 1975).

But other methods are also available for obtaining estimates of schizophrenic risk. In particular clinical observer Kraepelin (1919) and researchers Chapman (1966) and Golden and Meehl (1979) have demonstrated the existence of a premorbid personality with characteristics of bizarre thinking, cognitive slippage, social aversiveness, anhedonia, and ambivalence. To the extent that these characteristics lie along a continuum between normal functioning and schizotypal symptoms, the position of an individual along this continuum must include an element of probabilistic risk for those symp-

---

Correspondence and reprint requests should be addressed to: John Rust, Department of Psychology, University of London Institute of Education, 20 Bedford Way, London WCIH 0AA, UK.

toms. Recently, interest in the schizotypal precursors of schizophrenia has been centered on the distinction between positive symptoms (e.g., delusions, hallucinations) and negative symptoms (e.g., deadening of affect, cognitive deficit etc; see e.g., Crow, 1980; McGuffin, Farmer & Gottesman, 1986; Stone, 1980), and the link between this form of risk estimator and genetic risk has now been fairly well established for the negative symptoms (Gunderson & Siever, 1985).

However, the role of the positive symptoms remains a matter of some interest, as it is these positive characteristics of the schizotypal personality which have provoked most interest at the theoretical level. The positive symptoms are associated with idiosyncratic idea systems, and many of the idea systems of the adult have their basis in adolescence. Fromm (1946) and Rogers (1957) are among many who have emphasized the role of adolescence in the development of personal identity, while Laing (1959), Erikson (1968), and Aaronson (1977) have further postulated processes of existential growth of awareness which can sometimes develop atypically and lead to mental illness in the adult. These theories all predict that that, prior to breakdown, schizophrenic and schizotypal personality disordered patients will have exhibited an atypical personality in adolescence, this taking the form of a tendency towards the schizotypal end of any continuum associated with schizophrenic symptomology.

Watt et al. (1982) have demonstrated a higher score on various measures of the negative symptoms of interpersonal disharmony and emotional instability in the adolescent offspring of schizophrenic parents. In the present study we look at the relationship between the tendencies towards positive and negative symptomology in adolescents.

## METHOD

### PARTICIPANTS

Participants were 174 ( $n = 86$  males and 88 females) Hong Kong English speaking pre-university students from four English medium schools in Hong Kong. The mean age of the sample was 18.20 years ( $SD = .91$ ).

### PARTICIPANTS

The Minnesota Counselling Inventory (MCI) (Berdie & Layton, 1957) was used to identify the characteristics of interpersonal disharmony and emotional instability identified in the Watt et al. study. The MCI has been derived from the MMPI to provide a method for teachers, counselors, and others working with high school age youths and college freshmen to acquire information about the personality dynamics, structure, and problems of young people. The inventory is designed to identify students in need of therapeutic attention and to sensitize counselors to students' problems. The validity of the MCI has been demonstrated in a number of situations (Frederiksen, 1965). The subscales of conformity, social relationships, mood, and emotional instability were used in the present study. The test-retest reliabilities of these four scales have been shown to be approximately .75, .85, .80, and .72 respectively. The Rust Inventory of Schizotypal Cognitions (RISC; Rust, 1987, 1988a, 1988b; Rust et al., 1988) is a short psychometrically constructed questionnaire for tapping the positive cogni-

tive symptomatology of the schizotypal dimension in the normal population. It takes as its source the idiosyncratic ideas of those who are seen to be schizotypal or eccentric; DSM-III category A of schizophrenia and DSM-III(R) categories 1 to 9 (excluding 2, 6, and 8) of schizotypal personality disorder (American Psychiatric Association, 1987). These schizotypal ideas form the extremes of the cognitive schemata of suspicion, magical ideation, ritual, subjectivity, thought isolation, and self delusion which are not uncommon in the normal population. The RISC is 26 items long (13 positive and 13 negative) and is normally distributed in the general population. It has a test-retest reliability of .88, and has shown a high level of discrimination between a group of acute schizophrenic presenters at psychiatric hospitals and clinics, and normal controls. Indeed, about 2 out of every 3 acute schizophrenic presenters score more than one *SD* above the general population mean. The RISC has been standardized on a normal population to eliminate extreme items associated in the public mind with "mad" behavior, and no items in the RISC are rejected or accepted by less than 20% of the normal population. It thus overcomes the major problem found in most scales of its type, where items are often too obviously "mad" to be taken seriously by the normal population. The RISC for example has the item "Sometimes my thoughts seem so loud I can almost hear them", rather than "I sometimes hear imaginary voices".

#### PROCEDURE

Participants were given the two questionnaires to complete within the school setting and were asked to answer every question. Testing took place in classes of around 30. A 120-item intermediate version of the RISC was administered, but only scored for the 26-items of the final version. All scales and subscales were scored in such a direction that a higher score represented a problem.

## RESULTS

The mean RISC for the group was 39.24 ( $SD = 5.39$ ). This is slightly above the population mean for the sample on which the RISC was constructed ( $M = 35.67$ ,  $SD = 7.67$ ), although very considerably below that for the validation group of acute schizophrenic presents ( $M = 47.80$ ,  $SD = 9.87$ ) (Rust, 1987). The higher mean score may be due to the lower age of our group, as the RISC has been shown generally to correlate negatively with age, although there was no significant correlation with age within the narrow age range of sample ( $r = .03$ , *ns*). The smaller standard deviation may be due to the high homogeneity of the sample. There were no sex differences for the RISC ( $r = -.01$ , *ns*). The means for the versions of the MCI subscales used were: conformity,  $M = 14.63$ ,  $SD = 3.53$ ; social relationships,  $M = 27.79$ ,  $SD = 10.12$ ; mood,  $M = 20.57$ ,  $SD = 5.51$ ; and emotional instability,  $M = 20.15$ ,  $SD = 6.95$ . For the MCI, there were no sex differences for any of the subscales, and only emotional instability correlated with age ( $r = .20$ ,  $p < .01$ ).

The correlations between the RISC and the four MCI subscales appear in Table 1. It can be seen that the RISC correlates significantly with all of the MCI subscales. The size of the correlations shows that high RISC scorers are particularly high on emotional instability and non-conformity, but correlations with low mood and poor social relations are also significant at  $p < .001$ .

## DISCUSSION

It thus seems that those adolescents who exhibit evidence of a predisposition towards the negative symptomology of schizophrenia as measured by the MCI also exhibit evidence of predisposition towards positive schizotypal symptomology as measured by the RISC. Those with a higher degree of positive schizotypal symptomology are found during late adolescence to have poor social relationships and poor emotional stability.

**TABLE 1: CORRELATIONS BETWEEN THE RUST INVENTORY OF SCHIZOID COGNITIONS (RISC) AND THE FOUR SUB-SCALES OF THE MINNESOTA COUNSELLING INVENTORY (MCI)**

		<i>SR</i>	<i>M</i>	<i>EI</i>	<i>RISC</i>
<i>(NC)</i>	<i>Non-Conformity</i>	.06ns	.25***	.40***	.40***
<i>(SR)</i>	<i>Poor Social Relations</i>		.57***	.38***	.26***
<i>(M)</i>	<i>Low Mood</i>			.53***	.27***
<i>(EI)</i>	<i>Emotional Instability</i>				.45***

\*\*\*  $p < .001$

As all measures in the present study were self-report it could be argued that correlations between subscales might be artifactual for a number of reasons. In some studies using correlations between self report data, artifacts can be produced from common effects of acquiescence or response bias. However, the RISC was specially constructed to eliminate such effects, having the same number of affirmative as negative responses associated with a high RISC score, so this cannot be responsible for any relation here. Another reason for possible artifacts can be item contamination across the scales. For example the statement "I am anxious that people may be following me" contains the key concepts of both neuroticism ("I am anxious") and paranoia ("people are following me"), and any correlations between neuroticism and paranoia when a paranoia scale contained such an item would be an item level artifact. However; this form of random artifact in the items should cancel out as scale length increases. In the present study the size of the effects found is sufficiently large to discount any artifact of this type. Further evidence about such bias comes from a comparison of the content validities of the two scales. The RISC, having been constructed on the basis of positive symptomology, has no obvious overlap with the items of the MCI, which examines the negative characteristics. Inspection of the items from correlated scales and subscales shows that there is no evidence of an item bias artifact.

It could further be argued that schizoid and paranoid scales already exist in the MMPI, and the relationships between these scales and other MMPI scales are well known. However the RISC differs considerably from any MMPI scale in its conception, construction, and validation. As a scale dealing with cognitive content and style, it has no items dealing with deficit aspects, and in particular the negative symptoms, of schizoid behavior. These negative symptoms form a common pool across MMPI subscales in any patient sample, giving each scale therein a "healthy" and a "sick" pole. The RISC on the other hand has been standardized on a normal population in such a way as to minimize bias towards the "right" answer, the "good" answer, and the "sane" answer. It should be remembered that no items in the RISC are rejected or accepted by less than 20% of the normal population. There are no items which are obviously right or wrong, healthy, or sick.

It could be argued that estimation of risk for schizophrenia can only be based on biological or genetic studies, as with the Watt et al. study, and not from questionnaires. However this is by no means as self-evident as it may seem. The diagnostic process itself is conceptually related to risk estimation, the specific symptoms increasing the probability of a positive diagnosis being made. Therefore, to the extent that questionnaire items are projections of continua based on the presence of absence of symptoms, they too are estimators of risk. The ultimate test of the power of a risk estimator will be based on the extent to which it is able to make successful prediction and not on any a priori assumptions about the etiology of schizophrenia.

There is no clear reason why individuals with idiosyncratic ideas systems (i.e., with high RISC scores), should be poor on social relationships or be emotionally unstable, although the relationship between schizophrenia itself and these latter variables is known. While there is no necessary connection between prediction of the positive symptoms of schizophrenia and prediction of the negative symptoms, in the present study we did find such a relationship. Causal extrapolation is not possible without further data, but there is no obvious reason why negative symptoms should cause positive ones, while several theorists (e.g., Erikson, 1968) have ascribed an important role in adult mental health to the development of complex cognitive systems such as personal identity during adolescence. Beck et al. (1979) has suggested that in the related illness of depression, complex cognitions may have a causative role in the behavioral, motivational and mood aspects of that condition. Clearly much more work is required in the investigation of the role of premorbid schizotypal cognitions in the development of schizophrenia, and, in particular, further examination within a longer term study of possible causative links between premorbid positive and negative symptoms would be of considerable interest.

## REFERENCES

- Aaronson, L. S. (1977). Paranoia as a behavior of alienation. *Perspectives in Psychiatric Care*, 50, 171-181.
- American Psychiatric Association. (1987). *The Diagnostic and Statistical Manual*, (3rd ed.). Washington DC: Author.
- Baron, M., Asnis, L., & Gruen, R. (1981). The schedule for schizotypal personality (SSP): A diagnostic interview for schizotypal features. *Psychiatric Research*, 4, 213-228.
- Baron, M., Gruen, R., Rainer, J., Kane, J., Asnis, M., & Lord, S. (1985). A family study of schizophrenia and normal control probands: Implications for spectrum concept in schizophrenia. *American Journal of Psychiatry*, 142 (4), 447-455.
- Beck, A., Rush, A., Shaw, B., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford.
- Berdie, R. F., & Layton, W. L. (1957). *Minnesota Counselling Inventory*. London, England: The Psychological Corporation.
- Chapman, J. (1966). The early symptoms of schizophrenia: *British Journal of Psychiatry*, 112, 225-251.
- Chapman, L. J., & Jean, P. (1980). Scales for rating psychotic and psychotic-like experiences as continua. *Schizophrenia Bulletin*, 6 (3), 476-489.
- Chapman, L. J., Chapman, J. P., & Raulin, M. L. (1976). Scales for physical and social anhedonia. *Journal of Abnormal Psychology*, 85, 374-382.
- Chapman, L. J., Chapman, J. P., & Raulin, M. L. (1978). Body -image aberration in schizophrenia. *Journal of Abnormal Psychology*, 87, 388-407.
- Claridge, G., & Broks, P. (1984). Schizotypy and hemisphere function-I. Theoretical considerations and the measure of schizotypy. *Personality and Individual Differences*, 5, 633-648.
- Crow, T. (1980). Molecular pathology of schizophrenia: more than one disease process? *British Medical Journal*, 280, 66-68.
- Erikson, E. (1968). *Identity: Youth and crisis*. New York: Norton.
- Eysenck, S. B. G., Eysenck, H. J., & Barrett, P. (1985). A revised version of the psychoticism scale. *Personality and Individual Differences*, 6, 21-30.
- Frederiksen, N. (1965). Review of the Minnesota Counselling Inventory. In O. K. Buros (Ed.), *Mental measurement yearbook*, (Vol. 1). New Jersey: Gryphor.
- Fromm, E. (1946). *The fear of freedom*. London: Routledge.
- Golden, R. R., & Meehl, P. E. (1979). Detection of the schizoid taxon with MMPI indicators. *Journal of Abnormal Psychology*, 88, 217-233.
- Gottesman, I. I., & Shields, J. (1982). *Schizophrenia: The epigenic puzzle*. England: Cambridge University Press.
- Gunderson, J. G., & Siever, L. T. (1985). Relatedness of schizotypal to schizophrenic disorders. *Schizophrenia Bulletin*, 11(4), 532-537.
- Heston, L. L. (1970). The genetics of schizophrenia and schizoid disease. *Science*, 167, 249-259.
- Kraepelin, E. (1919). *Dementia praecox and paraphrenia*. Edinburgh: Livingston.
- Laing, R. D. (1959). *The divided self*. London: Pelican Books.
- McGuffin, P., Farmer, A., & Gottesman, I. I. (1987). Is there really a split in schizophrenia? *British Journal of Psychiatry*, 150, 581-592.
- Medenick, S., Schulsinger, H., & Schulsinger, F. (1975). Schizophrenia in children of schizophrenic mothers. In M. Hammer, K. Salzinger, & S. Sutton (Eds.), *Childhood personality and psychopathology: Current topics*. New York: Wiley.
- Rogers, C. (1957). *Client-centered therapy*. Boston, MA: Houghton-Mufflin.
- Rust, J. (1987). The Rust Inventory of Schizoid Cognitions: A psychometric measure of psychoticism within the normal population. *British Journal of Clinical Psychology*, 16(2), 151-152.
- Rust, J. (1988a). The Rust Inventory of Schizotypal Cognitions (RISC). *Schizophrenia Bulletin*, 14(2), (in press).
- Rust, J. (1988b). *The handbook of the Rust Inventory of Schizotypal Cognitions (RISC)*. London, England: The Psychological Corporation (in press).
- Rust, J., Moncada, A., & Lepage, B. (1988). Personality dimensions through the schizophrenia borderline. *British Journal of Medical Psychology*, (in press).

- Spitzer, R., Endicott, J., & Gibbon, M. (1979). Crossing the border into borderline personality and borderline schizophrenia. *Archives of General Psychiatry*, 36, 17-24.
- Stone, M. (1980). *The borderline syndromes*, New York: McGraw Hill.
- Watt, N. F., Grubb, T. W., & Elenmeyer-Kimling, L. (1982). Social, emotional and intellectual behavior at school among children at high risk for schizophrenia. *Journal of Consulting and Clinical Psychology*, 50, 171-181.