

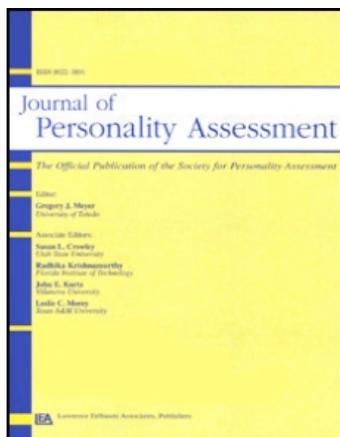
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### Assessing Interpersonal Aspects of Schizoid Personality Disorder: Preliminary Validation Studies

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## Assessing Interpersonal Aspects of Schizoid Personality Disorder: Preliminary Validation Studies

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In 2 studies, we examined the reliability and validity of an interpersonal measure of schizoid personality disorder (SZPD) based on nonverbal behaviors and interpersonal interactions occurring during interviews. A total of 556 male jail inmates in the United States participated in Study 1; 175 mentally disordered offenders in maximum security hospitals in the United Kingdom participated in Study 2. Across both samples, scores on the Interpersonal Measure of Schizoid Personality Disorder (IM–SZ) exhibited adequate reliability and patterns of correlations with other measures consistent with expectations. The scale displayed patterns of relatively specific correlations with interview and self-report measures of SZPD. In addition, the IM–SZ correlated in an expected manner with features of psychopathy and antisocial personality and with independent ratings of interpersonal behavior. We address implications for assessment of personality disorder.

Schizoid personality has a rich history in psychiatry and psychoanalysis, with clinical descriptions emphasizing preoccupation with inner life and a variety of interpersonal problems, ranging from shyness and difficulty in conversation to suspicion and interpersonal sensitivity (Bleuler, 1908/1924; Fairbairn, 1952; Guntrip, 1969; Hoch, 1909; Kretschmer, 1925). Partially consistent with these descriptions, the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev. [DSM–IV–TR]; American Psychiatric Association, 2000) category of schizoid personality disorder (SZPD) is defined by a pervasive pattern of interpersonal detachment and restricted affective expression. However, critics charge that the *DSM* operationalization omits important components of schizoid personality or assigns them to avoidant personality disorder (PD; Akhtar, 1987; Livesley, West, & Tanney, 1986).<sup>1</sup>

Indeed, in spite of evidence that individuals with SZPD are characterized by serious social, psychiatric, and socioeconomic dysfunction (Grant et al., 2004), there is a relative paucity of research on and lack of construct validity for the current *DSM–IV–TR* conceptualization of SZPD (Morey, 1988; Torgerson, 1995). It has been argued that less is known about SZPD than about many other diagnosed PDs (e.g., Cooke & Hart, 2004). Moreover, although it has been reported that SZPD is relatively rare (American Psychiatric Association, 2000), recent studies have suggested a community prevalence of 3.1% in the United States (Grant et al., 2004) and a higher prevalence in substance-abusing and primary care medical practice samples (Bricolo, Gomma, Bertani, & Serpelloni, 2002; Hueston, Werth, & Mainous, 1999).

Thus, additional research on the assessment of SZPD appears warranted.

In addition, there is relatively poor agreement between different approaches to assessing SZPD as well as PDs in general (Perry, 1992). In two studies, agreement between the *DSM* (4th ed. [DSM–IV]; American Psychiatric Association, 1994) and ICD systems was lower for SZPD ( $\kappa = .32, .37$ , respectively) than for other PDs examined (Ekselius, Tillfors, Furmark, & Fredrikson, 2001; Ottosson, Ekselius, Grann, & Kullgren, 2002). Even agreement between the International Personality Disorder Examination (IPDE; WHO, 1995) and the Structured Clinical Interview for *DSM–III*, Axis II (SCID–II; First et al., 1995) was reported to be quite low for SZPD (Skodol, Oldham, Rosnick, Kellman, & Hyler, 1991). Other studies have suggested poor convergent and/or discriminant validity for SZPD (Blackburn, Donnelly, Logan, & Renwick, 2004; Trull, 1993).

PDs are often conceptualized in interpersonal terms (Benjamin, 2002; Blackburn, 1992; Wiggins, 1982). Widiger and Frances (1985) suggested each PD “has a characteristic and dysfunctional interpersonal style that is often the central feature of the disorder” (p. 620). Even some approaches that are not explicitly interpersonal suggest evaluating interpersonal functioning when assessing PD (e.g., *DSM–IV–TR*; American Psychiatric Association, 2000). However, most instruments currently used to assess PDs depend solely on interview or self-report. The poor insight that often characterizes individuals with PDs, including individuals with SZPD (Westen & Shedler, 1999), may reduce the validity of information obtained solely on the basis of structured interviews or self-reports and may contribute to clinicians’ reports that direct questions have little utility in assessing personality disorders (Westen, 1997). Given that SZPD is a PD for which interpersonal dysfunction appears relatively central (Wiggins & Pincus, 1992) and the evidence for interpersonal anomalies in prior discussions of schizoid personality, we designed these studies to examine whether a measure based

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<sup>1</sup>The International Classification of Diseases (ICD–10; World Health Organization, [WHO], 1992) category of SZPD is quite similar but with a more explicit emphasis on the preference for fantasy and introspection.

on interpersonal behavior would prove useful in assessments of SZPD.

Several extant approaches to assessing PD explicitly encourage attention to interpersonal behavior during the interview (e.g., WHO, 1995). For example, a section of the Structured Interview for Schizotypy (Kendler & Lister-Sharp, 1989) consists of observations of participant behavior during the interview and is designed to probe behavioral signs such as enjoyment of the interview, grooming, attention seeking, and rapport. The IPDE also includes some items coded on the basis of nonverbal interpersonal behavior. However, there are few such items, and verbal responses have priority in conflicts between nonverbal and verbal information.

Given the emphasis in clinical training on behavioral observation, increased reliance on examiners as observers of behavior may contribute to improved assessment of SZPD. In particular, to the extent that PDs are often manifest in idiosyncratic (often maladaptive) personal agendas expressed while individuals respond to environmental demands (e.g., answering interview questions), observing nonverbal behavior and interpersonal interaction may provide evidence of distinctive or problematic interpersonal functioning, which contributes to assessment and diagnosis. Moreover, evidence that behavioral signs can contribute to assessments of schizotypy (Kendler & Lister-Sharp, 1989) and psychopathy (Kosson, Steuerwald, Forth, & Kirkhart, 1997) demonstrates the value of attention to such behavioral signs for some PDs.

To examine whether a measure based on interpersonal behavior would prove useful in assessments of SZPD, we developed the Interpersonal Measure of Schizoidia (IM–SZ) to quantify interpersonal manifestations of SZPD as articulated in *DSM–IV–TR* and ICD–10 definitions (American Psychiatric Association, 2000; WHO, 1992) and earlier descriptions of schizoid personality (Bullard, 1941; Fairbanks, McGuire, & Harris, 1982; Livesley, 1986; Zborowski & Garske, 1993). In this article, we report two initial studies addressing the reliability and construct validity of the IM–SZ.

In Study 1, our goal was to evaluate whether our IM–SZ correlated uniquely with measures of several constructs that have been reported to be associated with SZPD. The constructs we examined included specific components of psychopathy, demographic variables, alcohol and other substance problems, and criminal behavior. We conducted Study 2 to examine the generality of relationships identified in Study 1 and to examine how the IM–SZ correlated with previously validated measures of SZPD and other PDs.<sup>2</sup> In the paragraphs that follow, we outline the reasons for selecting the criteria we employed to examine the validity of the IM–SZ and the predictions we made.

Several researchers have reported links between SZPD features and antisocial behavior/psychopathy (Heston, 1970; Lewis & Shanok, 1978), but the few recent studies have reported nonsignificant or negative correlations of psychopa-

thy with schizophrenia or schizoid personality (Hart & Hare, 1989; Raine, 1986; Rice & Harris, 1995) and positive correlations with schizotypy or thought disorder (Raine, 1992; Williamson, 1993). Raine (1992) noted traits related to SZPD in offenders with moderate elevations on a measure of psychopathy. Similarly, studies that have used antisocial samples have suggested both similarities between SZPD or schizotypal PD (STPD) features and psychopathy (Hare, 1978; Raine & Venables, 1984) and differences (Dolan, Anderson, & Deakin, 2001; Raine, 1987; Raine & Venables, 1990).

One possible explanation for this pattern of findings is that descriptions of SZPD emphasize traits that appear both consistent with and inconsistent with traits of the psychopath. For example, a restricted range of emotions and detachment from others (American Psychiatric Association, 2000) appear to resemble components of psychopathy often referred to as shallow affect and lack of empathy. In contrast, preferences for solitary activities and unresponsiveness to affective expressions of others (American Psychiatric Association, 2000) appear contradictory to components of psychopathy such as interpersonal charm and ease in deceiving and manipulating others. In noting potential resemblances, we do not imply that similar mechanisms underlie SZPD and psychopathy. Nevertheless, clinical descriptions, interpersonal theories, and evidence for electrodermal hyporeactivity and reduced affectivity in SZPD offenders (noted previously; cf. Wiggins & Pincus, 1989) suggest the prediction of negative correlations between IM–SZ scores and interpersonal aspects of psychopathy but positive correlations between IM–SZ scores and affective aspects of psychopathy.

Few studies have directly addressed relations between SZPD and alcohol or drug use and crime. However, because schizoid traits have been linked to fewer alcohol problems (Blackburn & Coid, 1999; Drake, Adler, & Vaillant, 1988), we expected negative relations with ratings for alcohol use disorders. Because there are few findings on SZPD and crime, we also examined this relationship but made no predictions.

Similarly, few studies have addressed relations between SZPD and demographic variables. Two studies have linked schizoid traits to poorer cognitive function and education (Bergman & Walker, 1995; Torgerson, Kringlen, & Cramer, 2001), and one reported no such link (Drake et al., 1988). Therefore, we tentatively predicted such an association in our sample. Prior studies that have addressed links between SZPD and low socioeconomic status (SES) are inconsistent (Drake et al., 1988; Grant et al., 2004); we examined the issue based on links between SES and schizophrenia. Finally, to begin to contribute to an empirical literature addressing whether construct validity of our SZPD measure generalized across ethnicity, we also compared validity coefficients for European American versus African American participants.

We report both zero order relationships between IM–SZ scores and criteria and unique relationships after controlling for possible confounds. Given the possibility that correlations between SZPD scores and scores on some criteria might reflect relationships between these criteria and other constructs, we computed partial correlations to examine prediction of these criteria after controlling for participants' scores on potential nuisance variables.

<sup>2</sup>Recently, Collins, Blanchard, and Biondo (2005) demonstrated in a community sample that IM–SZ scores correlated uniquely with social anhedonia scores after controlling for IPDE scores. That study provides preliminary evidence for construct validity of the IM–SZ. However, that study was not used to inform the predictions of this study, as data for these studies were collected prior to those of Collins et al.

STUDY 1

Method

**Participants.** Participants were 556 male inmates aged 17 to 44 at a suburban county jail near a large city in the Midwestern United States (M age = 26.0 years, SD = 6.8). Exclusion criteria included inability to read English, taking psychotropic medication, or exhibiting overt psychosis. The latter two exclusion criteria were related to the subsequent testing of participants on laboratory tests of cognitive and emotional function unrelated to this study. In addition, only inmates convicted of a misdemeanor, felony, or traffic offense and sentenced to county jail time were invited to participate; inmates not yet sentenced were excluded. Of the participants, 244 (43.9%) were Euro-American, 238 (42.8%) were African American, 64 (11.5%) were Latino, and 10 (1.8%) were other. Clinical ratings (Psychopathy Checklist-Revised [PCL-R]; Hare, 2003), interpersonal behavior scales, and ratings of substance use problems were made by D. S. Kosson or graduate students, all of whom were trained by D. S. Kosson in use of these instruments. Interrater agreement between interviewers and in-the-room observers for each measure are listed following.

All participants were initially contacted by telephone and informed about study procedures in general terms. Details were provided in person to those expressing interest, and each participant was also required to read a detailed description of the procedures and indicate consent in writing. Men providing consent completed two interviews (described following). All participants received either \$5.00 or \$8.00 for the interview; payment was increased during the study to keep payments consistent with changes in minimum wage.

Measures

**The IM-SZ.** The procedure used to develop the IM-SZ was similar to that used to develop the Interpersonal Measure of Psychopathy (IM-P; see Kosson et al., 1997, for additional details). Based on the experiences of some of the authors with schizoid individuals (K. Byrnes, S. Park, R. Blackburn), additional suggestions by a few researchers (see Acknowledgments section), and a review of relevant theoretical and empirical literature (e.g., Fairbanks et al., 1982; Livesley, 1986; see additional references previously mentioned), 14 checklist items were generated to provide interpersonal indices of SZPD (see Table 1). Items were operationalized at an intermediate level of specificity to ensure that they were not so general that they applied to almost everyone or so specific that they were rarely encountered. Items were also operationalized so that behaviors would not be bound too tightly to specific effectors or stimuli and to permit scoring based on objective observations of nonverbal behavior and subjective reactions to individuals (i.e., to require no inferences). Examples were provided for some items to provide guidance as to the kinds of behavior that were generally consistent with an item. For example, examples for the item "constricted facial affect" included dull facial expression, infrequent blinking, rarely if ever smiles, and flatness.

The IM-SZ was designed to be scored in conjunction with a semistructured interview to ensure a sampling of participant behavior based on relatively similar interpersonal stimuli. Each item was scored following completion of a semistructured interview designed to provide a broad assessment of each participant's history and current functioning including ample

TABLE 1.—Interpersonal Measure of Schizoidia (IM-SZ) means and standard deviations.

Item	Study 1				Study 1		
	M	SD	r <sub>it</sub>	ICC	M	SD	r <sub>it</sub>
1. Constricted facial affect	0.38	0.68	.73	.69	0.74	0.92	.80
2. Lack of nonverbal expression	0.24	0.55	.69	.71	0.48	0.75	.79
3. Detachment (lack of engagement)	0.20	0.50	.50	.65	0.28	0.68	.60
4. Lack of verbal expression	0.32	0.66	.74	.73	0.62	0.94	.80
5. Indifference (lack of interest)	0.20	0.47	.37	.37	0.52	0.72	.64
6. Guardedness	0.42	0.69	.42	.40	1.12	1.08	.55
7. Lack of variability in affect/expression over time	0.20	0.51	.75	.54	0.56	.82	.74
8. Poor rapport	0.10	0.38	.65	.47	0.56	.75	.73
9. Absence of spontaneity in speech	0.17	0.45	.64	.47	0.58	.84	.79
10. Lack of verbal responsiveness to interviewer's remarks	0.10	0.34	.69	.34	0.55	.77	.78
11. Lack of interpersonal synchrony	0.10	0.36	.54	.50	0.33	.62	.56
12. Poor personal hygiene			deleted				deleted
13. Physical anergia	0.21	0.56	.61	.50	0.30	.61	.48
14. Social isolation			deleted				deleted

Note. r<sub>it</sub> = corrected item-scale correlation; ICC = intraclass correlation coefficient.

observation of nonverbal behavior and interpersonal interaction. Thus, interviews addressed family history, educational history, social and sexual histories, parenting history, work history, criminal history, emotional function, and substance use history. This interview permitted completion of the PCL-R following a review of available file material. Moreover, PCL-R ratings were completed before IM-SZ ratings to minimize the influence of interpersonal checklist ratings on PCL-R ratings; in addition, raters were instructed to concentrate on the PCL-R assessment while conducting their interviews. It was assumed that interpersonal deviance would be salient enough that raters would be able to complete the IM-SZ without devoting substantial effort or attention to the completion of interpersonal rating scales. For each item, raters judged whether the trait or interpersonal dynamic described the individual or interaction with 0 = *not at all*, 1 = *somewhat*, 2 = *very well*, or 3 = *perfectly* based on the frequency/chronicity and intensity with which each behavior or process occurred.

Total scores for the SZPD scale (IM-SZ) were based on a simple summation of the item scores following item analyses. The requirement that each item correlate .30 with the corrected total score for the scale as a whole led to retention of 12 of the 14 items (see Table 1).

**PCL-R.** The PCL-R is the best validated measure available for assessing psychopathy (Hare, 2003). This 20-item checklist is designed to be completed based on interview and collateral (usually file) information. Ample evidence demonstrates that it yields highly reliable ratings when interviewers are properly trained. Further, PCL-R scores predict criminal activity, recidivism, treatment failure, and a variety of emotional processing and subtle cognitive processing deficits (see Hare, 2003, for a recent review). In this sample, the intraclass correlation (ICC) for

average agreement between raters (calculated using a one-way random effects model) for PCL–R ratings was .92.

Two dimensions have been reported to underlie PCL–R scores (Harpur, Hare, & Hakstian, 1989). Factor 1 ratings are said to reflect the core interpersonal, affective traits empirically linked to emotional processing deficits and interpersonal anomalies. In contrast, Factor 2 ratings are said to reflect impulsive, irresponsible antisocial behavior or social deviance and are empirically associated with antisocial PD symptoms, with criminal activity, and ratings of substance abuse and dependence. Although Cooke and Michie (2001) and Hare (2003) have recently proposed three- and four-factor structures for PCL–R ratings, in this study, we were especially interested in correlations between SZPD and specific items considered part of the affective, interpersonal dimension associated with psychopathy (i.e., PCL–R Factor 1). If the IM–SZ provides a valid measure of SZPD, it was expected that higher IM–SZ scores would correlate uniquely with higher ratings of shallow affect and of lack of empathy but with lower ratings of superficial charm/impression management and of conning/manipulative features.

In this sample, the ICC for agreement of two raters on PCL–R total scores was .85,  $n = 113$ . For the four individual items reported here, ICCs ranged from .46 to .66,  $n = 111–112$ .

**IM–P.** The IM–P is a 21-item checklist of nonverbal behaviors and interpersonal processes associated with psychopathy. Its items were developed based on procedures analogous to those used to develop IM–SZ items. Initial analyses demonstrated that IM–P scores correlated more highly with scores on the affective and interpersonal dimension underlying PCL–R scores than with scores on the impulsive, antisocial lifestyle dimension. Scores on the IM–P also correlate uniquely with measures of adult fighting and interpersonal dominance (Kosson et al., 1997). Because SZPD is associated with submissiveness, whereas psychopathy and IM–P scores are associated with dominance (Harpur et al., 1989), we expected IM–SZ scores would correlate negatively with IM–P scores. The ICC for IM–P ratings in this sample ( $n = 107$ ) was .81, similar to that reported for Pearson correlations (Kosson et al., 1997).

**Alcohol and substance abuse/dependence problems.** These were rated based on the alcohol and substance use modules of the SCID (First et al., 1995). Each participant was given two ordinal ratings corresponding to the severity of his alcohol and drug problems, respectively. Regarding drug problems, only the most severe substance abuse diagnosis (lifetime) for each individual was used. Alcohol and drug diagnoses were scaled with 0 = *no problem*, 1 = *abuse*, 2 = *mild dependence*, 3 = *moderate dependence*, and 4 = *severe dependence*. In this sample, ICCs for independent ratings by interviewer and observer were .87 for alcohol ( $n = 84$ ) and .92 for drug problems ( $n = 81$ ).

**Demographic variables.** Age and education information were recorded from jail records. Ratings of SES using the Hollingshead formula (based on participants' educational and occupational histories) were available for 325 participants. The Shipley Institute of Living Scale–Revised (Zachary, 1986) was used to compute estimates of Wechsler Adult Intelligence Scale–Revised (WAIS–R; Wechsler, 1981) IQ that correlate highly with WAIS–R IQ scores (Zachary, 1986).

**Antisocial behavior.** Although there are no well-established relations between SZPD and antisocial behavior, there are reports of links between SZPD, STPD, and delinquency/criminality (see previously) and of elevated prevalence of these conditions in forensic samples (Andersen, Sestoft, Lillebaek, Gabrielsen, & Kramp, 1996). We used interview and file information to code the number of violent and nonviolent charges (Hare & McPherson, 1984) and number of categories of offenses inmates committed.

## Results

Due to missing data, the number of participants differs slightly from measure to measure.

**Reliability.** Descriptive statistics for the 12 items retained for the IM–SZ scale are reported in Table 1. All item means were low, consistent with base rates for SZPD reported earlier, and the mean score for the sample was 2.64 ( $SD = 4.21$ ). Item analyses we report here are based on interviewer ratings only except as noted. Internal consistency estimates were high, with coefficient alpha equal to .88. Corrected item-to-total correlations ranged from .40 to .74, and a mean interitem correlation of .41 suggests homogeneity for the IM–SZ. Interrater agreement was estimated with an average, one-way random effects ICC, based on 123 cases in which interviewer and observer ratings were available, and was acceptable,  $r = .69$ , indicating that the traits measured are relatively robust across raters. Individual item ICCs were somewhat lower; the mean item ICC was .53 (see Table 1 for individual item ICCs).

Scores on the IM–SS exhibited substantial skewness (skewness = 2.77,  $S_s = .10$ ). Although the central limit theorem suggests that statistics computed with skewed statistics are likely to be normally distributed in large samples even when raw data are skewed, validity coefficients were examined using both Pearson correlations ( $r$ ) and Kendall's tau ( $\tau$ ). The tau is a nonparametric measure of association that does not assume variables are normally distributed. Results were quite similar for both indexes of association, and we note any differences.

**Validity.** Validity data are based on averaged ratings for interviewer and observer when two ratings were available. We examined both zero order and partial correlations. Partial correlations are particularly useful because these provide information about unique relations between IM–SZ scores and criterion variables after eliminating the influence of other variables. In this study in which we examined relationships between IM–SZ scores and criteria related to psychopathy and antisocial behavior, we computed partial correlations to ensure that any zero order correlations reported did not simply reflect overall correlations between SZPD features and psychopathy (Kallman, 1938; Raine, 1992). When we examined correlations with demographic variables, partial correlations addressed whether zero order correlations simply reflected relations between SZPD features and intelligence or education.

**Relationships With Specific Components of Psychopathy:** Consistent with predictions, IM–SZ scores correlated negatively with scores on PCL–R items assessing impression management and manipulateness but positively with scores on the PCL–R item shallow affect (see Table 2). In contrast, IM–SZ scores were not correlated with scores on the PCL–R item callous/lack

of empathy. These patterns were identical in separate analyses for European American and African American participants.

To ensure that these correlations did not simply reflect an overall relationship between psychopathy and SZPD (cf., Raine, 1992), we computed partial correlations that controlled for scores on both dimensions of psychopathy (Factor 1, Factor 2) measured by the PCL-R. In each case, Factor 1 scores were corrected for the PCL-R item being predicted. Partial correlations (see Table 2) indicated that, after controlling for PCL-R Factor 2 and corrected Factor 1 ratings, IM-SZ scores correlated uniquely with scores on all four PCL-R items. Also, IM-SZ scores correlated negatively with IM-P scores even after entering PCL-R Factor 1 and 2 scores.<sup>3</sup>

*Relationships With Alcohol and Substance Abuse/Dependence:* IM-SZ scores did not correlate with interviewer-rated alcohol or substance abuse/dependence, both  $r_s < -.06$ . Separate analyses for the two ethnic groups yielded identical patterns of results.

*Relationships With Antisocial Behavior:* IM-SZ scores were not significantly correlated with indexes of criminal activity (all  $r_s < .06$ ). Correlations were similarly nonsignificant in separate analyses for European American and African American participants.

*Relationships With Demographic Variables:* Finally, based on limited prior evidence (see beginning of article), we expected IM-SZ ratings to be negatively correlated with education and intelligence but made no predictions regarding age or SES. Although IM-SZ scores were not significantly correlated with age, SES, or education, there was a small negative correlation between IM-SZ and estimated WAIS-R IQ,  $r(526) = -.15, p = .001$  ( $\tau = -.09, p < .005$ ). A partial correlation was computed to examine whether this correlation reflected relationships between scores on IM-SZ and scores on other demographic variables. The partial correlation remained marginally significant even after controlling for education,  $r(526) = -.13, p < .005$  ( $\tau = -.09, p = .05$ ). However, separate analyses for the two ethnic groups yielded evidence of ethnicity-specific relationships: Among European Americans, IM-SZ scores correlated negatively with estimated IQ and education,  $r = -.21, -.16, ps = .001, .01$ , respectively ( $\tau_s = -.15, -.12, ps = .01, .004$ , respectively). Moreover, the partial correlation between IM-SZ scores and estimated IQ remained significant even after controlling for education,  $r = -.18, p < .01$  ( $\tau = -.12, p = .06$ ). Neither correlation approached significance among African Americans, but the Z test for independent correlations failed to indicate a significantly greater correlation for European American than for African American participants,  $Z_s < 1.7, ps > .10$ .

*Discussion*

The reliability and preliminary construct validity of the IM-SZ appears relatively good. Most items nominated for the scale correlated relatively highly with corrected total scores.

TABLE 2.—Zero order and partial correlations between IM-SZ scores and specific components of psychopathy.

Criterion Variable	n	Pearson r	
		Zero Order	Partial
<b>Study 1</b>			
Interpersonal Measure of Psychopathy	542	-.22**	-.20**
PCL-R Item 1, glibness/superficial charm	550	-.36**	-.40**
PCL-R Item 5, conning/manipulative	541	-.18**	-.14**
PCL-R Item 7, shallow affect	549	.23**	.33**
PCL-R Item 8, callous/lack of empathy	547	.02	.16**
<b>Study 2</b>			
Interpersonal Measure of Psychopathy	171	.06	-.01
PCL-R Item 1, glibness/superficial charm	151	-.22*	-.35**
PCL-R Item 5, conning/manipulative	155	-.13	-.24**
PCL-R Item 7, shallow affect	151	.02	-.09
PCL-R Item 8, callous/lack of empathy	151	.29**	.32**

Note. IM-SZ = Interpersonal Measure of Schizoidia; PCL-R = Psychopathy Checklist-Revised. Partial correlations control for modified PCL-R Factor 1 ratings (omitting the item under examination) and Factor 2 ratings. Study 2 partial correlations also control for Millon Clinical Multiaxial Inventory and Personality Diagnostic Questionnaire Schizoid Scale scores.

\*  $p < .01$ . \*\*  $p \geq .001$ .

Moreover, IM-SZ items exhibited relatively high internal consistency, and scores exhibited moderately good interrater agreement.

In addition, results provide preliminary indications that the measure of SZPD correlates with other measures in specific ways that suggest preliminary construct validity. Scores on the IM-SZ appear independent of age, education, and SES yet correlated negatively with IQ. Similarly, IM-SZ scores were generally independent of criminal activity yet correlated in predicted ways with ratings on several components of psychopathy. In particular, consistent with emphases in descriptions of SZPD and in psychophysiological studies, IM-SZ ratings correlated positively with ratings of emotional flatness and shallow affect and ratings of callousness/lack of empathy for others. At the same time, IM-SZ ratings correlated negatively with involvement in impression management, conning or purposeful deception of others, and with specific interpersonal behaviors associated with psychopathy.

Contrary to expectations, IM-SZ scores did not correlate with lifetime history of alcohol and other substance use disorders. Nevertheless, because this relationship has been suggested only by two isolated studies and contradicted by a third, it remains important to examine this relationship in additional samples and with additional measures of SZPD.

STUDY 2

Although the results of the first study were encouraging, one limitation of that study was that individuals taking psychotropic medication and individuals exhibiting overt psychosis were excluded from participation. The restricted range of severe psychopathology in the sample may have reduced our ability to detect systematic covariation in IM-SZ scores and constructs of interest. To investigate these relationships in a sample with greater variation in psychiatric symptomatology, we examined the construct validity of the IM-SZ in patients at two maximum-security forensic hospitals in the United Kingdom. This sample also allowed us to examine relationships between IM-SZ ratings and scores on several additional validated interview and

<sup>3</sup>The Z test for independent correlations (Rosenthal & Rubin, 1982) revealed that the partial correlation for the relation between IM-SZ scores and scores on PCL-R Item 7, shallow affect, was greater for European Americans ( $r = .43$ ) than for African Americans ( $r = .23$ ),  $Z = 2.45, p = .01$ .

self-report measures of PD. We predicted that IM–SZ scores would correlate with scores on interview, behavioral observation, and self-report measures indicative of SZPD. We hypothesized that relations would be stronger for measures of SZPD symptoms than for measures of other PDs in the odd, eccentric cluster. Based on prior research with the IM–P, we expected relationships to be stronger for interview-based than for self-report measures.

Based on interpersonal accounts of SZPD and a prior study by Blackburn (1998), we also expected IM–SZ scores to correlate positively with submissive, withdrawn interpersonal behavior. Based on the suggestion of an anonymous reviewer and the circumplex model, we also computed the construct validity alerting coefficient,  $r_{alerting-CV}$ , a relatively new form of correlation coefficient designed to summarize the extent to which obtained correlations match predicted correlations. For our purposes, the  $r_{alerting-CV}$  was used to summarize the extent to which IM–SZ scores correlated with ratings of interpersonal behavior in expected ways (see Westen & Rosenthal, 2003, for more details).

Further, based on Study 1, we expected that IM–SZ scores would not correlate with antisocial behavior. In light of Study 1 findings, we also reexamined relations between SZPD and drug/alcohol problems but made no predictions. Finally, to examine whether IM–SZ scores contribute uniquely to predicting SZPD pathology, we examined whether IM–SZ scores predicted criteria of interest even after controlling for scores on other measures of SZPD.

### Method

**Participants.** Participants were 175 male mentally disordered offenders detained at Ashworth Hospital in England ( $N = 115$ ) or at the State Hospital, Scotland ( $N = 60$ ) and recruited as part of a larger study of PD and psychopathology (Blackburn, Logan, Donnelly, & Renwick, 2003). All Ashworth patients had been diagnosed as having psychopathic disorder, mental illness, or both under the Mental Health Act 1983; all State Hospital patients had been diagnosed as mentally disordered under the Mental Health Act (Scotland) 1984. Although we attempted to recruit representative samples, the sample excluded patients whose clinical disturbance precluded completing lengthy interviews and testing and was biased toward more stabilized mentally ill patients. Mean length of stay/detention was 81.23 months ( $SD = 68.56$ ). The average age of participants was 37.11 ( $SD = 9.90$ ) years, and their average WAIS Full Scale IQ was estimated to be 100.41 ( $SD = 15.15$ ); based on the National Adult Reading Test; Nelson, 1982). Because only one rater was available for the Scottish subsample (J. P. Donnelly), we did not assess interrater agreement, but we examined internal consistency of ratings. For the British subsample, the ICC of .67 ( $n = 10$  participants rated independently by R. Blackburn) indicates acceptable reliability for the IM–SZ.

Patients at the two hospitals were generally similar, but men at Ashworth were older,  $t(173) = 2.93, d = .45$ ; higher in intelligence,  $t(167) = 4.11, d = .64$ ; and had been detained longer,  $t(173) = 4.20, d = .64$ , all  $ps < .01$ . They also exhibited greater psychopathology, obtaining higher scores on the PCL–R,  $t(166) = 4.63, d = .72$  and IM–P,  $t(170) = 6.76, d = 1.04$  and higher IM–SZ scores,  $t(169) = 4.68, d = .72$ . In the combined Study 2 sample, the mean IM–SZ score was 6.63 ( $SD = 7.12$ ), and 6% of the men met *DSM–IV* categorical criteria for SZPD (Black-

burn, Donnelly et al., 2004). Ethnicity was unavailable for these samples.

### Measures

The IM–SZ, IM–P, and PCL–R were described previously. We describe other measures here.

#### *Interview/interpersonal measures.*

**IPDE:** The IPDE (WHO, 1995) yields reliable and valid diagnoses of the 10 *DSM–IV* Axis II disorders (Loranger et al., 1994; Pilkonis et al., 1995). A total of 99 PD criteria are rated 0, 1, or 2 based on a semistructured interview and file information (2 indicates *definite presence of a criterion*; 0, *absence of the criterion*). The IPDE provides both dimensional (i.e., continuous) and categorical scores for each PD. In this study, we used dimensional scores. A single interviewer at each site (C. Logan at Ashworth, J. P. Donnelly at the State Hospital) conducted IPDE interviews. Interrater reliability at Ashworth was assessed using independent ratings of videotaped interviews by R. Blackburn ( $n = 10$ ). The mean ICC across the 10 *DSM–IV* disorders was 0.77, range = 0.66 (dependent) to 0.92 (schizoid). Security restrictions at the other site limited reliability estimates to independent ratings of four audiotaped interviews by a trained IPDE user. Nevertheless, examiner–observer agreement (correlations across items of 0.59–0.92) and mean alpha of .76 for dimensional scores indicate acceptable reliability.

**The Chart of Interpersonal Reactions in Closed Living Environments (CIRCLE):** The interpersonal circle (Leary, 1957; Wiggins, 1982) is a two-dimensional system in which interpersonal styles and behaviors form a circular array, or circumplex, around the orthogonal dimensions of dominance (vs. submission) and love (vs. hostility). Interpersonal styles can be distinguished as different combinations of these dimensions, usually represented at the octant points around the circle. The CIRCLE (Blackburn & Renwick, 1996) is a 49-item rating scale of observed institutional behavior (e.g., “dominates conversations,” “demands attention to his own rights”), with each item rated on a scale ranging from 0 (*not at all*) to 3 (*usually or frequently*). Items are scored on eight scales (Dominant, Coercive, Hostile, Withdrawn, Submissive, Compliant, Nurturant, and Gregarious) that represent the octants of the interpersonal circle. Summary scores associated with the two underlying axes of dominance and love are also derived. CIRCLE ratings were demonstrated to be reliable and valid in forensic psychiatric samples (Blackburn & Renwick, 1996). Two nurses blind to IPDE and IM–SZ scores made ratings for each patient. For this sample, adequate reliability was demonstrated by a mean ICC across raters for the eight scales of .67 ( $N = 168$ ) and by a mean alpha of .77 ( $N = 168$ ).

**Composite International Diagnostic Interview (CIDI):** The CIDI (Version 2.1; WHO, 1997) is a structured interview used to assess Axis I disorders using *DSM–IV* and ICD–10 criteria. We used only lifetime prevalence data for alcohol abuse/dependence and drug abuse/dependence using *DSM–IV* criteria in this study. Prior studies have reported high reliability and moderate validity for most CIDI alcohol and drug dependence diagnoses as indexed by concordance with diagnoses using other systems (Cottler et al., 1997; Ustun et al., 1997). However, Cottler et al. (1997) reported relatively poor

agreement for cannabis and amphetamine dependence. We note that prevalence of *DSM-IV* psychotic disorders for the sample was 23% lifetime and 14% over the past 12 months (Blackburn, Donnelly et al., 2004).

*Self-report measures of personality and personality disorder.*

*Antisocial Personality Questionnaire (APQ):* The APQ (Blackburn & Fawcett, 1999) is a 125-item self-report measure yielding scores on 8 trait factors relevant to offender samples and two higher order dimensions, hostile impulsivity and social withdrawal. Validity evidence includes correlations with PD scores, antisocial behavior, and observer ratings of interpersonal behavior (Blackburn & Fawcett, 1999) and correlations with other self-report scales (Blackburn, Renwick, Donnelly, & Logan, 2004). For this sample, mean alpha across the 10 scales was .84 ( $N = 166$ ).

*Millon Clinical Multiaxial Inventory-Revised (MCMI-II):* The MCMI-II (Millon, 1987) is a 175-item measure requiring true-false responses that yields scores on 13 PD scales and nine Axis I disorder scales. Only the 10 *DSM-III-R* (American Psychiatric Association, 1987) PD scales were examined. Measures of distortion in self-disclosure are used to correct scores, and we excluded two cases with a maximum Validity scale (random responding) score. Mean alpha across the 10 scales in this sample was .81 ( $N = 159$ ).

*Personality Diagnostic Questionnaire (PDQ-4):* The PDQ-4 (Hyler, 1994) is a 99-item true-false measure assessing the 10 *DSM-IV* PD categories using *DSM-IV* criteria. We excluded two men meeting the Suspect Questionnaire scale (random responding) criterion. Mean alpha across the 10 scales was .68 ( $N = 167$ ).

*Measures of antisocial behavior.* Information was available on the offense history of each participant. We examined the number of total convictions for any offense as a juvenile or adult, the number of convictions for violence (murder, manslaughter, wounding, causing grievous bodily harm, causing actual bodily harm, assault, making an affray), and the number of convictions for sex offenses (rape, indecent assault, indecent exposure, bug-gery, indecency).

*Procedure*

Patients were contacted individually; those providing written informed consent were administered the CIDI, IPDE, and PCL-R in three or more sessions followed by self-report measures. The IPDE and PCL-R interviews were combined (PCL-R interview questions redundant with IPDE items were omitted). We scored the IM-SZ after interviews. For administrative reasons, data were incomplete in some cases;  $N$ s range from 159 to 171.

*Results*

*Internal consistency reliability.* Internal consistency for the IM-SZ was high, alpha = .92, mean interitem correlation = .53. We also calculated internal consistency statistics for each of the subsamples, and they were high for both (for Ashworth

subsample,  $\alpha = .92$ , mean interitem correlation = .51; for State Hospital subsample,  $\alpha = .91$ , mean interitem correlation = .48).

*Validity*

*Relationships with measures of personality disorder.*

*Correlations With Interview Measures of Personality Disorder:* As expected, zero order correlations (see Table 3) provide evidence that the IM-SZ correlated with the IPDE SZPD score and that observed relationships were moderately specific: the largest correlation for the IM-SZ was with the dimensional measure of SZPD, and the only other significant correlations were with STPD and avoidant PD. The pattern for Kendall's tau was nearly identical except that the correlation with the dimensional measure of narcissistic PD was also significant,  $\tau = .12, p < .05$ . Moreover, IM-SZ scores correlated more highly with IPDE dimensional scores for SZPD than with those for paranoid PD,  $Z = 4.71, p < .001$ , and those for schizotypal PD,  $Z = 3.10, p < .005$ . Moreover, a comparison of zero order correlations for the IPDE schizoid PD score versus the IM-SZ (Table 3) revealed that the two measures of SZPD were generally correlated with dimensional scores for the same other PDs. However, the correlations with other PD scale scores were generally larger for the IPDE SZPD scale than for the IM-SZ, and the correlations of the IPDE SZ scale scores with the IPDE Schizotypal PD, Avoidant PD, and Paranoid PD scale scores were larger than those for the IM-SZ,  $Z = 2.84, p < .005, Z = 3.94, p < .001$ , and  $Z = 2.17, p < .05$ , respectively, suggesting

TABLE 3.—Correlations Between IM-SZ and Interview and Observation-Based Measures in Study 2.

Scale	n	IPDE SZ		IM-SZ	
		Pear	Tau	Pear	Partial
IPDE Schizoid PD	167	—	—	.53***	.46***
IPDE Schizotypal PD <sup>a</sup>	167-168	.51***	.39***	.32***	.22**
IPDE Paranoid PD <sup>a</sup>	167-168	.29***	.20***	.13	.07
IPDE Antisocial PD	167-168	-.04	-.04	.03	.01
IPDE Borderline PD	167-168	.09	.08	-.01	-.10
IPDE Histrionic PD	167-168	-.18	-.11	-.07	-.04
IPDE Narcissistic PD	167-168	-.07	-.06	.12	.15
IPDE Avoidant PD <sup>a</sup>	167-168	.45***	.34***	.17*	-.01
IPDE Dependent PD	167-168	.01	.01	.02	-.04
IPDE OCPD	167-168	.16*	.09	.10	.08
CIRCLE Dominant	162-164	-.29***	-.23***	-.28***	-.18*
CIRCLE Coercive	162-164	-.20**	-.14*	-.10	-.05
CIRCLE Hostile <sup>a</sup>	162-164	-.02	.01	.22**	.25**
CIRCLE Withdrawn <sup>a</sup>	162-164	.28***	.21***	.47***	.42***
CIRCLE Submissive	162-164	.41***	.32***	.39***	.32***
CIRCLE Compliant	162-164	.15*	.11	.08	.04
CIRCLE Nurturant <sup>a</sup>	162-164	-.17*	-.10	-.37***	-.40***
CIRCLE Gregarious	162-164	-.38***	-.25***	-.48***	-.45***
CIRCLE Love <sup>a</sup>	162-164	-.10	-.08	-.32***	-.33***
CIRCLE Dominance	162-164	-.40***	-.29***	-.40***	-.33***

Note. IM-SZ = Interpersonal Measure of Schizoidia; IPDE = International Personality Disorder (PD) Examination; Pear = Pearson correlation; Tau = Kendall tau; OCPD = Obsessive-Compulsive PD; CIRCLE = Chart of Interpersonal Reactions in Closed Living Environments; IM-P = Interpersonal Measure of Psychopathy.  $n = 155$  for IPDE analyses;  $n = 153$  for CIRCLE analyses. Partial correlations control for Millon Clinical Multiaxial Inventory and Personality Diagnostic Questionnaire SZPD scales.

<sup>a</sup>The Z test for dependent correlations indicated significant differences in the magnitude of the correlation for the IM-SZ than for the IPDE SZPD scale, all  $Z$ s > 2.27,  $ps < .05$ .

\*  $p \leq .05$ . \*\*  $p < .01$ . \*\*\*  $p \leq .001$ .

somewhat greater specificity for the IM–SZ than for the IPDE SZ scale.

Finally, partial correlations were computed to examine whether the IM–SZ had incremental validity in predicting IPDE dimensional scores for various PDs after controlling for SZPD scores on the MCMI–II and on the PDQ–4. These correlations indicate whether the IM–SZ adds to the prediction of SZPD symptomatology beyond that which can be obtained from valid self-report measures of SZPD. Partial correlations revealed that the IM–SZ scores were uniquely correlated with dimensional measures of SZPD and STPD, even after controlling for self-report measures of SZPD (see Table 3). However, significant partial correlations were specific to measures of these disorders. IM–SZ scores were not uniquely predictive of dimensional scores for other PDs.

*Correlations With Self-Report Measures of Personality Disorder:* Correlations with self-report measures were also consistent with hypotheses but were lower in magnitude and less specific than those obtained for IPDE scales (see Table 4). IM–SZ scores correlated significantly with SZPD scores on the PDQ but correlated similarly with Schizotypal PD scores, and the correlation for the PDQ SZPD scale was not significantly larger than that for the Paranoid, Borderline, Avoidant, or Dependent PD scales, all  $Z_s < 1.2$ . Similarly, although the correlation between IM–SZ and MCMI SZPD scores was significantly larger than that with MCMI–II Paranoid PD,  $Z = 2.61, p < .01$ , it was not significantly larger than that with MCMI STPD (see Table 4).

Comparing correlations for the IM–SZ versus the IPDE SZPD score (as seen in Table 4) reveals a pattern of larger correlations for the IPDE SZPD score including significantly larger correlations with the PDQ and MCMI SZPD scales ( $Z_s = 3.40, 2.57, ps \leq .01$ ), the PDQ and MCMI Avoidant PD scales ( $Z_s = 2.07, 2.47, ps \leq .05$ ), and the MCMI Histrionic PD scale ( $Z = 2.47, p < .05$ ). Moreover, unlike the IM–SZ, IPDE SZPD scores correlated significantly with scores on several scales assessing other PDs including PDQ Borderline, Dependent, and Obsessive–Compulsive PD scales and MCMI Narcissistic PD scale. Thus, IM–SZ ratings were less related to self-reports of PD and more specific than IPDE SZPD scores.

Partial correlations also revealed that after controlling for PDQ–4 and MCMI–II SZPD scores, IM–SZ scores were generally not related to self-reported personality pathology (see Table 4). Thus, except as noted following, the IM–SZ did not demonstrate incremental validity in predicting self-reported personality pathology. The sole exceptions were that IM–SZ scores remained uniquely correlated with MCMI SZPD scores after controlling for PDQ SZPD and that the negative partial correlation between IM–SZ and PDQ Histrionic PD scale scores were significant for Pearson correlations,  $r = -.16, p < .05$  but not for Kendall’s tau,  $\tau = -.07, ns$ .

There was greater specificity to the correlations between IM–SZ and APQ scores. Higher IM–SZ scores were associated with greater avoidance, paranoid suspicion, and withdrawal and with lower self-esteem and extraversion. All these correlations are consistent with clinical descriptions of SZ personality. As shown in Table 4, the pattern was similar for the IM–SZ and IPDE SZPD scale; however, as with other self-report scales, correlations for Avoidance, Withdrawal, and Extraversion were

TABLE 4.—Pearson and tau correlations and partial correlations between IM–SZ and self-report measures of personality disorder symptoms in Study 2.

Scale	n	IPDE SZ		IM–SZ	
		Pear	Tau	Pear	Partial
PDQ Schizoid PD <sup>a</sup>	165–166	.45***	.37***	.21**	-.01
PDQ Schizotypal PD	165–166	.29***	.24***	.21**	.09
PDQ Paranoid PD	165–166	.13	.11	.09	-.01
PDQ Antisocial PD	165–166	.06	.08	.02	-.05
PDQ Borderline PD	165–166	.19*	.18**	.11	-.05
PDQ Histrionic PD	165–166	-.04	-.01	-.05	-.16*
PDQ Narcissistic PD	165–166	.01	.05	.06	-.00
PDQ Avoidant PD <sup>a</sup>	165–166	.35***	.29***	.20*	.03
PDQ Dependent PD	165–166	.17*	.15*	.15	-.01
PDQ OC PD	165–166	.16*	.18**	.13	.03
MCMI Schizoid PD <sup>a</sup>	157–158	.49***	.39***	.31***	.26**
MCMI Schizotypal PD	157–158	.31***	.26***	.20	-.00
MCMI Paranoid PD	157–158	-.00	.04	.05	-.01
MCMI Antisocial PD	157–158	-.01	.05	.04	.03
MCMI Borderline PD	157–158	.12	.12*	.10	.01
MCMI Histrionic PD <sup>a</sup>	57–158	-.40***	-.26***	-.23**	-.10
MCMI Narcissistic PD	157–158	-.19*	-.09	-.11	-.06
MCMI Avoidant PD <sup>a</sup>	157–158	.40***	.33***	.23**	.01
MCMI Dependent PD	157–158	.00	.04	-.01	-.08
MCMI Compulsive PD	157–158	.04	.03	-.02	-.06
APQ Self-Control	165	-.04	-.07	-.00	.04
APQ Self-Esteem (low)	165	.31***	.26***	.23**	.08
APQ Avoidance <sup>a</sup>	165	.52***	.39***	.33***	.20*
APQ Paranoid Suspicion	165	.20*	.14*	.26**	.18*
APQ Resentment	165	.07	.06	.05	-.00
APQ Aggression	165	.04	.03	.08	.07
APQ Deviance	165	.16*	.14*	.15	.08
APQ Extraversion <sup>a</sup>	165	-.49***	-.34***	-.34***	-.21**
APQ Impulsivity	165	.00	.01	.04	.03
APQ Withdrawal <sup>a</sup>	165	.54***	.39***	.37***	.24**

Note. IM–SZ = Interpersonal Measure of Schizoidia; IPDE SZ = IPDE = International Personality Disorder (PD) Examination; PDQ = Personality Diagnostic Questionnaire; Pear = Pearson correlation; Tau = Kendall tau; OC PD = obsessive-compulsive PD; MCMI = Millon Clinical Multiaxial Inventory; APQ = Antisocial Personality Questionnaire. Partial correlations control for MCMI and PDQ Schizoid scale scores (except where the correlation with one of these scores is reported).

<sup>a</sup>The Z test for dependent correlations indicated larger correlations for the IPDE SZPD scale than for the IM–SZ, all  $Z_s > 2.27, ps < .05$ .

\* $p < .05$ . \*\* $p \leq .01$ . \*\*\* $p < .001$ .

significantly greater for the IPDE SZPD than for the IM–SZ ( $Z_s = 4.21, 2.60, \text{ and } 2.22$ , respectively,  $ps < .05$ ).

Moreover, as for other self-report measures, relations between IM–SZ and APQ scale scores were substantially reduced by controlling for self-reported SZPD. Although Pearson partial correlations remained significant for APQ Avoidance, Paranoid Suspicion, and Extraversion, partial correlations based on Kendall’s tau were nonsignificant in all cases.

*Relationships between interpersonal measures.*

*Correlations With Measures of Interpersonal Behavior:* There was moderate specificity to the correlations between IM–SZ and CIRCLE scores. Consistent with expectations (see Table 3), higher IM–SZ scores correlated highly and specifically with ratings indicating withdrawal and submissiveness. The Z test for dependent correlations (Meng, Rosenthal, & Rubin, 1992) revealed that the correlation for Withdrawal scale ratings was greater than the correlation for the adjacent octant of Hostility,  $Z = 2.90, p < .005$ , and the correlation for Submission was greater than that for the adjacent octant of Compliance,  $Z = 3.57, p < .001$ . Summary scores also proved interesting.

IM–SZ scores correlated negatively with summary ratings for Love and Dominance. In contrast to Study 1, IM–SZ and IM–P scores were independent in this sample,  $r = .06$ .

Comparing zero order correlations for the IM–SZ versus IPDE SZPD scale (see Table 3) shows that the pattern of correlations was relatively similar for the two measures. Both measures correlated positively with ratings of withdrawn and submissive behavior; both correlated negatively with ratings of dominant, gregarious, and nurturant behavior. However, there were differences: Only IPDE SZ scores correlated positively with compliance and negatively with coerciveness ratings; only IM–SZ scores correlated positively with hostility ratings. Although these few differences may be viewed as favoring one or the other measure, that the IM–SZ correlated more highly with ratings of withdrawal,  $Z = 2.72$ ,  $p < .01$ , hostility,  $Z = 3.14$ ,  $p < .005$ , and nurturance (negatively),  $Z = -2.72$ ,  $p < .01$  than the IPDE SZPD score suggests the IM–SZ may bear a closer relationship to interpersonal accounts of SZPD (Soldz, Budman, Demby, & Merry, 1993; Wiggins & Pincus, 1989). Nevertheless, the overall similarity of the pattern indicates that the IM–SZ and IPDE SZPD scale correlate similarly with measures of interpersonal behavior.

Partial correlations revealed that IM–SZ scores contributed to predicting ratings of interpersonal behavior even after controlling for self-report scores on SZPD. In fact, the pattern of significant correlations was identical for partial and for zero-order correlations (see Table 3).

Finally, we computed the construct validity alerting coefficient,  $r_{alerting-CV}$ , a measure developed by Rosenthal, Rosnow, and Rubin (2000) to provide a single overall index of the extent to which a measure correlates with a variety of other measures in expected ways. Rosenthal et al. named it an “alerting” correlation because it was designed to provide “a rough, readily interpretable index that can alert the researcher to possible trends of interest” (Westen & Rosenthal, 2003, p. 610). We computed the  $r_{alerting-CV}$  in two ways to address the overall relationship between IM–SZ scores and CIRCLE scores. First, we computed it based on the predictions (see beginning of article) that IM–SZ scores would correlate most highly with withdrawn and submissive behavior, that they would correlate less strongly with hostile and compliant behavior, and that they would correlate negatively with gregarious and dominant behavior (i.e., behaviors opposite to withdrawn and submissive behaviors). For this calculation, the predicted correlation coefficients (which must sum to 0) were as follows: Withdrawn,  $r = .50$ ; Submissive,  $r = .50$ ; Hostile,  $r = .30$ ; Compliant,  $r = .30$ ; Nurturant,  $r = .00$ ; Coercive,  $r = .00$ ; Gregarious,  $r = -.30$ ; and Dominant,  $r = -.30$ . Because two other studies (Soldz et al., 1993; Wiggins & Pincus, 1989) had located SZPD specifically in the octant associated with withdrawn behavior, we also generated a series of predicted correlations based on these studies: Withdrawn,  $r = .50$ ; Submissive,  $r = .30$ ; Hostile,  $r = .30$ ; Compliant,  $r = .00$ ; Coercive,  $r = .00$ ; Nurturant,  $r = .30$ ; Dominant,  $r = -.30$ ; and Gregarious,  $r = -.50$ . Both  $r_{alerting-CV}$ s were large and positive:  $r_{alerting-CV1} = .94$ ;  $r_{alerting-CV2} = .98$ . These alerting coefficients provide additional confirmation that the pattern of findings for independent ratings of participants’ behavior was quite consistent with expectations.

*Relationships with measures of antisocial behavior and substance abuse.* Similar to findings in Study 1, IM–SZ

scores were not significantly correlated with any measures of antisocial behavior. However, whereas Pearson correlations were also not significantly correlated with CIDI scores for lifetime prevalence of alcohol or substance abuse/dependence,  $r_s(170) = -.12$  and  $-.13$ ,  $p_s = .12$ ,  $.10$ , respectively, the tau between IM–SZ scores and CIDI lifetime substance abuse was significant,  $\tau = -.14$ ,  $p < .05$ . Correlations for the IPDE SZPD scale were similarly independent of indexes of antisocial behavior and alcohol problems but were also independent of lifetime drug problems, all  $r_s < +.09$ . Nevertheless, the small negative correlations between IM–SZ and CIDI lifetime alcohol and substance use problems are in the same direction as effects reported in prior studies.

*Relationships with specific components of psychopathy.* As shown in Table 2, zero order correlations between IM–SZ scores and selected PCL–R item scores were moderately similar to those reported for Study 1: In this sample, correlations were significant only for superficial charm/glibness and callous/lack of empathy. However, the tau for conning/manipulative also approached significance,  $\tau = -.11$ ,  $p = .08$ . To examine whether IM–SZ scores contributed to prediction of these scores even after controlling for self-reports of schizoid traits and overall psychopathy scores, partial correlations controlled for PDQ and MCMI SZPD scores as well as PCL–R factor scores. After controlling for PCL–R Factor 2 and corrected Factor 1 ratings as well as PDQ and MCMI SZPD scores, IM–SZ scores correlated uniquely with scores on three of four PCL–R items examined (see Table 2).

Finally, although a measure of depressive affect was unavailable, we conducted additional analyses to ensure that reported relationships did not simply reflect low-self esteem among some participants. We computed partial correlations identical to those reported previously except also controlling for APQ Self-Esteem scale scores; these yielded a pattern of findings virtually identical to that reported previously. IM–SZ ratings continued to correlate uniquely with IPDE dimensional measures of SZPD and STPD, ratings of hostile, withdrawn, and submissive behavior, and PCL–R item scores.

## GENERAL DISCUSSION

Overall, findings across the two studies are relatively consistent. Across relatively different samples, IM–SZ ratings demonstrated high internal consistency and moderate interrater agreement and correlated in expected ways with instruments designed to measure schizoid PD and related constructs.

Within Study 2, the pattern of correlations for IM–SZ scores was generally similar to that for dimensional scores of SZPD on the IPDE. Both measures correlated moderately with nurses’ ratings of interpersonal behavior, interview-based dimensional scores for other Cluster A PDs, and scores on self-report measures of SZPD. Moreover, differences between the IPDE and IM–SZ provide further evidence of convergent and discriminant validity of the IM–SZ. Correlations between IM–SZ and CIRCLE ratings were more consistent with interpersonal conceptualizations of SZPD than those for the IPDE SZPD scale. In addition, correlations between IM–SZ scores and scores on several other IPDE, PDQ, and MCMI scales were smaller than those for the IPDE SZPD. For example, IM–SZ ratings appear less confounded with Avoidant PD than IPDE scores.

In addition, IM–SZ scores correlated more highly with interview measures of SZPD than with interview measures of other PDs and correlated with ratings of specific components of psychopathy and specific aspects of antisocial personality, all of which are consistent with clinical descriptions and empirical evidence on SZPD. The combination of specific pathology on the IPDE and the circumplex, along with evidence for paranoid suspicion and avoidance on a self-report scale (the APQ), suggests that the interpersonal measure is not simply identifying shy and reserved individuals. Rather, high IM–SZ scorers have many characteristics previously associated with schizoid personality (Akhtar, 1987). Moreover, the consistency of patterns across different methods (interview measures, ratings of nurses blind to IM–SZ and IPDE scores, self-report measures) suggests these relationships do not solely reflect shared method variance.

Partial correlations provide further evidence of construct validity. After controlling for self-report measures of SZPD, IM–SZ scores correlated uniquely with interview measures of SZPD, ratings of interpersonal behavior, and scores on specific components of antisocial personality. After controlling for PCL–R factor ratings, IM–SZ ratings correlate uniquely with scores on specific components of psychopathy consistent with descriptions of SZPD.

All these findings suggest the scale is likely to be useful for clinical assessment of important features of SZPD. Moreover, because IM–SZ ratings required no additional participant time (outside the IPDE interview) and did not depend on participants' insight into their own behavior or on inferences by raters about underlying dynamics or motivation, the IM–SZ may be particularly useful in settings in which time is limited and expert raters are not available. However, we do not suggest based on two samples that the IM–SZ should be used by itself in clinical settings. Many researchers of PDs have stressed the importance of multiple methods of assessing PD (Blackburn, Donnelly, et al., 2004; Trull, 1993). Following Widiger and Trull's (1987) suggestion that the convergence among diverse indicators may provide the most valid assessment of PD, we believe these studies have suggested that the IM–SZ may be a valuable and economical adjunct to interview-based assessments of SZPD (Widiger & Samuel, 2005). This measure may be especially useful for patients with low verbal ability or poor insight.

Several other aspects of these findings warrant brief discussion. In Study 2, correlations were considerably higher for interview than for self-report measures, even though IM–SZ ratings were not based on responses to any specific interview questions. Because the same individuals conducted interviews and completed the IM–SZ, it is possible that these higher correlations reflect the influence of interpersonal behaviors on diagnostic interview ratings or global rater biases about participants. However, this possibility cannot account for the higher correlations with CIRCLE ratings than with self-report scores because CIRCLE ratings were made by nurses who were blind to IM–SZ ratings. Similarly (as noted in footnote 2), Collins et al. (2005) demonstrated in a community sample that IM–SZ scores postdicted social anhedonia scores after controlling for IPDE scores. In that study, IM–SZ ratings were completed by a rater blind to participants' diagnostic scores. Thus, it appears that the predictive power of the IM–SZ is not limited to situations in which a single rater completes all the rating scales. Further, the pattern of stronger relations for interview than for questionnaire methods in Study 2 echoes the pattern reported earlier for the

IM–P (Kosson et al., 1997) and is consistent with Leary's (1957) observation that there are frequently disparities between nonverbal interpersonal behavior and self-descriptions of behavior. The greater correlations of interpersonal with interview scale than with self-report scores may reflect the insight required to complete self-report scales, the greater sensitivity of interpersonal assessment, a difference in the behaviors examined, or biases in one or both approaches to assessment.

In both studies, IM–SZ ratings were generally unrelated to antisocial behavior and to alcohol and substance use problems. Although prior literature on these issues is mixed, these findings are consistent with at least one prior report (Drake et al., 1988). Similarly, IPDE SZPD ratings were not correlated with alcohol or substance use problems. Also, although the pattern of findings in Study 1 was similar for European Americans and African Americans, there were isolated differences that merit further attention.

Finally, additional limitations of these studies should be noted. First, because selection of items was based on the Study 1 sample, the absence of individuals with overt psychotic features may have led to deletion of items that would correlate highly with other items in samples exhibiting greater schizophrenia-spectrum pathology. Thus, it may be worthwhile to reexamine deleted or additional interpersonal behavior items in other samples. Second, the use of offender samples in both studies represents an important limitation of these studies. It is important to examine the replicability of these findings with nonoffender samples and to examine relations between the IM–SZ and other measures of SZPD traits. As noted previously, that Collins et al. (2005) obtained evidence for the validity of the IM–SZ in a community sample is encouraging. Third, it must be noted that the interrater agreement for the IM–SZ was only moderate in both studies. Although ICCs of .67 to .69 are not terrible, these correlations suggest somewhat lower reliability than that previously reported for the IM–P. Although the lower interrater agreement for IM–SZ ratings in these studies may reflect the substantial skewness of IM–SZ scores in these samples, it is noteworthy that Collins et al. (2005) reported an ICC of .91 for the IM–SZ in their community sample. Fourth, the pattern of relationships was not identical in Study 1 and Study 2. The partial correlations between IM–SZ and IM–P and PCL–R shallow affect ratings were significant only in Study 1. Although the unique relationships were similar across samples for the other components of psychopathy, the generality of these relationships should be examined in other samples.

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