Stability of Schizotypic Signs in a Chronic Schizophrenic Population

Clifford R. Mahler

Veterans Administration Medical Center, Buffalo

Michael L. Raulin, Joseph C. O'Gorman,

Lisa D. Furash, and Geoffrey S. Lowrie

State University of New York at Buffalo

The construct validity of ten self-report measures of schizotypic signs was extended by evaluating the stability of the measures in a sample of chronic schizophrenics from a partial hospitalization program. Most scales showed excellent stability over periods of four, eight, and twelve months in spite of fluctuations in the levels of symptomatology and stress. The Perceptual Aberration Scale, although stable over four months, failed to show stability over periods longer than four months. The present findings are consistent with the concept of schizotypy as an enduring personality dimension.

Meehl (1962, 1964) proposed one of the best known diathesis/stress models of schizophrenia in which he argued that a genetic factor (schizotaxia) was a necessary but not sufficient condition for the development of schizophrenia. He further argued that individuals with this predisposing factor would develop a distinctive personality organization (schizotypy), but only a portion would ever decompensate into schizophrenia. Meehl (1964) suggested that the schizotype could be identified by a series of signs. These signs are stable characteristics of the individual which are apparent even in the fully compensated schizotype.

Self-report measures have been developed for many of the schizotypic signs described by Meehl including Physical and Social Anhedonia (Chapman, Chapman, & Raulin, 1976), Perceptual Aberration (Chapman, Chapman, & Raulin, 1978), Somatic Symptoms (Raulin, Chapman, & Chapman, 1978), Magical Ideation (Eckblad & Chapman, 1983), Intense Ambivalence (Raulin, 1984), Social Fear (Raulin & Wee, 1984), Rage (Raulin, 1982a), Distrust (Raulin, 1982b), Impulsive Nonconformity (Chapman et al., 1984), and Cognitive Slippage (Miers & Raulin, 1985). Each of these scales was developed to have high reliability and minimal method variance. Schizophrenics and normal subjects have been compared on the Physical and Social Anhedonia (Chapman et al., 1976), Perceptual Aberration (Chapman, Chapman, & Raulin, 1978), Magical Ideation (Eckblad & Chapman, 1983), and Intense Ambivalence (Raulin, 1984) Scales. In each case, the schizophrenic group showed a significantly higher mean score than normal subjects; however, high scores were not typical of all schizophrenics. In addition, research has shown that college students who score high on one or more of these scales display mild forms of a variety of symptoms found in schizophrenic populations (Adamski, Raulin & Colavecchia, 1983; Beckfield, 1985; Chapman, Chapman, Raulin & Edell, 1978; Chapman, Edell & Chapman, 1980; DePalma & Raulin, 1982; Eckblad & Chapman, 1983; Edell & Chapman, 1979; Friedland, Raulin, & Rourke, 1984; Fujioka & Chapman, 1984; Haberman, Chapman, Numbers & McFall, 1979; Martin & Chapman, 1982; Miller & Chapman, 1983; Numbers & Chapman, 1982; Raulin, 1984; Raulin, Van Slyck & Rourke, 1983; Simons, 1981, 1982; Simons, MacMillan & Ireland, 1982a, 1982b).

Test-retest reliability in normal subjects over a 6 to 12 week period was within a few points of the internal consistency reliability for the Physical Anhedonia, Perceptual Aberration, Magical Ideation, and Intense Ambivalence Scales (Chapman, Chapman, & Miller, 1982; Raulin, 1984). In all cases, the test-retest reliability coefficients were .75 or higher. However, there are no test-retest data available in a psychiatric population. Instability in these measures in a psychiatric population would compromise the construct validity of the scales. The current study evaluated the test-retest reliability of screening versions (Raulin, Van Slyck, & Rourke, 1983) of several schizotypy scales described in Table 1 in a chronic schizophrenic population over periods of four, eight, and twelve months. The screening versions are shortened scales that were designed to be maximally discriminating at the high end of the scale, i.e., most discriminating in the upper 10% of the distribution.

Method

Subjects

Thirty-two psychiatric outpatients participated in the study. They were randomly selected from a VA Medical Center partial hospitalization program from a group of patients with a hospital diagnosis of schizophrenia or schizoaffective disorder, below 65 years of age, and without a concurrent diagnosis of organic brain syndrome. Fourteen other subjects declined to participate when initially approached, three more did not meet the above experimental criteria upon interview, nine more withdrew within the first four months, and three subjects were dropped for random responding on the schizotypy scales. There were no significant differences between the participants (N = 32) and nonparticipants (N = 30) in this study on age, education, race, marital status, and years since first diagnosis. The average age of this sample was 39.28 (s = 11.20); the average education level was 12.09 (s = 1.91); the average number of years since the first diagnosis of psychosis was 15.71 (s = 10.79). Harris (1975) ratings of premorbid adjustment were obtained for each patient; the average premorbid sexual adjustment rating was 3.16 (s = 2.29), with an average premorbid social adjustment rating of 1.59 (s = 2.21). All patients were male; 26 were Caucasian, and six were black; four were married. These patients were participating in a year-long study of the effects of stressors on symptomatology.

Procedures

Patients were interviewed and given the schizotypy scales four times: at baseline, and at four-, eight-, and twelve-month followups. At baseline, patients were interviewed using the *Schedule for Affective Disorders and Schizophrenia--Lifetime Version* (*SADS-L*; Spitzer & Endicott, 1977) to verify the hospital diagnosis, and they completed a test protocol containing the schizotypy scales listed in Table 1 and an Infrequency Scale, which is used to detect random responders (items were intermixed). At each followup, patients were interviewed using the *Psychiatric Evaluation Form* (*PEF*; Spitzer, Endicott, Mesnikoff, & Cohen, 1968) and were retested on the schizotypy scales. Patients were rated at each testing on the *Global Assessment Scale* (*GAS*; Spitzer, Gibbon, & Endicott, 1976), a measure of current level of symptomatology, based on the data from the *SADS-L* or the *PEF*. At monthly intervals over the entire year patients completed the *Hassles and Uplifts Scale* (Kanner, Coyne, Schaefer, & Lazarus, 1981).

Table 1
Brief Descriptions of the Schizotypy Scales Used in the Current Study

Physical Anhedonia - difficulty experiencing physical pleasure

Perceptual Aberration - perceptual distortions especially of body image

Intense Ambivalence - strong simultaneous or rapidly fluctuating positive and negative feelings

Schizotypal Ambivalence - a modified Intense Ambivalence Scale that is more specific than the original scale for the type of ambivalence reported by schizophrenics

Somatic Symptoms - a collection of symptoms thought to be indicative of subtle neurological dysfunction

Social Fear - strong fear of people and/or social interactions

Magical Ideation - a general belief in causal connections between behavior and events which are objectively unrelated

Cognitive Slippage - a subtle form of thought disorder

Distrust - a strong distrust of the motives of other people

Rage - characterized by strong, periodic, uncontrolled, angry outbursts

Table 2
Internal Consistency and Test-Retest Reliabilities for Several Schizotypy Scales

Scale	Alpha[1] (N = 32)	4-month (N = 32)	8-month (n = 27)[2]	12-months (n = 28)[2]
Physical Anhedonia	.76	.68	.77	.66
Perceptual Aberration	.71	.57	(.29)	(.30)
Intense Ambivalence	.76	.70	.65	.78
Schizotypal Ambivalence	.88	.77	.86	.88
Somatic Symptoms	.84	.82	.73	.82
Social Fear	.88	.83	.87	.78
Magical Ideation	.73	.79	.60	.77
Cognitive Slippage	.85	.69	.76	.76
Distrust	.79	.60	.62	.72
Rage	.82	.70	.73	.70

All test-retest correlations were significant at the .001 level (one-tail tests) except when in parentheses.

[1]Coefficient Alphas were computed using the data from the initial testing.

[2]Data were unavailable for five subjects at the eight-month followup and four subjects at the twelve-month followup.

Results

Table 2 presents the correlations for each of the schizotypy scales between baseline and (1) four-month followup, (2) eight-month followup, and (3) twelve-month followup, as well as the internal consistency reliability (coefficient alphas) for each scale at the initial testing. Twenty-eight of the 30 possible test-retest correlations were statistically significant, with 90% of the correlations at or above .60. The only schizotypy scale that did not show impressive levels of stability was the Perceptual Aberration Scale.

Table 3 presents data that represent a stronger test of the hypothesis that these schizotypic signs are stable characteristics of the patients which are independent of factors such as level of symptomatology or stress. To test the hypothesis that level of symptomatology does not affect the schizotypy scores, the largest *GAS* rating difference between two successive ratings was identified for each patient. A subset of patients (n = 20) was selected whose largest *GAS* rating difference over four months was at least a 10-point change (up or down). Of those 20 patients, 11 showed increased symptomatology and 9 showed decreased symptomatology. The mean of the absolute level of change on the *GAS* was 17.4 (s = 6.20). The test-retest reliabilities over four months of the schizotypy scores were recomputed for this subset of patients who showed clinically significant symptom changes over the four month period.

Table 3
Four-month Test-retest Reliability for Several Schizotypy Scales Under Conditions of Symptom and Stress Level Changes

Scale	Symptom[1] (n = 20)	Stress[2] (n = 30)	Stress[3] (n = 21)
Physical Anhedonia	.78	.83	.75
Perceptual Aberration	.61*	.60	.54*
Intense Ambivalence	.83	.78	.60*
Schizotypal Ambivalence	.86	.84	.92
Somatic Symptoms	.90	.73	.84
Social Fear	.78	.73	.81
Magical Ideation	.80	.70	.57*
Cognitive Slippage	.91	.54	.83
Distrust	.81	.81	.67
Rage	.86	.74	.76

All correlations were significant at the .01 level, and all but four correlations (marked with a *) were significant at the .001 level (one-tail tests).

[1]This subanalysis used only those subjects who showed at least a 10-point change in the *GAS* rating.

[2]This subanalysis used only those subjects who showed at least a 10-point change in the Hassles rating made at the same time that the schizotypy scales were given.

[3]This subanalysis used only those subjects who showed at least a 10-point change in the Hassles rating made one month before the schizotypy scales were given.

A similar procedure was used to evaluate the effect of stress level on schizotypy scores. Test-retest reliabilities were computed for the subset of subjects who showed at least a 10-point difference over a four-month period on the intensity of Hassles score (Kanner et al., 1981). This was calculated two ways--using the stress level at the time the schizotypy scales were given, and then again using the stress level one month prior to completion of the schizotypy scales since the effects of stress have been hypothesized to be delayed (DeLongis, Folkman, & Lazarus, 1988). The mean of the absolute level of change on the *Hassles Scale* was 58.1 (s = 40.6) for the concurrent testing and 38.5 (s = 31.9) for the prior month testing. These test-retest reliabilities are also in Table 3.

Discussion

These data support one aspect of the construct validity of the schizotypy scales--the stability of the scales over time in a psychiatric population. Most of the scales (see Table 2) showed excellent test-retest reliability, which approached the levels of internal consistency reliability. Only the Perceptual Aberration Scale failed to show stability over periods longer than four months. It is interesting to note that Perceptual Aberration scores are stable over a four-month period, even when there are changes in the level of symptomatology or stress (see Table 3). An analysis of the scatterplots for the eight-month and twelve-month test-retest reliabilities for Perceptual Aberration revealed that the attenuated correlations were primarily the result of a small number (approximately 10%) of outliers. The majority of subjects continued to show relatively stable scores across these periods, although not nearly as stable as most of the other schizotypy scores.

The data also suggest that scores on the Cognitive Slippage scale may be affected by the current level of stress. Unlike the effect noted above for Perceptual Aberration, where a few outliers attenuated the correlation, the scatter plot of Cognitive Slippage scores for those subjects who showed a change in stress level simply shows a greater spread. The correlation of the change scores on stress and Cognitive Slippage was .23, suggesting that increases in stress had a very small effect on cognitive slippage scores. These data indicate that both the Perceptual Aberration and Cognitive Slippage scales may be unstable compared to the other schizotypy scales, suggesting that it is inappropriate to use these scales as trait measures. This is consistent with clinical findings that during decompensation, schizophrenic individuals report early changes in perceptual and cognitive processes. Finally, there is some evidence to suggest that stress levels a month prior to testing may affect some of the schizotypy measures (e.g., Intense Ambivalence, Magical Ideation, and Distrust). This possibility of a delayed effect of stress deserves further study.

The present findings support the notion that, with the possible exception of Perceptual Aberration and Cognitive Slippage, a stable set of personality traits was measured. This is consistent with Meehl's concept of schizotypy as an enduring personality dimension that may or may not develop into schizophrenia. This present effort is the first test of stability of the schizotypy construct in a psychiatric population. Many of the scales have shown excellent stability in normal populations, but the possibility has existed that serious psychopathology might alter the stability of these signs. Demonstrating that the signs are stable in a psychiatric population makes these measures more valuable as research and potential diagnostic tools. It should be noted,

however, that other research (Trigoboff, Raulin, Watson, Henderson, & Propper, 1987) has raised questions about the diagnostic significance of these measures in terms of current DSM-III diagnoses. Decisions on the potential diagnostic significance of these measures will have to await further testing.

The present study addresses a critical construct validation issue of the personality concept of schizotypy--namely, the stability of these characteristics over time. Construct validation issues remain, the ultimate one being whether the scales actually identify people who are at risk for schizophrenia. This question will have to await results from followup studies currently underway.

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Presented at the
Eastern Psychological Association Convention
in Boston on March 31, 1989