

The Development of a Scale to Measure Cognitive Slippage.

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Abstract

A 35-item true/false scale was constructed to measure cognitive slippage, a characteristic which Meehl (1962) suggests is found in schizotypic individuals. The scale showed excellent internal consistency and low method variance in a cross-validation sample. In addition, high scorers on the scale showed elevations on scales 2, 4, 7, 8, 9, and 0 of the MMPI relative to middle range scorers.

Cognitive disturbance has long been noted as a major feature in schizophrenia (Arieti, 1978; Johnston & Holzman, 1979). Bleuler (1911/1950) listed "cognitive slippage" as a primary symptom of schizophrenia -- a symptom that is always present in schizophrenics. More recently, Meehl (1962, 1964) gave cognitive slippage a central role in his concept of schizotypy. Meehl contends that there is a genetic predisposition for schizophrenia and that anyone who possesses this genetic heritage will develop a particular personality configuration which he calls "schizotypy". According to Meehl's model, only a portion of those individuals who are schizotypic will decompensate to the point of being diagnosable as schizophrenic. A variety of factors, both genetic and environmental, will determine which schizotypes decompensate and which ones maintain a reasonably stable adjustment.

Chapman, Chapman, Raulin, & Edell (1978) use Meehl's model as the basis for a behavioral high-risk approach to schizophrenia. The approach uses scales designed to measure signs which characterize subjects presumed to be at risk for schizophrenia (Meehl, 1964). These individuals are then brought into the laboratory for further clinical study. To date, a number of such scales have been developed including Physical Anhedonia (Chapman, Chapman, & Raulin, 1976), Perceptual Aberration (Chapman, Chapman, & Raulin, 1978), Intense Ambivalence (Raulin, 1984), Somatic Symptoms (unpublished), Social Fear (Raulin & Wee, 1984), Magical Ideation (Eckblad & Chapman, 1983), Nonconformity (Chapman et al., 1982), Rage (unpublished) and Distrust (unpublished). Subjects who score high on one or more of these scales and subjects who score in the normal range on the scales are brought into the laboratory and evaluated on a variety of clinically relevant measures. In a series of studies from several different laboratories, high scoring college students on these various schizotypy scales were found to score more deviantly on standard psychological tests (Chapman, Chapman, & Miller, 1982; Edell & Chapman, 1979; Raulin, VanSlyck, & Hourke, 1983), to demonstrate less social skill (Haberman, Chapman, Numbers & McFall, 1979), to show more social deficits (Numbers & Chapman, 1982), and to report more problems in their daily social functioning (Chapman, Edell, & Chapman, 1980). These high scoring subjects also demonstrate unusual communication styles (Martin & Chapman, 1982), atypical social perceptions (Adamski, Raulin, & Colavecchia, 1983), and differences in perceptual processing (DePalma & Raulin, 1982) and psychophysiological responsivity (Simons, 1981, 1982; Simons, MacMillan, & Ireland, 1982). Clients seeking counseling who score high on these

scales show a higher frequency of symptoms and more severe symptoms than clients scoring in the normal range (Adamski, 1983; Adamski, Raulin, & Capozzi, 1982). Ultimately, validation of these scales as indicators of risk will require following these high-scoring subjects over time to see if they are really more likely to develop schizophrenia than an equivalent control sample. Such studies are underway, but the data are not yet in.

This paper focuses on the development and preliminary validation of a scale to measure cognitive slippage. As mentioned earlier, Bleuler considered cognitive slippage a primary symptom of schizophrenia. It may be manifested in a variety of ways, including hallucinations, delusions, speech deficits, confused thinking and attentional disorders. Thus far, there is no adequate measure of cognitive slippage suitable for routine screening. In the development of a self-report scale to measure cognitive slippage, we chose to focus on speech deficits and confused thinking. These areas were selected for two reasons -- one pragmatic, the other theoretical. Pragmatically, questions about speech deficits and confused thinking can be more easily worded to minimize the effects of social desirability than items dealing with hallucinations and delusions. From a theoretical perspective, subtle disturbances in thinking are more likely to characterize the compensated schizotype than the florid psychotic symptoms of hallucinations and delusions.

The initial validation of the scale involved an evaluation of the reliability of the measure, the relationship of the measure to previously developed schizotypy scales, and the prediction of the typical MMPI profile of high scoring subjects on the Cognitive Slippage Scale.

SCALE DEVELOPMENT

Subjects

Undergraduate students from the Introductory Psychology Subject Pool were used in three steps in the scale development. The original screening of items involved six students. The initial standardization sample consisted of 125 male and 192 female students and the cross-validation sample consisted of 555 male and 324 female students.

Procedure

Item writing and pilot testing. An initial pool of 65 true/false items were developed by four item writers. Each item writer was given a description of cognitive slippage which we developed from a review of the clinical and research literature and which drew heavily on the work of Paul Meehl (1964). Items were developed to sample mild to severe forms of speech deficits and thought dysfunction. A mild speech deficit might be nothing more than an unusual use of words, while a severe speech deficit could include the attribution of idiosyncratic meaning to non-words, mutism, garbled sentences and the substitution of words having a meaning opposite of that which was intended. Mild confused thinking could involve subjective complaints of vague or hazy thoughts. More severe examples of confused thinking include loose associations, thought deprivation, concrete thinking and flights into fantasy.

The 65 items in this initial pool were screened by having six college students listen to each item and explain what they thought the item meant.

Frequently misunderstood items were either rewritten or dropped.

**Item pretest.** A 45-item scale, revised on the basis of the pilot testing, was given to 317 undergraduate students (125 males and 192 females). In addition to the Cognitive Slippage Scale, subjects also received the Crowne-Marlowe (1964) Scale for Social Desirability, Jackson & Messick's (1962) DY-3 Scale for Acquiescence, and an Infrequency Scale (Raulin, 1984) which was used to detect random responders. Subjects were dropped from the analyses if they answered more than two of the infrequency items in the keyed direction. The items from the various scales were intermixed into a single measure.

Product-moment correlations were computed separately for males and females with social desirability, acquiescence and the scale itself. Items were retained only if they had low correlations with social desirability and acquiescence and a high item-scale correlation for both males and females. Thirty-five items were retained for the final scale--18 keyed false and 17 keyed true.

#### CROSS-VALIDATION AND PRELIMINARY VALIDATION OF THE SCALE

##### Subjects and Procedure

A cross-validation sample of 555 male and 324 female students received the 35-item Cognitive Slippage Scale along with an Infrequency Scale and several other scales of schizotypic signs. The schizotypy scales included Physical Anhedonia (Chapman, Chapman, & Raulin, 1976), Perceptual Aberration (Chapman, Chapman, & Raulin, 1978), Intense Ambivalence (Raulin, 1984), Social Fear (Wee & Raulin, 1984), Magical Ideation (Eckblad & Chapman, 1983), Somatic Symptoms, Rage and Distrust. A subset of this group (87 males and 126 females) received a protocol which included the Social Desirability and Acquiescence Scales discussed earlier. As before, items from the scales were intermixed and subjects were dropped from the analysis if their Infrequency Score exceeded 2. This cross-validation sample was used to evaluate the psychometric properties of the Cognitive Slippage Scale, including internal consistency reliability and the level of method variance. This sample was also used to evaluate the relationship between the Cognitive Slippage Scale and the previously developed measures of schizotypic signs. Finally, 29 subjects were selected from the cross-validation sample for the initial concurrent validation of the scale. Each of these subjects was given the MMPI. Subjects scoring 1.7 standard deviations above the mean on the Cognitive Slippage Scale (N = 15) were designated "high scoring" subjects; "low scoring" subjects (N = 14) were randomly selected from those students scoring no more than .5 standard deviations above the mean.

##### Results

**Psychometric characteristics.** As can be seen in this first slide, the 35-item Cognitive Slippage Scale shows excellent internal consistency reliability and low social desirability and acquiescence variance in the cross-validation sample. The internal consistency reliabilities are close to .90 for both males and females while only about 13% of the variance is accounted for by acquiescence and only about 5% accounted for by social desirability.

#### Slide 1

##### Psychometric Properties of a 35-item Cognitive Slippage Scale in a Cross-validation Sample.

	MALES	FEMALES
sample size	555	324
coefficient alpha	.87	.90
mean scores	7.8	9.3
standard deviation	6.30	7.38
social desirability r	-.18	-.26
acquiescence r	.39	.31

\* The correlations with Social Desirability and Acquiescence are based on a subsample of 87 males and 126 females.

**Relationship to other schizotypy scales.** The Cognitive Slippage Scale also showed moderate to high correlations with most of the other scales of schizotypic signs for both males and females. The only exceptions were the correlations with scores on the Physical Anhedonia Scale for both male and female subjects and scores on the Rage Scale for male subjects. The Physical Anhedonia Scale has consistently shown low correlations in previous studies with all of the other schizotypy scales. It is worth noting that the Cognitive Slippage Scale was constructed completely independently of these other scales and that the content of many of the scales is dramatically different from the content of the Cognitive Slippage Scale. The finding of generally high correlations with scales that were also developed to be relatively free of method variance strengthens Meehl's hypothesis that these signs comprise a unitary syndrome.

#### Slide 2

##### Schizotypy Scale Correlates of the Cognitive Slippage Scale.

SCHIZOTYPY SCALES	MALES (N=555)	FEMALES (N=324)
Physical Anhedonia	.12	.16
Perceptual Aberration	.51	.56
Intense Ambivalence	.60	.64
Social Fear	.44	.39
Magical Ideation	.46	.46
Somatic Symptoms	.58	.62
Rage	.29	.39
Distrust	.50	.48

**MMPI correlates.** Fifteen high scoring (above +1.7 standard deviations) subjects and fourteen moderate scoring subjects (below a +.5 standard deviations) completed the MMPI. In this sample, 33% of the high scorers and 29%



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