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A validation of a picture preference test construct of psychoticism.

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A Validation of a Picture-Preference Test Construct of Psychoticism

by
Paul Szabo
Honours B. A., York University, 1983

A Thesis
Submitted to the Faculty of Graduate Studies through the Department of Psychology in Partial Fulfillment of the Requirements for the Degree of Master of Arts at the University of Windsor

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ABSTRACT

The main purpose of the present study is to test the Kline, Auld, and Cooper (1983) hypothesis that three Picture Preference Test scales, the Thought Disorder Scale, the Antisocial Tendencies Scale , and the Maladjustment Scale are projective measures of psychoticism. The three Picture Preference Test scales were administered together with the Eysenck Personality Questionnaire and the Friedman Overlap Scales (Friedman, 1983) to 78 psychiatric inpatients and 102 undergraduate psychology students. Information gathering proceeded by the convergent-discriminant validity and criterion related approaches to establishing construct validity. The results for the patient sample indicated convergence for the Antisocial Tendencies scale with the P-scale ($r=.58$, $p<.001$) and with the Psychoticism Overlap scale ($r=.37$, $p<.001$). The Maladjustment scale correlated significantly with the P-scale ($r=.28$, $p<.05$). The Thought disorder scale did not correlate significantly with either measure of psychoticism. The criterion related validity of the three Picture-Preference Test scales was not confirmed: none of the scales discriminated the psychotic group from the neurotic and the non-patient groups. A reevaluation of the behavioral domain measured by the P-scale indicates that it does not measure psychoticism. In view of the present

results, " P " is more appropriately labeled as " antisocial hostility ", and the author suggests that the three Picture Preference Test scales may be projective measures of 'antisocial hostility' but not psychoticism.

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CHAPTER I

INTRODUCTION

The purpose of this study is to test the hypothesis that three Picture Preference Test scales -- Thought Disorder, Antisocial Tendencies, and Maladjustment -- are projective measures of psychoticism.

To test this hypothesis two questions must be answered: 1) Do the three PPT scales measure a common construct ? If so, then 2) Is this construct "psychoticism" ?

The intent of this study is to confirm or disconfirm the construct validity of these picture-preference scales by comparing the three PPT scales with other, established measures of psychoticism. Tests like the Minnesota Multiphasic Personnality Inventory (MMPI; Hathaway & McKinley, 1951), the Eysenck Personality Questionnaire (EPQ; Eysenck, 1975), and the Friedman Overlap Scales (FOS; Friedman, 1983) have ratios and scales designed to diagnose psychoticism. The correlation between the three PPT scales scores and the EPQ psychoticism scale or the FOS psychotic overlap scale, for example, provides information about what the PPT scales are measuring and about how well they measure whatever they measure. Thus, in this study, multiple measures are used to define the construct "psychoticism". These measures, however, must be validated against a

criterion. As it is expected that a reasonably accurate classification of psychotic inpatients is possible, the membership or non-membership in this group will be used as a criterion.

Before addressing the two questions regarding the three PPT scales the author will present a brief review of the theory and development of the PPT, to introduce the reader to these scales. After that the author will consider presently available evidence about the relationships among the three picture-preference scales. Finally, the author will review what is known about the older psychoticism measures (the MMPI, EPQ, and FOS) and will show how this information bears on the second question -- "Is this construct 'psychoticism'?"

The Picture Preference Test (PPT)

The PPT Format and Theory

In 1967, Cowan devised a Picture Preference Test measuring 10 personality traits associated with a predisposition to alcohol and drug addiction. In its original form the PPT consisted of 106 pairs of pictures -- line-drawings -- organized into 10 a priori scales thought to represent 10 personality traits. Each pair of pictures -- including a left-hand picture designated as "A" and a right hand picture designated as "B" -- is presented by a

slide projector for 10 seconds during which the subject indicates the picture he or she prefers.

Auld (1981) has elucidated the rationale underlying the PPT format. The assumptions are : 1) Each picture represents one or more primary or learned drives that evoke approach and avoidance tendencies in the subject, 2) The picture selected has a greater overall net approach tendency (approach minus avoidance tendencies) than the other picture, and 3) From the picture chosen, valid inferences can be drawn about the subject's personality dispositions. Assumptions 1 and 2 are based on Neal Miller's (1959) approach-avoidance conflict model. Applying this model to the picture-preference situation, Auld (1981) proposes that the selection of a picture is determined by the resolution of the conflict between the approach and avoidance motives. If "unwanted determinants" such as social desirability response bias do not unduly influence picture selection then we can assume that the choice is determined by which picture has the greater net approach tendency elicited by it (Auld, 1981). Assumption 3 is supported by research on the use of projective techniques in personality assessment (Rapaport, Gill, & Schaffer, 1968; Zubin, Eron, & Shumer, 1965), which suggests that responses to relatively unstructured stimuli are governed by an internal cognitive-perceptual system. Accordingly, the chosen picture is assumed to reveal some aspect of the subject's internal organization and

functioning.

The PPT Development

Since 1967, many of the original PPT scales have been revised and further developed. I will mention here the scales related to the construct "psychoticism". Morrison (1973) developed a 23-item Antisocial Tendencies scale shown by Theis (1980) to discriminate between prisoners and normal persons. Kudzinski (1979) created a scale measuring thought disorder, a quality characterizing schizophrenic patients. His 31-item Thought Disorder scale discriminated among thought disturbed patients, other patients, and non-patients. In another study this scale correlated significantly with a Rorschach measure of thought disorder (Apanasiewicz, 1982). In trying to increase the homogeneity of Cowan's original items Auld and Kline (1984) developed two internally consistent scales; a 22-item Impulse Control scale and a 26-item Maladjustment scale.

One of the objectives of test construction in terms of generalizability is the scales' ability to locate a person on a theoretically meaningful location or construct (Morf, 1974). To identify the personality dimension underlying the PPT scales, Kline et al. (1983) factor analysed the PPT along with tests of known factorial composition. Each of the latter, usually called marker variables, clearly defines one factor and is potentially useful in identifying a

dimension in the factor space. Using this rationale, Kline et al. factor analysed the PPT scale scores of 181 students at a British University along with scores on the following marker variables: Cattell's Comprehensive Ability Battery (CAB), the Eysenck Personality Questionnaire (EPQ), Cattell's 16 Personality Factors Test (16 PF), and measures of obsessional traits, authoritarianism dogmatism, and Machiavellianism. The correlations among scale scores were factored by principal axes; the resulting loadings were subjected to a Direct Oblimin oblique rotation. A scree test supported the hypothesis that there were 12 factors. The PPT Maladjustment scale (.72), the Antisocial Tendencies scale (.83), and the Thought Disorder scale (.75) loaded substantially on Factor 3. Among the marker variables, EPQ Psychoticism (.50), Machiavellian views (.50), 16 PF Radicalism (.37), 16 PF Orderliness (-.83), and 16PF Conscientiousness (-.43) loaded significantly on the same factor.

The factor structure and factor pattern values led Kline et al. (1983) to propose that Factor 3 represents a disposition that may be labeled "psychoticism". Accordingly the three PPT scales loading substantially on Factor 3 are measures of this personality dimension. The positive and significant intercorrelations among the three scales is also an indication that the three scales measure a common disposition. Furthermore, research on the Thought Disorder

scale indicates significant correlations with other measures of psychoticism. Rudzinski (1979) found that his scale correlates moderately but significantly ($r = .38$, $p = .001$) with a composite of three Brief Psychiatric Rating Scales (Overall & Gorham, 1962) variables -- conceptual disorganization, hallucinatory behaviour, and unusual thought content. Rudzinski's scale also correlated significantly ($r = .26$, $p < .01$) with the Differential Personality Inventory (Jackson & Messick, 1964) psychotic tendencies scale. Thus there is some indication that the three PPT scales measure a common personality dimension and that the dimension may be psychoticism.

Existing Measures of Psychoticism

The Eysenck Personality Questionnaire

The Eysenck Personality Questionnaire (EPQ; Eysenck, 1975) is a test primarily designed to measure personality dispositions located on a dimensional framework, rather than to provide a psychiatric diagnosis or a categorical classification (Eysenck, 1975). The Psychoticism scale (P-scale), introduced in 1975, is the third personality dimension besides Neuroticism (N) and Extraversion (E). The P-scale has an encouraging reliability. In one study the test-retest reliability was approximately .78, with a one-month interval between testing; and the alpha coefficients for male and female non-patient samples were

.74 and .68, and for male and female prisoner samples were .71 and .77, respectively.

Although the P-scale's internal consistencies seem sufficiently high, the scale's construct validity is controversial. Eysenck cites the studies by McPherson (1974), Shade (1975), and Verma and Eysenck (1973), which indicate that the more a psychotic illness is described as involving affective flattening, incongruous affect, thought disorder, and hallucinations, the higher the scores on the P-scale (Eysenck, 1976). The standardization data on abnormal samples (psychotics, neurotics, prisoners etc., Eysenck, 1975) show, however, that the P-scale score overlap between psychotic and non-psychotic samples is so large that it brings into serious question the P-scale's ability to discriminate among diverse diagnostic groups (Block, 1978; Bishop, 1977; and Davis, 1974).

Eysenck may defend the P-scale by reminding his critics that the P-scale measures psychoticism on a continuous dimension on which disease is the manifestation of a pathological extreme. Because in prior studies (Eaves & Eysenck, 1974; Nias, 1973) the social attitude scale "toughmindedness" correlated significantly with the P-scale, and in view of the pathological connotations of the traditional psychiatric label "psychoticism", Eysenck proposes "toughmindedness" as an alternative construct to be used with normal samples (Eysenck, 1975). The examination

of the P-scale's relations with other scales and diagnostic groups may provide some answers as to the validity of his proposition.

A review of the P-scale's item content, however, suggests a pathological orientation very similar to that of MMPI questions (Tellegen, 1978). Wakefield's (1974) demonstration of a conceptual overlap between the EPI and MMPI supports the view that the P-scale expresses a pathological orientation. Therefore the P-scale is best thought of as a general or global indicator or dimensions that the MMPI measures in detail.

The Minnesota Multiphasic Personality Inventory

The Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1961) is a 550 item empirically-keyed questionnaire. From a large item pool derived from medical descriptions, clinical case histories, and self-descriptions, only those items were selected that differentiated between criterion groups represented by various psychiatric diagnostic categories, and normal samples. The 550 items are grouped into three validity and 10 psychodiagnostic scales. Many MMPI ratios and configurational rules have been developed to diagnose psychoticism (Affleck & Garfield, 1960; Meehl & Dahlstrom, 1960; Hendricks, 1964), with various degrees of success (Winter & Stortroen, 1963). In one study, 29 judges

diagnosed 861 profiles on a psychoticism-neuroticism dimension (Goldberg, 1965). Over all samples, the best actuarial sign (Meehl-Dahlstrom segential rules; Meehl-Dahlstrom, 1960) achieved a discriminant validity of .39, which Goldberg concluded is a chilling result for MMPI users.

The findings of studies on the MMPI scale structure help us to understand the difficulties in differential diagnosis. Because the clinical scales have been developed from a common item-pool, items that discriminate among normal and maladjusted groups appear on more than one scale (Wakefield,1975). This item overlap increases the correlations among criterion scales and may be resposible for the "structural redundancy" that hinders differential diagnosis (Rosen, 1966). Elaborating on this structural redundancy, Wakefield (1975) suggested that the overlapping items on the MMPI measure common underlying dimensions shared by clinical scales and by different criterion groups. To test Wakefield's contention , Friedman (1983) developed three overlap scales reflecting three main diagnostic categories: Psychoticism, Neuroticism, and Maladjustment.

The Friedman Overlap Scales

Friedman (1983) tested his items using MMPI data from four groups: 101 psychotics, 85 neurotics, 76 medical patients, and 38 college students. He grouped the items

overlapping within the traditional psychotic (Pa, Sc, and Ma) and neurotic (Hs, D, Hy, and Pt) scales into a Psychotic Overlap Scale (POS) and a Neurotic Overlap Scale (NOS). The items overlapping between the neurotic and psychotic scales formed the Maladjustment Overlap Scale (MOS). The three scales were highly homogeneous. The alpha coefficient for the POS, the NOS, and the MOS were .84, .85, and .86 respectively. Planned comparisons among group means indicated that the scales were able to discriminate between the scores of psychiatric and non-psychiatric samples, and identified the difference in psychiatric diagnoses in the predicted direction. Discriminant functions making use of the original, conventional MMPI scales correctly classified 62% of both the neurotic and the psychotic subjects whereas the discriminant functions based on the POS scales correctly classified 54% of neurotics and 52% of psychotics. The two sets of scales were equally effective in indentifying the normal controls, accurately indentifying 88% of them. In summary, the POS scales, although much shorter than the standard MMPI, have an almost comparable effectiveness in discriminating among major criterion groups.

In view of the theoretical overlap demonstrated by Wakefield et al. (1974) between the MMPI scales and Eysenck's personnality dimensions it might be hypothesized that the Psychoticism Overlap scale and the P-scale measure similar dimensions. Therefore, it is expected that the

Psychoticism Overlap scale scores should correlate positively and statistically significantly with EPQ P-scale scores.

Problem Statement and Hypothesis

The possibility that the three PPT scales measure the same personality dimension as the Psychoticism Overlap scale or the EPQ P-scale promises many advantages in the diagnosis of psychoticism. The PPT format eliminates or minimizes the influence of many extraneous variables that affect direct questionnaires and projective personality measures. The task of identifying a preferred picture is a simple task, requires little effort, and eliminates the need of verbal skills required for reading and understanding written questions. Selecting pictures is more attractive and is less likely to arouse defensiveness than answering explicit questions (Auld & Kline, 1984). The forced-choice format makes scoring simple and precise; scoring reliability is as good as for structured tests (Ryan, 1976). The PPT is also reported to be free of the influence of social desirability response-set (Rudzinski, 1979; Kline et al., 1983), and to be independent of variations in perceptual-cognitive ability (Kline et al., 1983).

With these advantages, the PPT holds much promise as a diagnostic tool. Although current studies (Rudzinski, 1979; Apanasiewicz, 1982; and Kline et al., 1983) indicate that

the Thought Disorder Scale correlates moderately with other measures of psychoticism, the extent to which the PPT measures psychoticism has not yet been clearly established.

The aim of the present study is to attempt to validate the PPT psychoticism construct using 1) the intertest method, and 2) the criterion-related method (Brown, 1976). The intertest method considers the interrelations among several tests simultaneously. Following this method, if the PPT scales correlate with other established tests of psychoticism, then it can be concluded that the PPT measures the same construct (convergent validity). Furthermore, the PPT scales should not correlate with tests that measure different constructs, indicating the independence of the construct being measured (discriminant validity). Thus, the intertest method follows the convergent-discriminant validity concept of construct validation (Campbell, 1960).

Criterion-related validity is the ability of the test scores to differentiate among naturally occurring or contrived groups. If the three PPT scale scores are able to differentiate psychotics from groups with differing psychopathology we have a further indication of the nature of the construct being measured.

If the three PPT scales (Thought Disorder, Antisocial Tendencies, and Maladjustment) do in fact measure psychoticism, according to the intertest and criterion-related methods of establishing constuct validity,

then the following hypotheses should hold:

1) The three PPT scales should correlate positively and significantly with Friedman's Psychoticism Overlap scale scale and Eysenck's P-scale measures of psychoticism.

2) The three PPT scales should not correlate significantly with Friedman's Neuroticism Overlap scale and Eysenck's Neuroticism-scale measures of neuroticism.

3) The three PPT scales should discriminate the psychotic group from non-patients and from neurotics.

CHAPTER II

METHOD

Subjects

The sample in this study consisted of patients and non-patients. The patient sample consisted of 76 psychiatric inpatients admitted consecutively to Metropolitan General Hospital and Hotel Dieu Hospital in Windsor, Ontario. All patients who agreed to participate and were able to respond either by speaking or by writing took part in the study.

The non-patient sample consisted of 102 undergraduate students enrolled in introductory psychology classes at the University of Windsor. The demographic characteristics of both patient and non-patient samples are presented in the Results section.

Instruments

The Picture Preference Test. An 80-slide version of the PPT included 37 items from three scales: 22 items from Rudzinski's Thought Disorder scale, 9 items from Morrison's Antisocial Impulses scale, and 6 items from Auld's Maladjustment scale. The length of the three scales was shortened to reduce the time necessary for testing. The 80-slide version includes the Thought Disorder items with the highest item-scale correlation. The description of each

item, and its keying, are presented in Appendix B. The subject's responses were registered on a two-alternative answer sheet.

The Friedman Overlap Scales. Friedman (1983) extracted the 18-item Psychotic Overlap Scale and the 30-item Neurotic Overlap Scale from the standard MMPI. Because validity and reliability data for the Psychoticism Overlap scale and the Neuroticism Overlap scale out of context were not obtained by Friedman, the use of these scales can be supported by Friedman's study only in the context of the complete MMPI. The 550-item MMPI, however, was too long and too time-consuming to be utilized in this study. Instead, the 166-item Faschingbauer Abbreviated Minnesota Multiphasic Personality Inventory (FAM; Faschingbauer 1974) was used, together with whatever additional items were required to in-clude all of the items in Friedman's Overlap Scales. The FAM, developed as a result of a cluster analysis of items with the greatest amount of scale overlap, least amount of scale overlap, and items with intercorrelations larger than .30 , contains 9 items in common with the Psychoticism Overlap scale and 19 in common with the Neurotic Overlap scale. The addition of the remaining items from each scale, that is, 9 items from the POS , and 11 from the NOS, results in a 186-item short form of the MMPI. The order of the items on the combined FAM, POS, and NOS scales follows the

sequence of the standard MMPI. All items are dichotomously scored. The Psychoticism Overlap scale and Neuroticism Overlap scale scores were computed by counting the respective items that had been marked in the scored direction.

The Eysenck Personnality Questionnaire. The EPQ (Eysenck, 1975) consists of 90 items grouped into four scales: the Neuroticism (N), Psychoticism (P), Extraversion (E), and Lie (L) scales. All four scales are true-false keyed.

The 23-item Neuroticism scale is a measure of a stability-instability dimension. High scorers on this scale are characterized as anxiety-prone, overly emotional, and frequently depressed. The 21-item E scale measures an introversion-extraversion dimension. A typical extravert is described as sociable, craving excitement, and impulsive. The dimension measured by the P scale is Psychoticism or "toughmindedness". The high P-scale scorer is described as aggressive, impulsive, uncaring, with marked social alienation, and with antisocial feelings. According to Eysenck's findings psychotics, prisoners, alcoholics, and drug addicts score high on this scale.

Eysenck also emphasized the role of the Lie scale scores in interpreting P-scale results. Beacause L scores have a negative correlation with P-scale scores, in

conditions of dissimulation nigh L scores tend to deflate the P-scores. Although Eysenck did not specify a cut-off score, he reccommended that correlations among the personality variables be obtained; and he reccmmended eliminating the highest 5% of L scorers, and then computing these correlations again. This procedure is thought to give an indication of the L scale's influence on scale interrelationships.

Overall, the EPQ appears to be a reliable test. Test-retest reliability estimates for P,E,N,and L are .78, .89, .86, and .84, respectively. Internal consistency estimates expressed by coefficient alpha are reported to be in the 80's for all four scales. Eysenck assumes that the N and E scales have changed little from the Eysenck Personality Inventory (Eysenck, 1968) format and he did not report any validity data for these scales.

Procedure

In the data collection among the psychiatric sample the examiner was introduced to the patients by the psychiatric staff. Each patient had been informed that the purpose of the questionnaires was to gain more understanding about some areas of difficulty he or she may have. Testing took place in an office on an individual basis. The examiner administered the tests in two sessions.

In the first session the examiner read the FAM items to

the patient. The EPQ and the PPT followed in the second session. Each session took approximately one hour. Patients who were less disturbed answered the FAM and the EPQ by themselves. Standard instructions were given for the FAM and the EPQ. For the PPT, the patients were asked to indicate the picture of each pair which they preferred. All patients were told that their test results would be communicated only to their psychiatrist. Where useful for psychiatric diagnosis, the examiner transformed the FAM scores to standard MMPI T-scores and interpreted the profile according to Lachar's automated interpretation (Lachar, 1981).

The non-patient sample was informed that the study concerned how people differ in regard to their preferences among sets of pictures. They were also informed that the study involved answering two questionnaires and looking at some slides and that testing would take approximately one hour and 15 minutes of their time. To ensure confidentiality they were instructed to omit their names on any of the answer sheets. Participants received experimental credit points toward their course grade. The instructions for the questionnaires followed the standard MMPI and EPQ instructions printed on the top of their answer sheet. For the PPT, they received the following instructions:

In taking this Picture Preference Test, your

task is simply to choose which of the two pictures presented together you prefer. Fill in "A" on your answer sheet if you prefer the left-handed picture designated as "A". Fill in "B" on your answer sheet if you prefer the picture on the right designated as "B". A sample item is shown now on the screen. You would fill in "A" on the answer sheet if you prefer the picture on the left of the lamp. You would fill in "B" on the answer sheet if you prefer the picture of the tree on the right. Each of the pictures will be shown for 10 seconds. You should make your choice within this time period. Even if you find it difficult to make a choice, please make one. If you don't like either picture, choose the one you dislike the least. The pictures will begin now. The examiner emphasized the confidentiality of individual tests. The subjects were promised access to the final overall results if they so desired.

CHAPTER III

RESULTS

Participant's demographic characteristics

The demographic characteristics of the patient and non-patient samples are presented in Table 1. Thirty-five males and 41 females made up the patient sample with age ranges from 13 to 75 years and a mean age of 38 years. According to marital status the typical patient is single with a range from "married" to "divorced" categories. The average reported educational level falls between the "high-school graduate" and "partial high-school" categories.

The diagnostic classifications assigned by the staff psychiatrists are based on the Ninth Revision of the International Classification of Mental Diseases (ICD-9, World Health Organization, 1977) nomenclature. The diagnoses, their frequency distribution, and grouping into major classifications based on the ICD-9 are presented in Table 2.

In comparison, the non-patient sample is similar in sex ratio (45 males and 54 females) to the patient sample. On the average, however, the non-patients are younger (mean age is 22 years) and more educated (partial college education) than the patient sample.

As sample size is directly related to the statistical power of a test, Cohen & Cohen (1975) recommended that with power level set between .70-.90 and α = .05, two tailed, a

Table 1

Participant's demographic characteristics

		Patients	Non-patients
Sex	Percentage Male	46	47
Age	Mean	38.6	22.0
	SD	16.4	5.5
Marital Status	Mean	2.00	1.98
	SD	1.19	.45
Educational level	Mean	4.55	3.59
	SD	1.19	.60

a = 76 patients

b = 102 non-patients.

c = Code for the marital status is as follows: 1) Married; 2) Single; 3) Divorced; 4) Widow; 5) Separated.

d = Code for educational level is as follows: 1) Graduate professional; 2) University graduate 3) Partial college training; 4) High-school graduate; 5) Partial high-school; 6) Junior high-school; 7) Less than seven years.

Table 2

Frequency Distribution of Psychiatric Diagnoses and Groups*

Diagnoses	No. of cases	Group	Total
Senile dementia, simple	2	Psychotic	46
Presenile dementia	2		
Schizophrenia, simple	2		
Schizophrenia, paranoid	3		
Schizophrenia, residual	1		
Schizophrenia, schizoaffective	4		
Manic-depressive, manic	3		
Manic-depressive, depressive	16		
Manic-depressive, mixed	5		
Reactive confusion	4		
Unspecified reactive psychosis	3		
Unspecified psychosis	1		
Hysteria	1	Neurotic	11
Phobic state	7		
Neurotic depression	2		
Neurasthenia	1		
Affective personality disorder	3		6
Schizoid personality disorder	1		
Hysterical personality disorder	1		
Unspecified	1		
Alcohol dependence	3	Alcohol Dependence	3
Acute situational disturbance	1	Acute reaction to stress and Adjustment disorders	5
Brief depressive reaction	3		
Acute adjustment disorder	1		
Postconcussional syndrome	2	Organic brain dysfunctions	3
Unspecified	1		
Undiagnosed	2	Undiagnosed	2

* Based on the Ninth Revision of the International Classification of Diseases (1977)

sample size must be between 68 and 110 so that a correlation of r = .30 can be detected between measurements. According to these criteria the patient sample size of 76 yields a statistical power of .76 which is sufficient to detect any significant relationships at r=.30 level.

The convergent-discriminant validity of the PPT scales

Using the convergent-discriminant method for construct validation (Brown, 1976, p.133), the three PPT scales should correlate positively and significantly with the EPQ P-scale and the Psychoticism Overlap scale measures of psychoticism and should not correlate with the Neuroticism and ~~the~~ Neuroticism Overlap scale measures of neuroticism. The Pearson product moment correlations calculated for the patient sample illustrates the interrelationships among scales (see Table 3).

Of the three PPT scales the Antisocial Tendencies scale correlates significantly with the P-scale (r=.58, p<.001) and the Psychoticism Overlap scale (r=.37, p<.001), while the Maladjustment scale correlates significantly with the P-scale (r=.28, p <.05). The Thought Disorder scale does not show significant correlations with either measure of psychoticism.

None of the three PPT scales correlates significantly with measures of neuroticism, extraversion (E-scale) or social desirability (L-scale). The Antisocial Tendencies

Table 3

Correlations among Tests in Patient Group

	ANTS	MALA	P	N	POS	NOS
TDIS	.34**	.39***	.07	-.05	.19	-.15
ANTS		.50***	.58***	-.03	.37***	-.12
MALA			.28*	-.18	.21	-.10
P				.03	.37***	-.03
N					.29*	.45***
POS						.08

a =76 patients

Note. Key to abbreviations : TDIS = Thought Disturbance Scale; ANTS = Antisocial Tendencies Scale; MALA = Maladjustment Scale; P = EPQ Psychoticism Scale N = EPQ Neuroticism Scale; POS = Psychoticism Overlap Scale; NOS = Neuroticism Overlap Scale.

* $p<.05$

** $p<.01$

*** $p<.001$

scale is the only PPT scale that correlates with sex (r=-.31, p =.01) and age (r=-.22, p=.05). To control for the possible influence of demographic variables on the relationship of Antisocial Tendencies to other scales the author recalculated the correlations while controlling for the effects of sex and age variables. The partial correlations coefficient table (Table 4) indicates that the existing interrelationships among the scale scores were not significantly influenced by age and sex.

For the non-patient sample the interscale correlations are presented in Table 5. Of the three PPT scales the Antisocial Tendencies scale correlates significantly with the P-scale (r=.29, p <.005). The Antisocial Tendencies scale also correlates significantly negatively with the EPQ L-scale (r= -.23, p <.05), sex (r=-.28, p=.005), and age (r= -.35, p <.001) variables.

The criterion-related validity of PPT scales

To establish construct validity with the criterion-related method, the three PPT scale scores would have to discriminate the psychotic patient group from non-patients, and from patients diagnosed as neurotic. In other words, if the three PPT scales measure psychoticism, the psychotic patients should score statistically higher on these scales than non-patients and neurotic patients.

A series of t-tests indicate that although the mean

Table 4

Partial Correlations among Tests, in Patient Group (Partialling for Sex and Age)

	ANTS	MALA	P	N	POS	NOS
TDIS	.35**	.41**	.07	-.05	.18	-.14
ANTS		.54**	.52***	-.02	.31**	-.05
MALA			.29*	-.15	.27*	-.13
P				.04	.32**	.03
N					.29*	.47***
POS						.16

a = 76 patients

Note. Key to abbreviations : TDIS = Thought Disturbance Scale; ANTS = Antisocial Tendencies Scale; MALA = Maladjustment Scale; P = EPQ Psychoticism Scale N = EPQ Neuroticism Scale; POS = Psychoticism Overlap Scale; NOS = Neuroticism Overlap Scale.

* $p<.05$

** $p<.01$

*** $p<.001$

Table 5

Correlations among Tests, in Non-patient Group

	ANTS	MALA	P	N	POS	NOS
TDIS	.42**	.36**	.06	-.03	-.06	.06
ANTS		.40**	.29*	.10	.17	.13
MALA			.11	.12	.08	.07
P				.28*	.46**	.43**
N					.51**	.53**
POS						.53**

a = 102 non-patients

Note. Key to abbreviations : TDIS = Thought Disturbance Scale; ANTS = Antisocial Tendencies Scale; MALA = Maladjustment Scale; P = EPQ Psychoticism Scale N = EPQ Neuroticism Scale; POS = Psychoticism Overlap Scale; NOS = Neuroticism Overlap Scale.

* $p<.005$

** $p<.001$

Table 4

Partial Correlations among Tests, in Patient Group (Partialling for Sex and Age)

	ANTS	MALA	P	N	POS	NOS
TDIS	.35**	.41**	.07	-.05	.18	-.14
ANTS		.54**	.52***	-.02	.31**	-.05
MALA			.29*	-.15	.27*	-.13
P				.04	.32**	.03
N					.29*	.47***
POS						.16

a = 76 patients

Note. Key to abbreviations : TDIS = Thought Disturbance Scale; ANTS = Antisocial Tendencies Scale; MALA = Maladjustment Scale; P = EPQ Psychoticism Scale N = EPQ Neuroticism Scale; POS = Psychoticism Overlap Scale; NOS = Neuroticism Overlap Scale.

* $p<.05$

** $p<.01$

*** $p<.001$

Table 5

Correlations among Tests, in Non-patient Group

	ANTS	MALA	P	N	POS	NOS
TDIS	.42**	.36**	.06	-.03	-.06	.06
ANTS		.40**	.29*	.10	.17	.13
MALA			.11	.12	.08	.07
P				.28*	.46**	.43**
N					.51**	.53**
POS						.53**

a = 102 non-patients

Note. Key to abbreviations : TDIS = Thought Disturbance Scale; ANTS = Antisocial Tendencies Scale; MALA = Maladjustment Scale; P = EPQ Psychoticism Scale N = EPQ Neuroticism Scale; POS = Psychoticism Overlap Scale; NOS = Neuroticism Overlap Scale.

* $p<.005$

** $p<.001$

Table 6

Comparison of Psychotic, Neurotic, and Non-patient Scores on Thought Disturbance, Antisocial Tendencies, and Maladjustment Scales

Scale	Groups Compared	M	SD	df	t
TDIS	Psychotic	4.07	3.40	55	1.15
	Neurotic	2.82	2.31		
	Psychotic	4.07	3.40	146	.90
	Non-patient	3.60	2.70		
ANTS	Psychotic	1.11	1.63	55	.21
	Neurotic	1.00	1.18		
	Psychotic	1.11	1.63	146	-2.87*
	Non-patient	1.68	1.46		
MALA	Psychotic	1.43	1.29	55	- .48
	Neurotic	1.64	1.12		
	Psychotic	1.43	1.29	146	.23
	Non-patient	1.39	.89		

a = 46

b = 11

c = .102

* p=.005

Thought Disorder and Maladjustment scores are higher for psychotics than for the other two groups, the difference is not statistically significant (Table 6). For the Antisocial Tendencies scale, however, the non-patient group mean (M=1.88) and the psychotic group mean (M=1.11) differ significantly even after the correction for the comparisonwise error rate (CER ; SAS, 1982, p.171) which sets the probability of Type I error at $p=.025$ level.

The finding that the non-patient group scored higher than the psychotic group on the Antisocial Tendencies scale may be an artifact of sex and age, as both ~~of~~ these variables correlate with Antisocial Tendencies scores, and the non-patient sample is significantly younger than the patient sample. The results of an analysis of covariance (Table 7) on the Antisocial Tendencies scale for the two groups with age and sex as covariates indicates that the difference between the means of the non-patient (M=1.71) and psychotic groups (M=1.50) is no longer significant; $F(1,144)=.39$, $p=.535$.

None of the t-tests showed significant differences between normals and neurotics on any of the PPT scales. The mean Thought Disorder, Antisocial Tendencies, and Maladjustment scores for all diagnostic categories are presented in Appendix A.

Table 7

Analysis or Covariance for Antisocial Tendencies Scale with Age and Sex as Covariates

Groups	Observed Means	Adjusted Means
Non-patients	1.88	1.71
Psychotic	1.11	1.50

Source of variation	SS	df	MS	F	Significance level
Groups	.80	1	.80	.39	.535
Regression	39.78	2	19.90	9.64	.000
Constant	124.05	1	124.05	60.09	.000
Error	297.26	144	2.06		

a = 102

b = 46

Relationship between the P and Psychoticism Overlap scales

Wakefield (1974) demonstrated a relationship between the dimensions measured by the P-scale and the traditional MMPI scales measuring psycnoticism. Because Friedman constructed his Psychoticism Overlap scale from overlapping items taken from MMPI scales measuring psychoticism, it was hypothesized that the P-scale correlates positively and significantly with Friedman's Psychoticism Overlap scale. Table 3 shows that for the patient sample this correlation is $r=.38$; $p=.001$.

Another point of interest is to compare the ability of the P and the Psychoticism Overlap scales to discriminate between the scores of the psychotic group and the normal and neurotic groups. A series of t-tests (Table 8) indicate that for the P-scale, the psychotic group mean (M=4.39) and the non-patient group mean (M=3.31) are significantly different at p=.025 level. The psychotic (M=4.39) and neurotic (M=4.36) group means, however, are virtually identical.

For the Psychoticism Overlap scale , the difference in psychotic (M=8.35) and non-patient (M=4.34) group means is significant at the p .001 level. The comparison between the psychotic (M=8.35) and neurotic (M=5.18) group means remained significant (at the p=.019 level) even after the correction for the Comparisonwise error rate was done.

Table 8

Comparison of Psychotic, Neurotic, and Non-patient Means on P-scale and Psychoticism Overlap Scale

Scale	Groups Compared	M	SD	df	t
P	Psychotic	4.39	3.00	146	2.26*
	Non-patient	3.31	2.54		
	Psychotic	4.39	3.00	55	.03
	Neurotic	4.36	2.01		
POS	Psychotic	8.35	3.89	70.02	6.20**
	Non-patient	4.34	2.99		
	Psychotic	8.35	3.89	55	2.42*
	Neurotic	5.18	3.94		

a = 46

b = 102

c = 11

d = Separate variance estimate

* $p<.05$

** $p<.001$

No t-test showed significant differences between non-patients and neurotics on the P or the Psychoticism Overlap scales.

What does the P-scale measure ?

The dimensions determining P-scale scores can be inferred from the intercorrelations of P with other scales (Table 3). As already mentioned, the P-scale correlates with Antisocial Tendencies and Psychoticism Overlap scales. Furthermore, the P-scale score correlates negatively with sex ($r = -.27$, $p < .05$) and age ($r = -.31$, $p < .01$) and does not correlate significantly with either the Neuroticism or the Neuroticism Overlap scale measures of neuroticism.

Eysenck states in the EPQ Manual that terms like "schizoid", "psychopathic", and "personality disorders" are overlapping with the concept "psychoticism" (1975, p.6). If this is so the P-scale should discriminate schizophrenics from non-patients and neurotics. To test this hypothesis the author compared the mean P-scale scores of 10 patients from the psychotic sample diagnosed as schizophrenic with non-patient and neurotic scores. A series of t-tests on the P-scale means failed to show significant differences between groups. The point-biserial correlation between group membership, schizophrenic versus neurotic, and P scores is -.21; and that between schizophrenic versus non-patients, and P scores is .03 .

Table 9

Comparison of Schizophrenic, Neurotic, and Non-patient Means on P-scale, Psychoticism Overlap Scale, and Thought-Disorder Scale

Scale	Groups Compared	M	SD	df	t
P	Schizophrenic	3.60	1.43	110	.35
	Non-patient	3.31	2.54		
	Schizophrenic	3.60	1.43	19	- .99
	Neurotic	4.36	2.01		
POS	Schizophrenic	9.60	2.60	110	5.35***
	Non-patient	4.34			
	Schizophrenic	9.60	2.60	19	3.00**
	Neurotic	5.18	3.94		
TDIS	Schizophrenic	6.00	4.50	9.64	1.66
	Non-patient	3.60	2.70		
	Schizophrenic	6.00	4.50	19	2.07*
	Neurotic	2.81	2.31		

a = 10

b = 102

c = 11

d = Separate variance estimate

* p=.053

** p<.01

***p<.001

It is a point of interest to compare the P-scale with the Psychoticism Overlap scale's ability to discriminate between the same groups. As Table 9 shows, the Psychoticism Overlap scale discriminates significantly between the schizophrenic and non-patient groups (t =5.35, $p<.001$) and between the schizophrenic and neurotic groups ($p<=3.00$, $p<.01$). The point-biserial correlation between group membership, schizophrenic versus non-patient, and Psychoticism Overlap scale score is .45; that between group membership, schizophrenic versus neurotic, and Psychoticism Overlap scale score, is .55 .

Rudzinski (1979) found that a 31-item version Thought Disorder scale discriminated between thought-disordered, other-patient, and non-patient samples. As distortion in thinking is traditionally considered a diagnostic symptom characteristic of schizophrenia it may be expected that the Thought Disorder scores should also discriminate the schizophrenic group from neurotics and non-patients in the present sample.

The results of t-tests indicate (Table 9) that although the mean Thought Disorder score is higher for schizophrenics (M=6.00) than for non-patients (M=3.60) the difference is not significant. The point-biserial correlation for this comparison is .23 .The difference between the mean Thought Disorder scores for schizophrenics (M=6.00) and for neurotics (M=2.81) does not reach

significance when the correction for the Comparisonwise error rate is set at p=.025 level. The point-biserial correlation for this comparison is .42 .

CHAPTER IV

DISCUSSION

To identify the personality dimensions underlying the PPT scales, Kline et al. (1983) factor analysed 181 university students' PPT scores along with scores on tests of known factorial composition. Of the PPT scales, the Thought-disorder, Antisocial-impulses, and Maladjustment scales loaded substantially on a factor labeled "psychoticism". Interpreting this finding, Kline et al. (1983) hypothesized that the three PPT scales are projective measures of psychoticism.

The main purpose of the present study was to evaluate the hypothesis that these PPT scales are measures of psychoticism. Information gathering proceeded by the convergent-discriminant validity and the criterion-related approaches to establishing construct validity.

The validity of the psychoticism construct will be discussed in view of the results from these two methods. An examination of the nature of the P and the Psychoticism Overlap scale will also help in clarifying the nature of the "psychoticism" dimension.

Convergent and discriminant validity of the PPT scales

The correlation coefficents between the PPT scales and the P and Psychoticism Overlap scales provide indices of convergent-validity. The Antisocial Tendencies scale shows

a relatively high correlation (r=.58) with the P-scale and a moderate correlation (r=.37) with the Psychotic Overlap scale, indicating a significant overlap between Antisocial Tendencies and the two psychoticism measures (Table 3). Our confidence in the specificity of what the Antisocial Tendencies scale measures is strengthened by evidence for its discriminant validity: it does not overlap with any of the measures of neuroticism. The pattern of relationships supporting the convergent-discriminant validity of the Antisocial Tendencies scale remain even after the effects of sex and age are partialed out from the intercorrelations (Table 4).

The convergence of the Antisocial Tendencies scale with the P-scale is evident in the similarities in content between the the two scales. The Antisocial Tendencies scale was originally designed to measure characteristics such as hostile impulses, inability to handle frustrations, and painful tensions expressed in violent acts causing harm to self or others (Morrison, 1973; pp. 5-8). Furthermore, the Antisocial Tendencies scale showed significantly higher mean scores for alcoholics (Morrison, 1973) and criminals (Theis, 1980) than for normals. In the present study the "personality disorder" group scored the highest on this scale among all groups (Appendix A).

The description of a high P scorer shows similar behavioral manifestations to those of a person scoring high

on the Antisocial Tendencies scale. Some of these are: troublesome, cruel, inhumane, hostile, and aggressive (Eysenck, 1975). Similarly, the P-scores of alcoholics, criminals, and patients with personality disorder are among the highest for any group. Thus, the behavioral manifestations measured by the two scales are strong evidence in favor of the convergence hypothesis.

The convergent-discriminant validity of the Thought Disorder and the Maladjustment scales as projective measures of psychoticism was not confirmed. Although the Maladjustment scale correlates significantly (r=.28) with the P-scale, the amount of shared variance (r=.07) suggests little overlap. For the non-patient sample, the relationship between the three PPT scales and the psychoticism scales is less evident (Table 5). Only the Antisocial Tendencies scale shows some overlap with the P scale (r=.29), but the Thought Disorder and the Maladjustment scores do not show any significant correlations with other scales.

The Thought Disorder and the Maladjustment scales fail to show convergent validity with the P and Psychoticism Overlap scales, suggesting that the construct measured by these two PPT scales is not psychoticism. The meaning of this lack of convergence, however, may be questioned in view of the projective nature of the PPT scales and the direct questionnaire format of the two psychoticism scales: what

size of correlation is to be expected, if any, between a projective and a direct measure? This issue will be further examined in the conclusions of this paper.

It is interesting to note the stable relationship of the Antisocial Tendencies scale with sex and age in both patient and non-patient samples. The significant negative correlations between the Antisocial Tendencies, sex, and age indicate that men tend to have higher Antisocial Tendencies scores than women, and that overall, younger people tend to score higher on the Antisocial Tendencies scale than older people regardless of patient or non-patient status.

Criterion-related validity of the PPT scales

The ability of the PPT scales to discriminate psychotics from neurotics and non-patients was tested by comparing the mean Thought Disorder, Antisocial Tendencies, and Maladjustment scores for the respective groups. It was hoped that from the behavioral characteristics of the criterion group, identified a priori by ICD-9 diagnosis (Table 2), it would be possible to infer the theoretical dimension measured by the PPT scales. Note that, since this is not a classification problem, discriminant analysis is not an appropriate test.

The results of a series of t-tests on the mean Thought Disorder, Antisocial Tendencies, and Maladjustment scores for psychotic, neurotic, and non-patient groups

failed to confirm the criterion-related validity of the PPT scales. None of the PPT scales discriminated the psychotic group from the neurotic or non-patient groups (Table 6). The lack of criterion-validity of PPT scales indicates a lack of relationship between the clinically defined behavioral manifestations of psychoticism and the PPT construct of psychoticism. In other words, the construct measured by the three PPT scales is not psychoticism as one would understand this clinically. Given the high PPT scale loadings on Factor 3 (Kline et al. 1983) this finding raises another question: is Factor 3 a dimension of psychoticism? An examination of the nature of the P-scale may help in clarifying this question.

The fact that the non-patients received higher scores on the Antisocial Tendencies scale than the neurotic patients does seem to be accounted for by differences in sex and age between groups. The significant negative correlations between Antisocial Tendencies scores, age, and sex in both the patient and the non-patient samples, and the 16 years difference in mean age between the patient (38 yrs) and non-patient (22 yrs) groups may explain the higher non-patient Antisocial Tendencies scores. It is plausible that introductory psychology students (non-patient sample), who receive credit points towards their grade if they volunteer for testing, have a different test-taking attitude than psychiatric inpatients, who -- according to one patient

-- are tested to evaluate how "crazy" they are. A degree of defensiveness is apparent in the higher overall EPQ-L score for patients (M=10.11) compared to non-patients (M=6.75). The higher L-score for patients indicates a desire to be perceived in a good light, which may be quite important if it means being released from hospital wards.

Relationship between the P and Psychoticism Overlap scales

In clinical populations the P (Eysenck, 1975) and Psychoticism Overlap (Friedman, 1983) scales are hypothesized to measure the behavioral manifestations of psychoticism. Consequently, we would expect a significant relationship between the two scales administered to the same patient population. In this study, the amount of variance (r=.14) shared by the two scales indicates that the scales have little in common. This lack of overlap seems to support Eysenck's (1975) contention that the personality dimension measured by the P-scale is "radically different" from the MMPI items' pathological and categorical orientation.

As expected, the Psychoticism Overlap and the P scales' criterion-related validity was confirmed: the means of the psychotic group on the P and Psychoticism Overlap scales were significantly higher than those of non-patients (Table 8). The Psychoticism Overlap scale, however, also discriminated between the psychotic and neurotic groups,

whereas the P-scale scores for the same groups were identical. These results suggest that the Psychoticism Overlap (derived from overlapping MMPI psychoticism items) is sensitive to the clinical manifestations of psychoticism and that it can be quite effective as a quick, preliminary diagnostic tool.

The P-scale's failure to discriminate the psychotic from the neurotic group was unexpected. Although Eysenck warns about the methodological difficulties encountered in comparing psychotics with neurotics, pointing out also that neurotics as well as psychotics may have high P components (1976, p.116), the virtually identical P-scores for the two groups raises doubt about the labeling of the personality dimension measured by the P-scale.

What does the P-scale measure?

According to Eysenck, "high P scorers are found in unusual abundance among psychotics (mostly shizophrenics, but also other functional types)" (1976, p.202). He also cites evidence that the more psychotic symptoms there are involving affective flattening, incongruous affect, thought-disorder, and hallucinations, the higher the P-score will be (pp. 101-119). In the present study, the relationship between severe pychotic symptoms characteristic of schizophrenics and high P-scores was not confirmed: t-tests failed to show significant P-score differences

between schizophrenics and non-patients or between schizophrenics and neurotics (Table 9). The point-biserial correlation for the latter comparison (r= -.21) suggests that the schizophrenic patients' P scores are actually lower then those of the neurotic patients. This finding is quite contrary to Eysenck's assertions.

The lack of relationship between schizophrenic behavioral correlates and the P-scale may explain the lack of overlap between the Thought Disorder and P-scales. In earlier studies, elevated Thought Disorder scores were demonstrated to correlate with various measures of thought-disturbance characteristic of schizophrenics (Rudzinski, 1979) and to discriminate between schizophrenics and normals (Apanasiewicz, 1982). In the present study, the point-biserial correlation between schizophrenic and neurotic group membership and Thought Disorder scores (r=.42) suggests that with a larger sample size the differences in Thought Disorder means could reach significance. This finding tends to support the proposition that the Thought Disorder scale is a projective measure of thought-disorder. Because the P-scale does not discriminate schizophrenics from neurotics and non-patients, the lack of relationship between the P and the Thought Disorder scales is not surprising.

In view of the present evidence about the P-scale's discriminant validity and the assertion that the P-scale

deals with normal behaviors, not with symptoms, the recommendation that in normal samples "psychoticism" should be replaced with "toughmindedness"appears to be well founded. Psychoticism is traditionally associated with the clinical symptoms of psychotic disorder, and the introduction of another concept of "psychoticism" may be confusing.

If the P-scale does not measure psychoticism, then the naming of Factor 3 from Kline et al. (1983) needs to be reevaluated. Consequently, the PPT scales loading on this factor may indicate something other than psychoticism.

The "psychoticism" factor reevaluated.

In the Kline et al. (1983) study the following scales loaded on Factor 3: P-scale (.50), Machiavellian views (.50), 16 PF Radicalism (.37), 16 PF Orderliness (-.83), 16 PF Conscienciousness (-.43), and the Antisocial Tendencies (.83), Thought Disorder (.75), and Maladjustment (.72) scales. The factor pattern correlations and factor loadings lead Kline et al. (1983) to label Factor 3 as psychoticism. The evidence, however, points to a dimension appropriately labeled another way. The correlations of P-scale with the tenderminded-toughminded scale and with Fould's hostility scales (Eysenck 1976), the factor pattern correlations, and the factor loadings point to an "antisocial-hostility" dimension.

This labeling appears particularly appropriate if we consider the 'social control' function of mental hospitals. An inpatient population, specifically the psychotic group in the present sample, was hospitalized because of a history of delusions of projected hostility or violent behavior towards others or themselves. That the P-scale is a measure of this dimension may be supported by the fact that drug addicts, alcoholics, criminals, and people with personality disorders score just as high on the P-scale as the psychotic group does (Eysenck, 1975).

Conclusions

In view of the information gathered through the convergent-discriminant validity and criterion-related validity assessments, the construct measured by the Thought Disorder, Antisocial Tendencies, and Maladjustment scales is not appropriately labelled psychoticism.

We found that the Antisocial Tendencies scale had convergence with the P and Psychoticism Overlap scales; however, its lack of criterion-related validity would imply that the dimension involved in this is not psychoticism. After examining the similarities between the Antisocial Tendencies scale and the P-scale, it makes sense to conclude that this dimension is "hostile antisocial tendencies", characterized by hostile tendencies and by possibly socially harmful acting-out behavior.

The results regarding the construct measured by the Thought Disorder scale are consistent with previous findings (Hudzinski, 1979; Apanasiewicz, 1983): the Thought Disorder scale is a measure of thought-disorder characteristic of schizophrenic persons. This behavioral domain, however, is so specific that the Thought Disorder scale does not show convergence with a more general measure of psychotic symptomatology such as the Psychoticism Overlap scale.

The meaning of the Maladjustment scale needs to be reevaluated. If the Maladjustment scale is indeed a measure of general behavioral pathology, then it should correlate with measures of neuroticism; it does not. The tendency of the Maladjustment scale to correlate positively with measures of psychoticism but negatively with measures of neuroticism supports the hypothesis of Kline et al. (1983) that the Maladjustment scale is a measure of some form of "Psychoticism".

Because the evidence did not confirm the validity of the three PPT scales as measures of psychoticism some explanations are in order: why did the present research fail to support the hypothesis? Or, how could we improve on the design? Possible explanations involve: the nature of projective measures versus direct tests, the nature of the control sample, and the hypothesis that Factor 3 of Kline et al. (1983) represents the dimension of psychoticism.

Direct versus projective measures. A methodological question that arises from this study is the degree of possible overlap that can be expected between a direct questionnaire and a projective test. Because different stimuli are involved in the two tasks (direct questions versus pictures), and different mediational processes may be involved in responding to these stimuli the two tests may measure different constructs about the same behavioral domain. The inclusion of a projective measure of psychoticism, such as the Rorschach, might have been more likely to reveal evidence of convergent-discriminant validity.

The nature of the non-patient group. The test-taking attitudes of the student sample may have also influenced the results. The students knew that their test results would remain anonymous and may have endorsed some pathological PPT items in a spirit of "fun". Test-taking attitude may be quite different in a hospital setting where an inpatient submits to "mental health" examinations. The inclusion of a non-psychiatric, medical patient sample rather than a student sample could partially control for differences in test-taking attitudes. It is hoped that a "health examination" context would make these patients more concerned about the nature of the endorsed items than the "fun" attitude of the student sample. Consequently, with the medical patient control group, the differences between

the patient and non-patient PPT scores may become more

Is Factor 3 a dimension of psychoticism? In view of the present results Factor 3 is not psychoticism. Consequently, the three PPT scales loading on this factor cannot be hypothesized to measure this dimension. Based on the present evidence it is proposed that Factor 3 is a measure of "antisocial hostility". The Antisocial Tendencies scale overlaps to a large degree with this dimension. The Thought Disorder scale could be seen as a measure of delusions, hallucinations, or breakdown in thought-processes associated with these tendencies, and the Maladjustment scale as a measure of admitting to an inability to control these tendencies. Due to the structural advantages of the Picture-Preference Test over other measures, the hypothesis that the Antisocial Tendencies, Thought Disorder, and Maladjustment scales are a projective measure of "antisocial hostility" deserves further attention.

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Appendix A

Mean Group Scores on Thought Disorder, Antisocial Tendencies and Maladjustment Scales

Mean Group Scores on Thought Disorder, Antisocial Tendencies and Maladjustment Scales

Scale	Group	No. of cases	M	SD
TDIS	1	46	4.07	3.40
	2	11	2.82	2.32
	3	6	2.70	2.34
	4	5	2.20	1.09
	5	3	3.00	3.00
	6	3	4.70	.58
	7	102	3.60	2.69
	8	2	1.50	.71
ANTS	1	46	1.11	1.64
	2	11	1.00	1.18
	3	6	2.50	2.34
	4	5	1.60	.89
	5	3	.70	.57
	6	3	.33	.57
	7	102	1.88	1.46
	8	2	2.00	2.82
MALA	1	46	1.43	1.29
	2	11	1.64	1.12
	3	6	1.83	1.94
	4	5	1.00	.00
	5	3	1.00	1.00
	6	3	1.67	1.53
	7	102	.89	.09
	8	2	1.50	.71

Note. Group codes are as follows: 1) Psychotic; 2) Neurotic; 3) Personality Disorders; 4) Alcohol Dependence; 5) Acute Reaction to Stress and Adjustment Disorder; 6) Organic Brain Dysfunction; 7) Non-patients; 8) Undiagnosed.

Appendix B

Description of the 80-item version of the Picture-Preference Test, Including the Thought Disorder, Antisocial Tendencies, and Maladjustment Scales

Appendix B

Description of Items in the Picture-Preference Test

Note. * = Thought Disorder item
** = Antisocial Tendencies item
*** = Maladjustment item

Item	Picture A	Picture B
X.	Lamp on Table	Tree
Y.	Triangle	Square
1	Women with shoulder bag	Handbag and pair of shoes*
2	Marquee displaying "Love story"	Marquee displaying "Godfather"*
3	Women in shower	Women watering shrubs
4	Frustrated boy sitting in front of math problem	Same boy being reprimanded by mother
5	An owl on tree branch	Salesman fitting a women with shoes
6	Young man arm-in-arm with girlfriend	Same man walking hand-in-hand with parents
7	A conservative appearing man	A masked man**
8	A male sword-swallower	A male fire-eater
9	A car driving off with a "just married" sign	Man and women being married by a minister
10	Rear view of a tenement and alley***	A fun-house mirror with a distorted reflection
11	Boy climbing a tree	Boy with a pie in his face
12	A man and women kissing	Scene inside theater
13	Father reprimanding son in a loving way	Son kicking family cat***
14	Child walking under sun	Same child falling - cloud across sun*
15	Spoon, fork, sword*	Spoon, fork, knife

16	Tree and a key*	Key and a lock
17	Drooping flower*	Three upright flowers
18	A refrigirator with door open, amply stocked	Same with door closed
19	Couple entering a hotel	A woman typing
20	Telephone receiver	Telephone receiver with mouth on listening end*
21	A boy being treated by a doctor	Boy escaping from scene of crime through window**
22	An upright baby bottle	Same bottle tilted
23	Medicine cabinet filled	Same filled with pill boxes
24	Baseball and bat	Ball, and child crawling*
25	Mother feeding son	Father feeding son
26	A girl thinking about a grave***	Same girl thinking about husband and child
27	Simplified, childlike drawing of a figure*	Well drawn head of a man
28	Couple looking through a picture album	A couple dancing
29	Modern art figure representation--close up	Same at a distance
30	Nails and a pail*	Hammer and nails
31	Bedroom with two figures in bed	Same picture with one figure in bed
32	Birthday cake, fork, glass	Birthday cake, snake*
33	Girl standing, intact figure	Same girl split into segments*
34	Couple in motorcycle with sidecar	Couple on motorcycle
35	A drunk being laughed at	Same man with family
36	A man hanging from cliff	Same man crumpled on ground

	holding branch with one hand	at bottom of cliff***
37	A masked man with gun**	A policeman
38	Two eyes behind a broken lamp*	Broken lamp on florr beside table
39	A rose with thorns	A dead tree
40	An escalator	An express elevator with doors closed
41	A road leading to town in the distance	Same scene with no town in sight
42	A double bed	Twin beds
43	Superman***	A muscular stevedore
44	A car parked by side of road with hood up	Same car being driven on mountain road
45	Mop and broom	Mop and ice cream cone that's dripping
46	Boy putting candy into his mouth	Boy looking through telescope
47	Stewardess greeting passangers	Man and woman reading from same paper
48	Sleeping Beauty and Prince Charming	Snow White and Seven Dwarfs
49	Man driving a big car***	Male graduate in cap and gown
50	A car going over a bumpy road	Road showing a "detour" sign
51	Boy holding hands with mother	Same boy holding hands with father
52	"The Kiss" by Rodin	Statue of a nude woman
53	Woman in bathing suit	Woman cooking at stove
54	Woman talking with child	Woman with raised arm yelling at child*

55	Chair	Same chair broken*
56	Stetoscope	Package of dynamite**
57	Baby in crib	Couple in bed
58	Car being pulled by tow truck	Car being pushed by tow truck
59	Train, chain, rain*	Train and car
60	Full length view of boy	Framed picture of same boy*
61	Milk carton, shaving cream, and razor*	Milk carton, coffee cup and spoon
62	Picture of mouth	Picture of eyes
63	A buxom women	A less buxom woman
64	Couple at a zoo	Couple walking arm-in-arm
65	Man walking across tattered rope bridge	Man moving heavy rock
66	Couples dancing closely	Square dance
67	Empty garage door	A handgun**
68	Long line of people waiting to get into restaurant	An automat
69	Girl watching TV screen from which an arm is extended*	Same picture without arm extending out of TV
70	A hospital (outside view)	Line of traffic waiting for train to pass
71	Saw and screwdriver	Saw and set of false teeth*
72	Union picketers outside office building**	Negotiating men at table
73	A medical journal	A detective magazine*
74	Window with shade pulled	Same window with shade up showing an outdoor scene
75	Pair of shoes and pair	Pair of sox and a box*

	of sox	
76	Woman talking to a priest	Woman talking to a man
77	A secluded tree	A family house
78	Saw and apple*	Tree and apple

VITA AUCTORIS

Paul Szabo was born on October 8, 1954 in Kolozsvar, Roumania where he obtained his matriculation diploma from Liceum II. He obtained his Honours Bachelor of Arts Degree at York University in 1983. Since 1982 he has been enrolled in the Ph.D. program in Clinical Psychology at the University of Windsor.