
The Rorschach Test in Clinical Diagnosis: A Critical Review, with a Backward Look at Garfield (1947)



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The present article comments on a classic study by Garfield (1947) then reviews research on the Rorschach and psychiatric diagnoses. Despite a few positive findings, the Rorschach has demonstrated little validity as a diagnostic tool. Deviant verbalizations and bad form on the Rorschach, and indices based on these variables, are related to Schizophrenia and perhaps to Bipolar Disorder and Schizotypal Personality Disorder. Patients with Borderline Personality Disorder also seem to give an above-average number of deviant verbalizations. Otherwise the Rorschach has not shown a well-demonstrated relationship to these disorders or to Major Depressive Disorder, Posttraumatic Stress Disorder (PTSD), anxiety disorders other than PTSD, Dissociative Identity Disorder, Dependent, Narcissistic, or Anti-social Personality Disorders, Conduct Disorder, or psychopathy. © 2000 John Wiley & Sons, Inc. *J Clin Psychol* 56: 395–430, 2000.

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The Rorschach Inkblot Test (Rorschach, 1921) recently has become the subject of considerable scientific controversy (Costello, 1999; Dawes, 1994; Exner, 1996; Ganellen, 1996a, 1996b; Gann, 1995; Garb, 1998, 1999; Garb, Wood, & Nezworski, in press; Garb, Wood, Nezworski, Grove, & Stejskal, in press; Hunsley & Bailey, 1999; Sechrest, Stickle, & Stewart, 1998; Stricker & Gold, 1999; Viglione, 1999; Weiner, 1996; Wood & Lilienfeld, 1999; Wood, Nezworski & Stejskal, 1996a, 1996b; Wood, Nezworski, Stejskal, Garven, & West, 1999). Recent criticisms of the test have focused on such fundamental issues as scoring reliability, test-retest reliability, validity, incremental validity, clinical utility, effects of method variance, cultural diversity, and accessibility of research results.

The co-editor of the *Journal of Clinical Psychology* has asked us to look backward to a classic article by Sol Garfield (1947) and forward to the future of the Rorschach. The present review addresses a single but very important clinical question: Are Rorschach scores related to psychiatric diagnoses? This same question was the topic of Garfield's (1947) classic article, "The Rorschach Test in Clinical Diagnosis," published in this journal half a century ago.

Garfield rightfully has been accorded high respect as a researcher, and his contributions to clinical psychology as a profession and science have been numerous. It is instructive, therefore, to see how this careful and thoughtful scholar was led to conclusions regarding the Rorschach that probably were in error or at least exaggerated. In his article, we find a familiar juxtaposition of three striking features that still can be found in many Rorschach studies up until the present time.

First, the article by Garfield (1947) presents a set of dramatic results that seem to confirm the great value of the Rorschach for diagnostic purposes. The article reports the concordance between Rorschach-based diagnoses, mainly for schizophrenia or psychoneurosis, and diagnoses made by the psychiatric staffs of two hospitals. A few calculations based on numbers in the article reveal that Rorschach-based diagnoses for 75 patients showed a .67 correlation with clinicians' diagnoses of schizophrenia, and a .70 correlation with diagnoses of psychoneurosis. If such high validity coefficients were reported in a present-day Rorschach study of schizophrenia, they might arouse intense skepticism. In the late 1940s, though, the numbers may have seemed like cause for encouragement rather than doubt.

The second striking feature of Garfield's article (1947) is the presence of methodological flaws that seem glaring, at least from a distance of fifty years. The Rorschach administrator and scorer was the author and experimenter, who was not blinded to the hypotheses of the study. As is well established, the failure to blind Rorschach administrators can introduce demand effects and subtle forms of reinforcement into the testing situation (Exner & Sendin, 1997; Masling, 1960/1992). Furthermore, although the article (p. 376) states that the experimenter was unaware of patient's histories ("with a few unavoidable exceptions"), he had the opportunity for interaction and observation during the test session. It is difficult to rule out the possibility that he received non-Rorschach cues regarding the patients' psychotic status. Finally, and perhaps most important, the article states (p. 376) that the clinical teams who made the criterion diagnoses already had been told the experimenter's own formulations, based upon the Rorschach. This is an obvious case of "criterion contamination" and casts serious doubt on the study's findings. It hardly is surprising that the Rorschach correlated with diagnoses, insofar as the Rorschach findings actually were used in reaching the diagnoses.

This leads to the third striking feature of Garfield's (1947) article, its tendency to minimize the gravity of the study's methodological weaknesses. As will be discussed later in this article, a relationship does exist between schizophrenia and Rorschach

performance. However, to a present-day reader, it seems clear that the high correlation between Rorschach and clinical diagnoses in Garfield's study was simply too good and must have been largely artifactual. Yet the article downplays the idea that artifact influenced the results. For example, the article argues that although the psychiatric teams knew the experimenter's Rorschach formulation before making a diagnosis, they did not agree with him in every case. Therefore, the article concludes, when the teams did agree with him, there were probably good grounds for doing so.

It is worth reflecting on Garfield's (1947) study because we can see at a distance, and perhaps with more objectivity, methodological and inferential errors that still are common today. As we will show in the following pages, current Rorschach research often presents striking positive findings juxtaposed with serious methodological problems. In fact, two of the specific methodological problems identified in Garfield's study (failure to blind test administrators and scorers, and criterion contamination of diagnoses) continue to be common in Rorschach studies despite repeated warnings by Rorschach scholars (Exner & Sendin, 1997; Garb, Wood, Nezworski, et al., in press; Viglione, 1997; Viglione & Exner, 1995; Weiner, 1995). Of course, it is far easier to excuse such methodological shortcomings in Garfield's study: Fifty years ago, the psychological research community had not yet fully recognized the impact that experimenter effects and confirmatory bias might have on Rorschach performance and study outcomes.

In the present review, we will evaluate Rorschach studies using criteria proposed by Wood and his colleagues (1996b, p. 15). Wood et al. challenged psychologists who use the Rorschach to identify test scores that "have shown (a) a consistent relationship to a particular psychological symptom or disorder, (b) in several methodologically adequate validation studies that were (c) conducted by unrelated researchers or research groups." They argued that "few Comprehensive System scores appear to have a well-established relationship to psychopathological disorders or symptoms" (p. 15). Interestingly, Rorschach proponents have not responded to this negative appraisal by publishing a list of individual Comprehensive System (CS) scores that meet the criteria proposed by Wood et al. (1996b), along with citations to the relevant scientific literature. In the present article, we will try to determine which Rorschach scores, if any, have shown a well-demonstrated relationship to psychiatric diagnoses.

Review of the Empirical Literature

The Rorschach and Schizophrenia

Hermann Rorschach designed his test to discriminate schizophrenic patients from other individuals (Exner, 1993), and he succeeded at least in part. Even the test's critics agree that some Rorschach scores are related to schizophrenia (Dawes, 1994; Wood, et al., 1996a, 1996b; but see Frank, 1990). As numerous studies have shown (e.g., Archer & Gordon, 1988; Hilsenroth, Fowler, & Padawer, 1998; Johnston & Holzman, 1979; Saccuzzo, Braff, Sprock, & Sudik, 1984; Wagner, 1998), psychotic patients who take the Rorschach often show slippage in the use of language ("deviant verbalizations") or report seeing things in the blots that other people cannot ("bad form"). Some Rorschach scores that are related to schizophrenia also appear to be related to bipolar disorder (Frank, 1990; Khadavi, Wetzler, & Wilson, 1997) and perhaps to schizotypal personality disorder as well (Hilsenroth et al., 1998).

There is a straightforward explanation for why patients with psychotic disorders say and see strange things when they take the Rorschach: The symptoms of these disorders commonly include disordered speech and aberrant interpretation of stimuli (American

Psychiatric Association, 1994). However, the research findings regarding the Rorschach may have only limited implications for clinical practice. Because the symptoms of schizophrenia tend to be striking and serious, there is usually little point in administering the Rorschach to confirm a diagnosis established by clinical interview or collateral information. Furthermore, if testing is deemed necessary, the Minnesota Multiphasic Personality Inventory (MMPI) is considerably less expensive and seems to be equally or more valid for the purpose than the Rorschach (Archer & Gordon, 1988; but see Saccuzzo et al., 1984). For example, although the CS Schizophrenia Index (*SCZI*) (Exner, 1986a; 1993) is related to schizophrenia, no published studies have shown that it can add significant incremental validity for diagnoses of the disorder, beyond what can be obtained from an interview and MMPI scores. In short, although the Rorschach can be used to identify schizophrenia, there are usually easier, more effective ways to do the job.

The Rorschach and Depression

For the past 15 years, the most intensely studied Rorschach indicator of depression has been the Depression Index (*DEPI*) of the CS (Exner, 1991, 1993). The *DEPI* has been held forth as a sensitive and specific indicator of depression diagnoses (Exner, 1993, pp. 260–264, 309–311). Exner (1991, p. 146) has reported that an elevated score on the *DEPI* “correlates very highly with a diagnosis that emphasizes serious affective problems.” Likewise, Ganellen (1996a, 1996b) has argued that the Rorschach is useful for diagnosing depression (but see Wood et al., 1999).

Despite such claims, nearly all independent studies have found that the original and revised versions of the *DEPI* lack sensitivity and are unrelated to diagnoses of depression in either adolescents or adults (Archer & Gordon, 1988; Archer & Krishnamurthy, 1997; Ball, Archer, Gordon, & French, 1991; Caine, Frueh, & Kinder, 1995; Carlson, Kula, & St. Laurent, 1997; Carter & Dacey, 1996; Lipovsky, Finch, & Belter, 1989; Meyer, 1993; Sells, 1990/1991; Silberg & Armstrong, 1992; Viglione, Brager, & Haller, 1988; but see Jansak, 1996/1997; Singer & Brabender, 1993). Some of these studies contain methodological shortcomings. However, their findings have been so consistently negative that the overall interpretation is clear (see review by Jorgensen, Andersen, & Dam, in press).

Rorschach advocates have reacted to the negative research findings in various ways. Exner (1996, p. 12) has stated that “I believe that there are other measures, such as the Minnesota Multiphasic Personality Inventory or Beck Depression Inventory, that might identify the presence of reported depression much more accurately than the Rorschach.” In contrast, Meyer (1997, p. 326) has speculated that the *DEPI* measures “implicit cognitive–affective depression,” which apparently is not the same depression that is measured by self-report inventories and described in the *Diagnostic and Statistical Manual of Mental Disorders (DSM)* of the American Psychiatric Association (1994).

Three comments may be made regarding Meyer’s (1997) speculations. First, Exner (1991, 1993) constructed the *DEPI* using actuarial methods so that it would correlate with diagnoses of depression, and he subsequently claimed that the scale was highly correlated with depression diagnoses. Therefore, it seems difficult for Meyer now to argue that the *DEPI* is measuring a different type of depression. Second, in our opinion, Meyer’s (1997) article does not offer convincing evidence that the *DEPI* measures implicit depression, or that this type of depression is different from the type described in the *DSM*. Evidence demonstrating that the *DEPI* exhibits incremental validity above and beyond standard diagnostic measures in the prediction of quasi-criteria relevant to depression (e.g., biological markers, laboratory correlates, course, and outcome) would be necessary to corroborate Meyer’s conjecture.

Third and finally, if the *DEPI* indeed is measuring some kind of implicit depression, the fact remains that *DEPI* scores are unrelated to the kind of depression that is defined in the *DSM*. Thus the scale has no utility if the purpose is to identify depressive disorders as they are currently recognized.

Another Rorschach proponent, Viglione (1999), has suggested that the *DEPI* might be related to diagnoses of depression if certain moderator variables, including Lambda, number of responses (*R*), and *Erlebnistypus* (*EB*), are taken into account. However, findings from recent studies do not support Viglione's position (see critique by Garb, Wood, Nezworski, et al., in press). In a study of depressed patients and the *DEPI*, Jansak (1996/1997) failed to find a moderating effect for either Lambda or *R*. Similarly, Krishnamurthy and Archer (2000) failed to find a moderating effect for *EB*.

The Rorschach and Posttraumatic Stress Disorder (PTSD)

Levin (1993, pp. 189–190) has asserted that “The Rorschach is ideally suited for assessment of PTSD . . .” (see also Weiner, 1996; Wood et al., 1999). Before this claim can be evaluated, however, two important methodological points require attention. First, as Exner and Sendin (1997, p. 158) have recently noted,

Occasionally, researchers use published norms as a control sample against which comparisons for small groups are made. This tactic is naive at best and invariably leads to faulty and misleading conclusions.

The use of normative data in place of comparison groups repeatedly has been criticized by Rorschach scholars (Exner, Kinder, & Curtiss, 1995; Garb, Wood, Nezworski, et al., in press; Ritzler & Exner, 1995; Viglione, 1997; Viglione & Exner, 1995; Weiner, 1995; Wood et al., 1999). A diagnostic group (e.g., veterans with PTSD) is likely to differ from a normative group in such background characteristics as age, educational level, and socioeconomic status, creating between-groups differences that have nothing to do with the diagnosis (Ritzler & Exner, 1995, p. 141). In fact, some research indicates that Rorschach scores of nonpatient veterans *without* PTSD often are deviant compared with normative data (Goldfinger, 1998/1999; Van Horn, 1996).

In addition, spurious between-groups differences may be introduced into studies using normative data, because the Rorschach scorers for the diagnostic and normative groups are different (Viglione, 1997, p. 597). The median interrater reliability of Comprehensive System scores appears to be in the low .80s (Acklin, McDowell, & Verschell, in press), and the reliability of some important scores is considerably below that level. Thus, there can be substantial room for scoring differences among different Rorschach raters.

A second methodological point concerns the blinding of Rorschach administrators and scorers. Exner and Sendin (1997, p. 156) have noted that both nonverbal and verbal reinforcement from test administrators can influence patients' Rorschach responses:

The possibility of experimenter bias continues to exist. Thus, in most instances, the principal investigator for a research project should not collect any of the records; instead, the data collection should be left to others who are naive to the nature of the project.

Keeping in mind these two methodological points, Levin's (1993, p. 198) claim that the Rorschach is an “exquisite measure of PTSD” now can be evaluated thoughtfully. After reviewing the research cited by Levin (1993; Levin & Reis, 1997) and conducting a general literature search, we identified 12 group studies that have examined the relationship of the Rorschach to diagnoses of PTSD. Only two of these have examined PTSD

in civilian groups. The first study of civilian PTSD was by Levin herself (1990/1991; Levin, 1993). However, in this study (a) comparisons were made to Exner's (1986a) normative data rather than to a comparison group, and (b) the principal investigator administered and scored Rorschachs. In light of the methodological issues just discussed, the findings of this study must be regarded as highly problematic. The second study of this type was by Lincoln (1993), who compared 29 female inpatients with PTSD and 31 female inpatients with dissociative disorders. Lincoln found that the PTSD and dissociative patients differed significantly on eight Rorschach variables. Specifically, the PTSD patients were significantly higher on the Coping Deficit Index, and lower on Blends, Negative Human Movement (*M-*), vague Developmental Quality, formless responses, Pure Human content responses (Pure *H*), Human Detail content responses, and a Traumatic Content Association score. No significant differences were found on 22 additional CS variables, including Human Movement responses (*M*), the Affective Ratio (*Afr*), Weighted Sum Color (*WSumC*), Form Dimension responses (*FD*), Conventional Form ($X + \%$), Distorted Form ($X - \%$), the *SCZI*, and the *DEPI*.

The remaining 10 group studies of PTSD all have involved combat veterans. However, 4 of the 10 lacked a comparison group and instead made comparisons to normative data or no comparisons at all (Frueh, Leverett, & Kinder, 1995; Hartman et al., 1990; Sloan, Arsenault, Hilsenroth, Harvill, & Handler, 1995; Swanson, Blount, & Bruno, 1990). Our discussion will focus on the six group studies of combat PTSD and the Rorschach that have included a comparison group.

Using an unspecified Rorschach system, van der Kolk and Ducey (1984; 1989; and see Cohen & de Ruiter, 1991; de Ruiter & Cohen, 1992b; Ducey & van der Kolk, 1991) compared 13 Vietnam veterans with PTSD and 11 matched combat veterans. Although several Rorschach variables were discussed, only two statistical tests were reported that compared both samples. First, the PTSD group showed a trend ($p < .06$) toward relatively fewer Human Movement responses relative to Color responses [$M : (M + Sum C)$]. Second, the PTSD group provided significantly more Inanimate Movement (*m*) responses (mean = 3.64) than the comparison group (mean = 1.18). The *t*-test for *m* may have yielded misleading results, however, because *m* was highly skewed and the samples small.

Using the CS, Souffront (1986/1987) compared 30 Vietnam veterans with PTSD and 30 Vietnam combat veterans with other psychiatric disorders. Six Rorschach variables were entered into a stepwise discriminant-function analysis, with group status as the criterion. Because stepwise variable-selection procedures tend to be associated with an increased risk of Type I error, the findings described by Souffront must be interpreted with caution. First, consistent with van der Kolk and Ducey (1984, 1989), Souffront found that significantly more *m* responses were given by the PTSD group (mean = 1.57) than the comparison group (mean = .633). However, the mean number of *m* responses was substantially lower in Souffront's PTSD group than in van der Kolk and Ducey's PTSD group. Second, Souffront found a relationship, in the opposite direction than had been predicted, for Color responses: In some analyses, PTSD diagnoses were associated significantly with a higher Form-Color Ratio ($FC : CF + C$). Third, contrary to what had been predicted based on the findings of van der Kolk and Ducey, Souffront found that PTSD veterans had relatively higher scores on *EB* (the ratio of *M* to *WSumC*), though the difference was not significant statistically. Fourth, Souffront found no significant between-groups differences for Morbid content, $X + \%$, or Blood, Anatomy, and Geography contents.

Using the CS, Burch (1993) compared 29 Vietnam veterans with PTSD, 25 Vietnam veterans without PTSD, and 29 Vietnam-era veterans without PTSD. Veterans without PTSD may have had other psychiatric diagnoses. Significant differences between the PTSD group and the other two groups combined were predicted but not found for the

following variables: $X + \%$, D score, Adjusted D , m , $FC : CF + C$, Afr , Aggressive Content, EB Style, all Human responses ($SumH$), and Pure H . As can be seen, Burch's findings failed to replicate earlier findings regarding m and color responses. However, Burch did find that the PTSD group significantly differed from the comparison groups on two content variables: Morbid content and combat-related content.

Using the CS, Frueh and Kinder (1994) compared 20 Vietnam veterans with PTSD, 20 normal male undergraduate controls, and 20 male undergraduates who had been instructed to malingering PTSD. The PTSD group had significantly higher Lambda scores, more Pure Form responses, and lower $M-$, than the normal controls. However, no significant differences between PTSD veterans and normal controls were found for the following 21 Rorschach variables: the D score, Adjusted D , m , Diffuse Shading (Y), summed Texture responses (T), number of color responses ($SumC$), Pure Color plus Color-Form responses ($C + CF$), Afr , $X - \%$, $X + \%$, Conventional Pure Form ($F + \%$), the Weighted Sum of the Six Special Scores ($WSum6$), the $SCZI$, the $DEPI$, the CDI , the Suicide Constellation ($S-Con$), the Egocentricity Index, Pure H , R , Morbid responses, or a scale of Dramatic content. Some additional differences were found between the PTSD group and the instructed malingerers, but they are not reported here.

Using the CS, Van Horn (1996) studied 30 Vietnam veterans with more severe PTSD, 30 with less severe PTSD, and 30 veterans from the same era without PTSD drawn from a nonpsychiatric population. Based in part on findings reported by Souffront (1986/1987) and van der Kolk and Ducey (1984, 1989), Van Horn predicted that the PTSD groups would differ significantly from the comparison group on m , Y , $FC : CF + C$, or Lambda. However, none of these predictions were confirmed. Furthermore, the three groups did not differ on the $DEPI$, although they did differ in predictable ways on the Beck Depression Inventory.

Finally, using the CS, Goldfinger (1998/1999) compared 16 Vietnam veterans with PTSD and 21 nonpatient veterans without PTSD. No significant differences were found for m , Y , $FC : CF + C$, D Score, Adjusted D , Pure Color (C), Color-Form (CF), Form Color (FC), Afr , $X + \%$, $X - \%$, Unusual Form ($Xu\%$), $F + \%$, $SumH$, Morbid responses, or a measure of combat-related content derived from the earlier study by Burch (1993). However, significant differences were found for EB Style (PTSD veterans were less likely to be introverted, and more likely to be ambiverts), and for a separate measure of "combat content" based on work by Sloan et al. (1995). Test administration in this study was nonstandard: Subjects were attached to electrical monitoring equipment and viewed the cards on a screen.

As can be seen, conjectures about the value of the Rorschach as a measure of PTSD have not been confirmed by controlled studies. For example, because of a limited number of early studies, Souffront (1986/1987) proposed that m and $FC : CF + C$ are related to PTSD among combat veterans. However, subsequent attempts at replication have not confirmed Souffront's hypotheses. Similarly, Weiner (1996; but see Wood et al., 1999) reviewed several uncontrolled PTSD studies and concluded that the D score and Morbid content were related to PTSD distress. However, controlled studies have yielded predominantly null findings regarding both these variables. In fact, it does not appear that any specific Rorschach variable has shown a consistent relationship to combat PTSD. In light of these generally negative findings and the dearth of replicated controlled studies on PTSD among civilians (e.g., rape or disaster victims), there are currently insufficient grounds to conclude that Rorschach scores are related to PTSD.

The Rorschach and Other Anxiety Disorders

Several Rorschach variables bear a hypothesized relationship with anxiety (McCown, Fink, Galina, & Johnson, 1992; Perry et al., 1995; but see Frank, 1978, 1993a, 1993b)

including *m*, *Y*, and the Elizur Anxiety scale (Elizur, 1949). However, we could identify only two group studies published since 1980 that have examined the Rorschach's relationship to anxiety disorders other than PTSD.

One of these studies, by de Ruiter and Cohen (1992a), compared 22 panic-disordered patients with agoraphobia and several other patient groups. Somewhat surprisingly, the panic disorder patients evidenced significantly lower scores than other patient groups on *WSumC*. They also had significantly fewer Food responses, and significantly more protocols with Lambda greater than .99. No difference was found on *Afr*. However, this study had two serious methodological shortcomings. First, in place of a genuine comparison group, the study used Exner's (1990) normative data, and 42 sleep-disordered patients from an earlier study by the same authors. Second, test administration and scoring was conducted by the first author, who was not blind to patient diagnoses or the hypotheses of the study.

A second study, by Rosenberg and Andersen (1990), compared 41 patients with panic disorder, 11 with Generalized Anxiety Disorder, 14 with Major Depressive Disorder, and 18 normal participants, using 54 scoring categories from the system of Rapaport, Gill, and Schafer (1945) and 2 scoring categories from the Comprehensive System. Fifty-six ANOVAs and 54 post-hoc tests were performed. Most of the significant differences involved comparisons to the depressed group, which gave a very low number of responses to the test (Mean = 15.2). Because this study performed 110 statistical tests without adjusting the level of alpha, its findings must be regarded as exploratory. Only one variable overlapped with those studied by de Ruiter and Cohen (1992a): Whereas de Ruiter and Cohen had found that panic-disordered patients gave fewer weighted Color responses than other patients (*WSumC*), Rosenberg and Anderson found that panic-disordered patients did not differ significantly from other groups on the total number of Color responses (*SumC*).

As may be seen, there is no well-demonstrated relationship between Rorschach scores and anxiety disorders. Until such a connection is established by sound, replicated studies, there seems to be little basis for the belief that the Rorschach is related to clinically relevant anxiety (McCown et al., 1992; Perry et al., 1995).

The Rorschach and Dissociative Identity Disorder

Several published case studies have described the Rorschachs of patients with Dissociative Identity Disorder (DID), the disorder formerly known as Multiple Personality Disorder (Danesino, Daniels, & McLaughlin, 1979; Lovitt & Lefkof, 1985; Wagner, Allison, & Wagner, 1983; Wagner & Heise, 1974; see also Leavitt & Labott, 1997). In addition, seven group studies in published articles or dissertations have examined the relationship of Rorschach scores to diagnoses of DID (Armstrong & Loewenstein, 1990; Crim, 1997/1998; Griffin, 1989/1990; Labott, Leavitt, Braun, & Sachs, 1992; Lincoln, 1993; Scropo, 1996; Young, Wagner, & Finn, 1994; see also Scropo, Drob, Weinberger, & Eagle, 1998).

Based on a study of 14 DID and dissociative patients by Armstrong and Loewenstein (1990), Armstrong (1991, p. 542) proposed a "preliminary profile" of six variables (*M*, *WSumC*, Lambda, Blends, *FD*, *SCZI*) that might be useful for distinguishing dissociative patients from PTSD patients or normal individuals. However, the study by Armstrong and Loewenstein lacked a true comparison group, and instead relied upon comparisons to normative data. A later controlled study by Lincoln (1993) attempted to replicate the findings of Armstrong and Loewenstein by comparing 31 women inpatients with dissociative disorders (DD) and 29 women inpatients with PTSD. The results of Lincoln's

study already have been reported in the discussion of PTSD. She concluded that the between-groups differences observed in her study “did not parallel Armstrong’s (1991) findings or show a clear pattern from which a hypothesis regarding definitive diagnostic indices of MPD/DD could be made” (pp. 36–37).

Other research findings regarding the relationship of the Rorschach to DID sometimes have been strikingly discrepant. Based on case studies, Wagner and his colleagues (1983; see also Wagner & Heise, 1974) proposed that five “Wagner signs” on the Rorschach were associated with DID. These signs included a large number of movement responses, as well as other distinctive movement and color responses. In a group study using the Piotrowski system, a research team including Wagner (Young et al., 1994) compared 11 DID patients with 22 outpatients matched for age and sex. A strong relationship was found between the Wagner signs and diagnoses of DID (sensitivity = .91; specificity = 1.00). Labott et al. (1992), also using the Piotrowski system, compared 16 female DID inpatients with 16 female psychiatric inpatients without dissociative disorders. However, these researchers found that the Wagner signs were essentially unrelated to DID diagnoses (sensitivity = .36; specificity = .54). Crim (1997/1998) examined the Wagner signs among 29 outpatients with DID and 58 outpatients without DID. The Wagner signs were related significantly to a diagnosis of DID, but the relationship was much weaker than reported by Young et al. (sensitivity = .24; specificity = .90).

Similarly, Labott et al. (1992) proposed that two “Labott signs” were associated with DID. These signs were (1) responses that involved division or splitting, and (2) responses that involved seeing people or objects through a mist or fog. Labott et al. found a strong relationship between the Labott signs and diagnoses of DID (sensitivity = .94; specificity = .94). However, Young et al. (1994) found that the Labott signs essentially were unrelated to DID diagnoses (sensitivity = .45; specificity = .55). Crim (1997/1998) also failed to find a significant relationship between the Labott signs and DID diagnoses (sensitivity = .07; specificity = .98). Similarly, Scropo (1996, pp. 145–146) found that the Labott scoring rules did not discriminate significantly 21 female DID inpatients from a comparison group of 21 female inpatients without dissociative disorders (sensitivity = .14, specificity = .95), although the two groups apparently scored differently on the Labott signs in some analyses (Scropo et al., 1998, p. 278), and the index performed better after Scropo (1996) made post-hoc changes in the scoring rules.

Why have studies arrived at such different findings regarding the validity of the Wagner and Labott signs? The explanation may be methodological. First, it appears that diagnoses in some studies may have been made by clinicians who knew the Rorschach results, with resulting criterion contamination (e.g. Crim, 1997/1998). In other studies (Labott et al., 1992; Scropo, 1996; Scropo et al., 1998; Young et al., 1994), the experimenters who administered or scored Rorschachs may have been inadequately blinded to patients’ diagnoses and to the research hypotheses.

Particularly in a study of DID, it is essential that the test administrator be blinded, for three reasons. First, as has long been known (Exner, 1993; Exner & Sendin, 1997; Masling, 1960/1992), subtle cues from administrators can bias Rorschach scores. Therefore, as a general rule the blinding of the administrator is important in any research involving the Rorschach.

Second, blinding may be particularly critical in studies of DID patients. One major current theory concerning DID suggests that patients are enacting a role in response to social cues and incentives (Spanos, 1994, 1996; but see Gleaves, 1996). Moreover, some proponents of this view (e.g., Ganaway, 1995; Lilienfeld et al., 1999) have proposed that certain personality traits common among individuals with DID, such as approval seeking and perhaps suggestibility, might render these individuals especially susceptible to influ-

ence from important others. Research on DID patients should therefore be designed to eliminate potentially contaminating demand characteristics or subtle cues within the testing session.

Third, in studies of DID and some other disorders, any attempt to blind the Rorschach administrator regarding patient diagnoses is likely to fail. For example, all the studies discussed here allude to the problem that DID patients may "switch personalities" during assessment sessions. Under such circumstances, even a blinded test administrator is likely to guess the patient's diagnosis. If the administrator has been blinded to the hypotheses of the study, however, "diagnosis guessing" is less likely to bias either the test administration or the test results.

These considerations may explain partially why research findings on DID and the Rorschach have often confirmed experimenters' expectations. Furthermore, it is possible that incomplete reporting of research results has obscured somewhat the overall picture. An example is provided by the article of Scropo et al. (1998), which was based on the dissertation of Scropo (1996). A comparison of the article and dissertation reveals several omissions. (1) Scropo's dissertation (1996, pp. 132–138) predicted significant differences between DID patients and controls on the following seven Rorschach variables: *WSum6*, number of fictional human and human-detail contents [$(H) + (Hd)$], *T*, *Afr*, Intellectualization index, $F + \%$, and *Populars*. None of these predictions were confirmed. In fact, some results even showed a nonsignificant trend in the opposite direction from what was hypothesized. However, the article (Scropo et al., 1998) omitted the negative findings for six of these variables. The seventh negative finding, regarding the Intellectualization index, was mentioned obliquely in the article's Discussion (p. 281), but not the Results. (b) The dissertation (pp. 138–139) predicted significant differences on six Rorschach variables between DID patients and normative data for Borderline Personality Disorder. Three of these predictions were confirmed, but three were not. The article reported the three positive findings but omitted the three negative findings, claiming "All three of the hypotheses concerning differences between the DID and BPD normative data were supported and were large effects" (p. 281). (c) Four Rorschach variables (*Morbid*, *Blood*, *Anatomy*, and *fragmented Human* responses) were reported separately in the dissertation (pp. 142–143) in analyses explicitly described as "post-hoc" and "exploratory rather than confirmatory." Because these analyses were post hoc, it is probably not surprising that all yielded positive results. The results were reported in the article (p. 278), but without mention that the analyses were post hoc. Thus half of the findings in Table 4 of the article are post hoc and exploratory, though not identified as such. (d) The dissertation (pp. 145–146) found that the Labott scoring rules for Dissociative and Splitting responses did not differentiate significantly between DID patients and controls. This negative finding, which many readers might regard as the clinical "bottom line," simply was not reported in the article.

Our review of the literature indicates that up to the present time, no Rorschach score or sign has shown a consistent, replicated relationship to DID in methodologically sound studies. Probably the score that comes closest in this respect is the "Total Movement" (M^T) variable suggested by Wagner et al. (1983; see also Crim, 1997/1998), which consists of the sum of Human, Animal, and Inanimate Movement responses ($M + FM + m$). Labott et al. (1992), using the Piotrowski system, and Scropo et al. (1998), using the CS, both have reported significant elevation of M^T among DID patients. Griffin (1989/1990) also found that a decision rule incorporating M^T significantly differentiated 30 male inpatients with MPD from 60 male inpatients with other diagnoses. This finding does not seem to fit easily with traditional theories regarding the meaning of Rorschach movement responses (Exner, 1993; Frank, 1993a; but see Crim, 1997/1998). Furthermore, research-

ers need to rule out the possibility that the elevation of movement responses is due simply to an elevation in the total number of responses to the test (R). Nevertheless, the finding is very interesting and deserves careful exploration.

Even if some Rorschach scores do eventually show a well-replicated relationship to DID, the practical and theoretical implications may be limited for three reasons. First, because patients with DID tend to have very high rates of certain co-occurring conditions, such as Borderline Personality Disorder and Somatization Disorder (see Horevitz & Braun, 1984; Lilienfeld et al., 1999; North, Ryall, Ricci, & Wetzel, 1993), the extent to which any findings apply specifically to DID still will need to be clarified. Second, the base rate of DID is low enough in clinical and especially nonclinical populations that any Rorschach indicators of DID may tend to yield an unacceptably high rate of false positives, a problem that may be exacerbated by the apparently low sensitivity of the scoring rules studied so far. Finally, and perhaps of greatest practical importance, is the issue of incremental validity. It remains unclear whether any Rorschach indicators will be able to improve the identification of DID patients, beyond what can be accomplished with more economical instruments such as the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986). Indeed, some studies of DID and the Rorschach have used the DES, rather than diagnoses, as a criterion (Leavitt & Labott, 1997).

The Rorschach and Dependent Personality Disorder

Two Rorschach scores commonly are mentioned with respect to dependency. First, even a single Food response is said to indicate dependency (Exner, 1991, p. 184). However, the empirical basis for this claim is weak (Stephenson, 1996; Wood et al., 1996a), and no studies have reported a relationship between Food responses and Dependent Personality Disorder (DPD). In addition, it is well established that individual test responses tend to be highly unreliable, largely because they possess a large component of “situational uniqueness” (Epstein, 1979; Nunnally, 1978). Thus, basing a complex trait inference on a response to a single item is an extremely questionable psychometric practice unless that indicator possesses remarkably high construct validity.

The second common Rorschach measure of dependency is the Rorschach Oral Dependency scale (ROD; Masling, Rabie, and Blondheim, 1967). Although considerable research regarding the ROD and dependent behavior has been reported (Bornstein, 1996, 1999), only one study has examined the relationship of ROD scores to DPD. Bornstein (1998) used the Personality Diagnostic Questionnaire—Revised (PDQ-R; Hyler et al., 1988; Hyler, Skodol, Kellman, Oldham, & Rosnick, 1990) to diagnose personality disorders. Bornstein reported that undergraduates who scored above a threshold for DPD on the PDQ-R had higher ROD scores than either undergraduates with other personality disorders or undergraduates with no personality disorders. In addition, ROD scores were related significantly to dimensional scores for dependent personality in men ($r = .35$) and women ($r = .30$).

Although available research regarding the ROD and DPD is promising, two limitations should be noted (see also discussion by Bornstein, 1998, p. 12). First, the only study that has ever examined the relationship of the ROD to DPD used questionnaires, rather than clinical or structured interviews, to establish diagnoses. However, such questionnaires can yield a high rate of false-positive diagnoses, particularly in nonclinical populations. Specifically, the PDQ-R has been found in a number of studies to exhibit high false-positive rates when structured interviews are used as quasi-criteria for the diagnosis of personality disorders (Hunt & Andrews, 1992; Hyler et al., 1990; Hyler, Skodol, Old-

ham, Kellman, & Doidge, 1992). For example, Hunt and Andrews (1992) reported that whereas only 2.5% of a sample of 40 individuals with anxiety disorders were diagnosed with DPD according to a structured interview (the Personality Disorders Examination; Loranger, 1988), 30.0% of this same sample were diagnosed with DPD according to the PDQ-R.

Second, the relationship of ROD scores to DPD has not yet been replicated independently. As a recent review indicates (Bornstein, 1996), virtually all published studies on the ROD during the past 15 years have been produced by one researcher (J. Masling) and his former student (R. Bornstein). In light of the impressive results produced thus far, replications by independent researchers seem important. In the meantime, it is premature to conclude that the ROD has a well-established relationship with DPD.

The Rorschach and Narcissistic Personality Disorder

Before examining the relationship of the Rorschach to Narcissistic Personality Disorder (NPD), it may be helpful to consider two methodological points. The first concerns "criterion contamination," an issue that was touched on at the beginning of this article when Garfield's (1947) classic study was discussed. If a Rorschach score is to be validated by comparing it with a psychiatric diagnosis, then a diagnostician who has not been influenced either directly or indirectly by patients' Rorschach scores should establish that diagnosis completely independently. Otherwise, if the diagnostician's decisions are "contaminated" by the Rorschach scores, then any correlation between the two may be purely artificial.

The second point concerns the method by which diagnoses are established in Rorschach studies. We would argue that such diagnoses should be based on clinical interviews, or preferably on validated structured or semistructured interviews, and not on chart reviews. There are three reasons that interviews are preferable to chart reviews. First, in other areas of clinical research (e.g., psychopathology, psychotherapy outcome), diagnoses typically are assigned by diagnosticians who have had an opportunity to interview and observe patients directly. If a diagnostician does not have direct contact with the patient, but instead relies on indirect evidence from charts, then the validity of diagnoses likely is to be lowered. Moreover, it cannot be assumed that certain symptoms were absent simply because they do not appear in charts. Such information may not have been inquired about or recorded.

Second, structured and semistructured diagnostic interviews provide standardization of diagnoses among studies (Rogers, 1995). For example, if two separate research teams use the same structured interview to diagnose cases of NPD, then the patients in the two studies are more likely to be comparable.

Finally, chart reviews can be problematic in validation studies because of possible criterion contamination. For example, suppose that a patient is given the Rorschach at the start of treatment and the therapist forms a diagnosis of NPD based partly on the test results. If a researcher later attempts to establish a diagnosis by chart review, reading the Rorschach scores or the therapist's diagnosis may bias him or her. Even if the Rorschach scores and therapist's diagnosis are deleted from the chart, the situation is still problematic: Various hints and clues regarding the therapist's diagnosis may still "leak through" in case formulations ("Patient displays sense of entitlement") or progress notes ("Patient's intense self-preoccupation shows some improvement").

The methodological issues that just have been discussed are important in evaluating the six group studies that have examined the relationship of the Rorschach to NPD. In

four of these studies (Berg, 1988/1989, 1990; Gacono, Meloy, & Berg, 1992; Hilsenroth, Hibbard, Nash, & Handler, 1993) diagnosticians used patients' Rorschach scores when assigning diagnoses. That is, there was clear criterion contamination. In the remaining two studies, diagnoses were based either in part (Farris, 1988) or entirely (Hilsenroth, Fowler, Padawer, & Handler, 1997) on chart reviews.

Thus, although several studies have examined the Rorschach and NPD, none has based diagnoses on uncontaminated clinical or structured interviews. In light of this problem, along with other methodological shortcomings, it is difficult to reach firm conclusions regarding the relationship of Rorschach scores and NPD. In addition, the situation may be complicated when positive findings are published but negative ones are not. For example, a dissertation by Hilsenroth (1996/1997) predicted that twelve NPD patients would differ from several other patient and nonpatient groups in respect to 17 Rorschach variables. The NPD group significantly differed from at least one other group in the predicted direction for 4 of these variables. The findings regarding the NPD group were null or contrary to prediction for the remaining 13 variables. However, a published article based on the same data (Hilsenroth et al., 1997) reported 3 of the dissertation variables with positive findings, but omitted 12 of the variables with null findings.

Even if methodological issues are set aside, the research evidence is ambiguous. For example, CS Reflection responses are sometimes said to be related to narcissism (Exner, 1969, 1993, 1995; Hilsenroth et al., 1997; but see Nezworski & Wood, 1995). However, the three empirical studies that have examined this issue among NPD patients and comparison groups have yielded ambiguous results. Gacono et al. (1992) examined 79 males with personality disorders (PD), including 18 patients with NPD, 18 with Borderline PD, 22 psychopathic prisoners with Antisocial PD, and 21 nonpsychopathic prisoners with Antisocial PD. No significant between-groups differences were found for Reflection responses. Similarly, Hilsenroth et al. (1993) compared 17 patients with NPD, 17 with Borderline PD, and 17 with Cluster C personality disorders, but found no significant differences for Reflection responses. Only one study has reported significant positive findings: Hilsenroth et al. (1997) found more Reflection responses among 15 NPD patients than among several other diagnostic and normal groups. It also is worth noting that in studies of nonclinical groups, Himelstein (1983/1984) and Jacques (1990/1991) found no relationship between Reflection responses and scores on the Narcissistic Personality Inventory (Raskin & Hall, 1979; Raskin & Terry, 1988), a self-report instrument that assesses features of Narcissistic Personality Disorder as operationalized by the DSM-III and DSM-III-R (American Psychiatric Association, 1980; 1987).

The Rorschach and Borderline Personality Disorder

Reviews on the Rorschach and Borderline Personality Disorder (BPD) sometimes have arrived at strikingly different conclusions. For example, Acklin (1993, pp. 337–338; see also Acklin, 1995; Collins & Glassman, 1992; Gartner, Hurt, & Gartner, 1989; Kwawer, 1979; Lerner, 1991, 1998) argued that BPD patients “typically” exhibit several distinctive features on the Rorschach, that the test “is unparalleled in graphically assessing and displaying the underlying structural, affective and representational features of the borderline’s inner world,” and that “the Rorschach’s unique role and value in elucidating borderline dynamics assures its preeminent place in the diagnostician’s tool box” (p. 338). In contrast, Zalewski and Archer (1991, p. 341) reviewed essentially the same literature and summarized: “It is markedly premature to conclude that a pattern of distinguishing Rorschach characteristics has been reliably identified for the BPD patient.”

How could two reviews of the same research literature yield such different conclusions? The explanation seems to be that Zalewski and Archer (1991; see also Widiger, 1982) were concerned with the same issues of methodology and replication that we have emphasized here. In the present review, we identified 39 published group studies that have contrasted the Rorschach scores of BPD patients with either normal individuals or other diagnostic groups. Before attempting to review this literature, we noted the warnings of Carr (1987) and Zalewski and Archer (1991) that many studies on the Rorschach and BPD have used diagnostic criteria or procedures that now would be considered outmoded or inappropriate. Accordingly, we began by eliminating studies in which the BPD diagnosis was problematic or weak.

First we eliminated any study that had (a) used vaguely described or pre-1980 criteria for diagnoses (Bodoin & Pikunas, 1983; Burke, Friedman, & Gorlitz, 1988; Singer & Larson, 1981; Spear, 1980; Spear & Lapidus, 1981; Spear & Sugarman, 1984), or (b) included patients in the "borderline" group who had not been diagnosed with BPD, but instead had been diagnosed with Schizotypal P.D. or some other disorder (Lerner, Albert, & Walsh, 1987; Lerner & Lerner, 1983; Lerner & St. Peter, 1984a, 1984b; Lerner, Sugarman, & Barbour, 1985; Lerner, Sugarman, & Gaughran, 1981; Lerner & Lerner, 1980; Wilson, 1985). We also eliminated any study that (c) used Kernberg's (1975, 1976) criteria for borderline personality organization (Hymowitz, Hunt, Carr, Hurt, & Spear, 1983; Murray, 1985), because these criteria encompass a much broader diagnostic concept than the *DSM* criteria for BPD, and assess not only BPD, but also a variety of both non-BPD personality disorders and Axis I disorders (Kullgren, 1987; Kullgren & Armelius, 1990). Thus, we retained only studies that used either (d) the diagnostic criteria for BPD set forth in the third or later editions of the *DSM* (American Psychiatric Association, 1980, 1987, 1994), or (e) Gunderson, Kolb, and Austin's (1981) Diagnostic Interview for Borderlines (DIB), which is closely related to the *DSM* criteria (Armelius, Kullgren, & Renberg, 1985; McManus, Lerner, Robbins, & Barbour, 1984).

Second, to avoid criterion contamination, we eliminated studies if clinicians had used the Rorschach when formulating diagnoses (Berg, 1990; Berg, Packer, & Nunno, 1993; Gacono et al., 1992; Hilsenroth et al., 1993; Kelly, 1986; Peters & Nunno, 1996), or if the same clinicians who administered the Rorschach also assigned diagnoses (Exner, 1986b). Finally, we eliminated studies that assigned diagnoses based entirely or in part on chart reviews (with possible criterion contamination) rather than on structured or clinical interviews (Carlson et al., 1997; Coonerty, 1986; Farris, 1988; Hilsenroth et al., 1998; Hilsenroth et al., 1997; Salwen, Reznikoff, & Schwartz, 1989).

After we had eliminated studies in which diagnoses were outmoded or inappropriate, potentially contaminated, or based on chart reviews, ten studies remained. The first of these (Edell, 1987) compared several inpatient groups (51 borderline patients, 14 schizotypal patients, 17 patients with mixed borderline-schizotypal personality disorder, and 30 early schizophrenic patients) with 20 normal participants. All inpatient groups scored significantly higher than the normal group on the Thought Disorder Index for the Rorschach (TDIR; Johnston & Holzman, 1979), but did not significantly differ from each other. A weakness of this study was that Rorschachs were administered by the author, who was not blinded to the patient status of subjects, to the hypotheses of the study, or (so far as can be determined from the article) to patient diagnoses. Thus experimenter effects may have been introduced (see Exner & Sendin, 1997). Furthermore, although the article states that Rorschachs were scored "blindly" (p. 31), this assertion seems problematic because the author was the scorer as well as the administrator.

Harris (1993) also examined the TDIR. Thirty outpatients diagnosed with BPD were found to have significantly higher TDIR scores than 30 outpatients diagnosed with other

personality disorders. This study had exceptionally strong methodology. However, it used a *t*-test, rather than a nonparametric statistic, to analyze the TDIR, which appears to have been highly skewed.

Stuart et al. (1990) examined the Rorschach scores of 21 BPD inpatients with or without depression, 13 depressed inpatients without a BPD diagnosis, and a comparison group of 26 normal individuals. Thirty Analyses of Variance (ANOVAS) were performed using 15 subscales of the Developmental Analytic Concept of the Self Scale (Blatt, Brenneis, Schimek, & Glick, 1976). Of these 30 ANOVAS, three were significant statistically. These three positive results were treated as meaningful and followed up with post-hoc analyses (p. 310). To protect against alpha inflation due to multiple statistical tests, Stuart et al. performed a Multivariate Analysis of Variance (MANOVA) beforehand. However, the use of MANOVA in this way often is an insufficient protection against Type I error in the subsequent univariate tests (Bray & Maxwell, 1985, pp. 40–41; Miller, 1966). Thus the findings of Stuart et al. may have capitalized on chance.

Hirshberg (1989) divided a group of eating-disordered female outpatients into borderline ($N = 19$) and nonborderline ($N = 43$) groups based on their scores on the DIB. The borderline group exhibited higher scores on six components of the Symbiotic Phenomena Content Scale, including four intercorrelated components of "Separation." At least 57 statistical analyses were performed without controlling for alpha inflation, so the findings of this study may have capitalized heavily on chance. Furthermore, the use of ANOVA and Analyses of Covariance may have been inappropriate because samples sizes were seriously uneven and the dependent variables appear to have been highly skewed.

Wixom, Ludolph, and Westen (1993) compared 35 borderline adolescent girls with 17 depressed, nonborderline girls. The borderline girls had higher scores than depressed girls on two intercorrelated Rorschach measures of oral-dependent and oral-aggressive content. The article by Wixom et al. (1993) was based on a dissertation by Wixom (1988/1989), which examined three additional Rorschach variables (the Egocentricity Index, Reflection responses, and a scale of "narcissistic injury"). Although Wixom's dissertation predicted between-groups differences for these three additional variables, no significant differences were found. For reasons that are unclear, the article by Wixom et al. (1993) did not report the three Rorschach variables with negative findings from Wixom's dissertation. Instead, only the two Rorschach variables with positive findings were reported.

Cooper, Perry, and Arnow (1988) studied 21 patients with BPD, 14 with "borderline traits," 17 with antisocial personality disorder, and 16 with Type II bipolar disorder, on 15 Rorschach Defense Scales. Out of 180 correlations that were calculated, 28 were significant ($p < .05$). Nine of these significant correlations were between a diagnosis of BPD and various defense scales. However, if alpha had been adjusted for multiple tests using the Bonferroni correction, none of the nine would have been significant statistically. In addition, when all 15 defense scales were entered simultaneously into a discriminant function analysis to predict diagnostic group, no significant relationship was found.

Cooper, Perry, Hoke, and Richman (1985) examined approximately the same sample of patients as Cooper et al. (1988) and found that borderline patients were significantly more likely than antisocial patients to score above the sample median on the Rorschach Transitional Object Scale (TOS; Greenberg, Craig, Seidman, Cooper, & Teele, 1987). Because no data were reported from normal subjects, it is unclear whether borderline patients were unusually high on the TOS, antisocial patients were unusually low, or both. Cooper et al. (1985) also found that "subjects with greater levels of borderline psychopathology" had higher scores on the TOS. However, patients without BPD apparently

were included in this "borderline" group. In addition, the effect was not significant statistically when verbal productivity was controlled.

Greenberg et al. (1987) also studied the TOS among 20 borderline patients, 13 schizophrenic patients, 5 patients with nonborderline character disorders, and 4 patients with diagnoses of manic-depressive illness or schizoaffective disorder. An ANOVA followed by post-hoc tests indicated that the borderline patients scored significantly higher on the TOS than the schizophrenic and character-disordered patients. However, this study contained two flaws. First, patients do not seem to have been selected randomly from a particular population, but instead were contributed by various members of the research group according to criteria that are not entirely clear. In particular, it appears that diagnoses may have been assigned by clinicians who had already seen patients' Rorschachs, with resulting criterion contamination. Second, the use of ANOVA as a statistical test appears to have been inappropriate, insofar as the patient samples were small and the TOS highly skewed. Finally, it should be noted that this study shared a co-author with the study by Cooper et al. (1985) and thus probably should not be regarded as an independent replication of the TOS.

Pfefferbaum, Mullins, Rhoades, and McLaughlin (1987) compared 13 Borderline children and 10 conduct-disordered children using 12 variables from the Piotrowski system. After inspecting means, the authors selected six variables for entry into a stepwise discriminant function analysis. It was found that a discriminant function based on five of these variables predicted diagnostic group status ($p < .04$). However, the statistical procedures used in this study capitalized heavily on chance. Specifically, the selection of a few variables from a relatively large pool *after* inspecting the data, and the absence of cross validation, render these findings highly vulnerable to Type I error.

Richman and Sokolove (1992) compared 20 outpatients with BPD with 20 "neurotic" outpatients. The borderline group scored significantly lower than the neurotic group on the Rorschach Developmental Level scale (Friedman, 1953). However, Rorschachs were administered and scored by the first author, who does not seem to have been blinded to either patients' diagnoses or the hypotheses of the study. Thus, the results may have been affected by demand characteristics, experimenter bias, or both (Exner & Sendin, 1997).

Despite optimistic claims to the contrary (e.g., Acklin 1993; Gartner et al., 1989; Lerner 1991, 1998), purported Rorschach measures of interpersonal relatedness, emotional functioning, object relations, and psychological defense do not bear a well-demonstrated relationship to BPD as it is defined in the *DSM*. As our review indicates, most of the studies have used outmoded or weak approaches to establish diagnoses. Among the ten studies with better methodology, there has been virtually no overlap or replication. Furthermore, about half of these studies could be characterized as "fishing expeditions," so that their positive findings must be regarded as tentative at best.

There is one exception, however: Two independent studies (Edell, 1987; Harris, 1993) have found that well-diagnosed BPD patients show elevated scores on the TDIR, a measure of deviant verbalizations. However, individuals with BPD often have a co-occurring diagnosis of Schizotypal PD (Kavoussi & Siever, 1992; Nurnberg et al., 1991), and elevated TDIR scores have been reported among patients with Schizotypal PD (see discussion above). Similarly, some authors have argued that at least some cases of BPD might represent atypical manifestations of Bipolar Disorder or Cyclothymia (e.g., Akiskal, 1992; Akiskal et al., 1985), and elevated TDIR scores have also been reported among patients with Bipolar Disorder (see discussion above). Thus, high TDIR scores may indicate that a patient has Schizotypal PD or a Bipolar Disorder, rather than directly indicating that the patient has BPD.

The Rorschach, Antisocial Personality Disorder, and Conduct Disorder

The diagnostic category of Antisocial Personality Disorder (ASPD) as defined in recent editions of the *DSM* (American Psychiatric Association, 1980, 1987, 1994) only partially overlaps with the classical concept of psychopathy (Cleckley, 1976; Hare, Hart, & Harpur, 1991). Therefore, the present article treats separately ASPD and psychopathy. First the relationship of the Rorschach to ASPD and Conduct Disorder (the childhood analogue of ASPD) will be discussed. Psychopathy will be treated in the next section.

Studies by Gacono, Meloy, and their colleagues (Gacono, 1988/1989, 1990; Gacono & Meloy, 1991, 1992, 1994; Gacono et al., 1992; Gacono, Meloy, & Heaven, 1990; Meloy & Gacono, 1992, 1995) often are mentioned in discussions of ASPD and the Rorschach. However, most of these studies compared ASPD subjects with normative data, or with data published by other authors, a practice that generally is considered unsound, as we have explained already. In the following discussion of ASPD, we have set aside all studies that failed to use adequate comparison groups. However, we will return to the work of Gacono and Meloy in the discussion of psychopathy.

It appears that only four studies have used a comparison group, rather than normative data, when studying individuals with a diagnosis of ASPD (Berg, Gacono, Meloy, & Peaslee, 1994, as cited in Gacono and Meloy, 1994, pp. 104–108; Gacono et al., 1992; Hilsenroth et al., 1997; Howard, 1998/1999). In addition, three studies have examined the relationship of Rorschach scores to the number of diagnostic criteria for ASPD in mixed patient groups (Baity & Hilsenroth, 1999; Blais, Hilsenroth, & Fowler, 1998; Cooper et al., 1988).

It has been suggested that a large number of Rorschach variables are related to ASPD (Gacono & Meloy, 1994). However, a review of the seven empirical studies cited here indicates that most of these variables have never been replicated independently (e.g., Adjusted *D*, *X* + %, Blood, Boundary Disturbance) or have been found in independent replications to be unrelated to ASPD. For example, Berg et al. (1994) reported the rather surprising finding that Aggressive Movement (*AG*) was lower among female prisoners with ASPD than among Borderline patients. However, Baity and Hilsenroth (1999) did not find that *AG* scores were significantly lower in ASPD patients than Borderline patients, or that *AG* scores significantly predicted the number of criteria that patients met for ASPD. Similarly, Berg et al. reported that *T* responses were significantly less frequent among women with ASPD than women with Borderline PD. However, Howard (1998/1999) found no significant differences in *T* between incarcerated adult males with ASPD and those without, and Blais et al. (1998) found a correlation of $-.08$ (*ns*) between *T* and the number of criteria that patients met for ASPD. Similar negative results or failures to replicate have been reported for Aggressive Content (*AgC*; Berg et al., 1994; Baity & Hilsenroth, 1999), Color responses (Berg et al., 1994; Blais et al., 1998), *Y*, Vista responses (*V*), (Gacono et al., 1992; Howard, 1998/1999), Space (*S*), and pure *H* (Howard, 1998/1999).

Among all the Rorschach scales examined in the seven studies, only one finding seems to have been replicated unequivocally: Both Berg et al. (1994) and Hilsenroth et al. (1997) found that Pair responses were significantly less frequent among individuals with ASPD than among Borderline patients. However, the data of Hilsenroth et al. indicate that this finding was due to the Borderline patients having an abnormally high number of Pair responses (Mean = 6.8). Patients with ASPD had approximately the same number of Pair responses as nonclinical subjects (Mean = 4.0 and 4.5, respectively).

Except for excluding studies that compared individuals with ASPD to normative data, we have not paid attention to issues of methodological quality, and instead simply

have focused on the lack of replication. However, it is worth noting that the strongest study of the seven discussed here (Cooper et al., 1988) did not find any significant relationship between Rorschach variables and ASPD. The study by Berg et al. (1994) was never published except for a brief summary by Gacono and Meloy (1994), and was flawed by criterion contamination (i.e., diagnoses were made by clinicians who knew the Rorschach results). Similarly, Rorschach scores contaminated diagnoses in the studies by Gacono et al. (1992) and Howard (1998/1999). In the series of studies by Hilsenroth and his colleagues (Baity & Hilsenroth, 1999; Blais et al., 1998; Hilsenroth et al., 1997), diagnoses were based on chart reviews.

At the present time, no Rorschach variable (except arguably Pair responses) has shown a well-demonstrated relationship to ASPD. The situation is similar regarding Conduct Disorder (CD). Only two published studies with comparison groups have examined the relationship of the Rorschach to CD. Weber, Meloy, and Gacono (1992; see also Weber, 1990/1991) found that adolescents with a CD diagnosis gave significantly more *Y* responses, fewer *T* responses, and fewer Pure *H* responses, than adolescents diagnosed with dysthymia. Archer and Krishnamurthy (1997) combined adolescents with diagnoses of Conduct Disorder, Oppositional Defiant Disorder, and Adjustment Disorder with Disturbance of Conduct into one "conduct-disordered" group. Contrary to the findings of Weber et al., Archer and Krishnamurthy found that patients in this broadly defined group had the same number of *T* responses as other adolescent patients. In fact, no significant differences were found for any of six CS variables with a hypothesized relationship to CD. However, Archer and Krishnamurthy's approach of combining several different diagnostic groups into one broadly defined group is potentially problematic. It is possible that the findings might have been different if data had been examined separately for patients with a narrowly defined diagnosis of Conduct Disorder.

Two other studies also may be relevant to the Rorschach and conduct problems among adolescents. Long (1995) compared 35 adolescent inpatients with conduct problems at admission to 18 adolescent inpatients without conduct problems. Nine Rorschach variables were examined, including the Hypervigilance Index, *S*, *AG*, *SumH*, and *T* responses. No significant differences were found. A limitation of this study was that subjects were assigned to groups based on presenting problems rather than formal diagnoses. Karfgin (1988/1989) compared 10 adolescent inpatients with conduct problems (including 7 with formal diagnoses of conduct disorder or adjustment reaction with disturbance of conduct) with 25 adolescent inpatients with depression (including 24 with formal diagnoses of major depression, dysthymic disorder or adjustment reaction with depressed mood). Twelve Rorschach variables were examined, including *EB*, *FC*: *CF* + *C*, the Egocentricity Index, *AG*, *Y*, *T*, and Reflection responses. None of these variables discriminated between the two groups, although *V* seemed to differentiate patients with depression from patients with both depression and conduct problems. A limitation of this study was that subjects were assigned to groups based on a complex decision rule rather than diagnoses.

The Rorschach and Psychopathy

Meloy and Gacono (1995, p. 414) have written that the Rorschach is "ideally suited" for the assessment of psychopathy. They claim that through a series of studies "we have validated the use of the Rorschach as a sensitive instrument to discriminate between psychopathic and nonpsychopathic subjects."

In light of this claim, the present discussion will focus on the work of Gacono, Meloy and their colleagues, (Gacono, 1988/1989, 1990; Gacono & Meloy, 1991, 1992, 1994;

Gacono et al., 1992; Gacono et al., 1990; Heaven, 1988/1989; Meloy & Gacono, 1992, 1995). We will begin by noting that there is substantial overlap of subjects among these studies, so their results should not be regarded as independent replications. All ASPD subjects in the samples were male prisoners ($N = 30-43$). On the basis of Hare's Psychopathy Checklist (PCL; 1980), they were divided into a "severe psychopathy" group ($PCL \geq 30$) and a "moderate psychopathy" group ($0 \leq PCL \leq 29$). Individuals with PCL scores below 15 usually are considered "non-psychopaths" (for example, see Smith, 1994/1995), so the inclusion of such participants in the "moderate psychopathy" group was an unusual feature of these studies.

The findings over various studies and several Rorschach-scoring systems were as follows: (a) The "severe" group gave significantly more Personal responses, with no significant differences found for 25 other CS variables, including Pure *H*, *Afr*, *FC*: *CF* + *C*, *EB*, *D*, Adjusted *D*, pairs, and the Whole Response to Human Movement ratio (*W*:*M*) (Gacono & Meloy, 1991; Gacono et al., 1990; Heaven, 1988/1989); (b) The "severe" group was significantly higher on "Total Primitive Object Relations" according to the Kwawer (1980) scoring system, but not on 8 of the 10 Kwawer object relations subscales (Gacono, 1988/1989, 1990; Gacono & Meloy, 1992); (c) No significant between-groups differences were found for 34 Rorschach measures of Defense (Gacono, 1988/1989, 1990; Gacono & Meloy, 1992); (d) No significant between-groups differences were found for five different measures of aggressive Rorschach content (Gacono, 1988/1989, 1990; Heaven, 1988/1989; Meloy & Gacono, 1992); (e) Mixed findings were reported for *T*, *Y*, Reflection responses, the Egocentricity Index, Narcissistic Mirroring, Boundary Disturbance, Impressionistic responses, and Sado-masochism (Gacono 1988, 1990; Gacono & Meloy, 1991, 1992; Gacono et al., 1992, 1990; Heaven, 1988/1989; Meloy & Gacono, 1992).

As can be seen, the various studies of Meloy and Gacono reported a limited set of positive findings after examining a variety of Rorschach scores. When a large number of correlations are sifted in this way, the probability of Type I error is substantial and replication becomes essential. Five replications have been attempted.

Using the revised version of the Psychopathy Checklist (PCL-R; Hare, 1991), Egozi-Profeta (1998/1999) assigned 44 male prisoners diagnosed with ASPD to high psychopathy ($PCL-R \geq 30$) or medium psychopathy ($PCL-R \leq 29$) groups. Five Rorschach variables were examined: Reflections, *V*, *T*, *Y*, and Personal responses. None showed a significant correlation with psychopathy scores.

Murphy-Peaslee (1993/1995; see also Peaslee, Fleming, Baumgardner, Silbaugh, & Thackrey, 1992, as cited in Gacono & Meloy, 1994, p. 102) attempted to replicate Gacono and Meloy's findings in a sample of 47 incarcerated women. She divided subjects into high ($PCL-R \geq 27$), medium ($PCL-R = 20-26$), and low ($PCL-R \leq 19$) psychopathy groups. Eight Rorschach variables were examined, including Pairs, Reflections, *T*, *Y*, Personal, and Impressionistic responses. Contrary to expectation, none of the Rorschach variables was related significantly to level of psychopathy.

Ponder (1998/1999) rated 50 male and female incarcerated violent juvenile offenders using the Hare Psychopathy Checklist, Youth Version (PCL-YV; Forth, 1995; Forth, Hart, & Hare, 1990; Forth, Kosson, & Hare, 1997). In multiple regression analyses, psychopathy scores were found to be unrelated to seven Rorschach variables, including Reflections, *T*, Personal responses, the Egocentricity Index, *W*:*M*, Cooperative movement, and *AG*. However, a significant relationship was found with an eighth Rorschach variable, Blatt's Object Differentiation Index (Blatt et al., 1976).

Loving (1998) used the PCL-YV to divide 48 male juvenile offenders into high ($PCL-YV \geq 30$), medium ($PCL-YV 20-29$), and low ($PCL-YV \leq 19$) psychopathy groups.

Loving found that the high psychopathy group gave significantly more Reflection responses, and was significantly more likely to have zero *T* responses, than the other two groups. However, no significant differences were found for seven other Rorschach variables, including Pure *H*, the Egocentricity index, *m*, *Y*, *FD*, *V*, and *S* responses.

Smith (1994/1995) closely followed the methodology of Gacono and Meloy (1994). Using a modified form of the PCL-R, Smith studied 60 adolescent males with *DSM-III* diagnoses of Conduct Disorder, including 20 severe psychopaths (PCL-R \geq 30), 20 moderate psychopaths (PCL-R = 20–29), and 20 nonpsychopaths (PCL-R \leq 19). Contrary to expectation, no significant differences were found on any of the following variables: Reflection responses, the Egocentricity Index, Devaluation, Grandiosity, Omnipotence, Primitive Idealization, Exhibitionistic Movement, Personal responses, and *W: M*. Further analyses compared the severe and moderate psychopathic groups, as Gacono and Meloy (1994) had done. However, no significant differences were found between these groups on any of the nine variables.

Smith, Gacono, and Kaufman (1997) later published an article in the *Journal of Clinical Psychology* based on Smith's (1994/1995) dissertation. However, the article differed from the dissertation in three important ways. First, data and analyses for the moderate psychopathic group were omitted without explanation. Contrary to the dissertation, the article stated that "only those subjects in the psychopathic and nonpsychopathic range with Rorschachs \geq 14 responses were used" (p. 291).

Second, the article (Smith et al., 1997) reported negative findings for some variables not included in the dissertation: *T*, *Y*, and Cooperative Movement responses. The article also reported significant differences ($p < .05$) for *AG* and an unusual dichotomized form of the Egocentricity Index that had been created for the study. Smith's dissertation (1994/1995, p. 97) stated that the analysis of the dichotomized Egocentricity Index had been "exploratory."

The third difference between the article (Smith et al., 1997) and the dissertation (Smith, 1994/1995) concerned their conclusions. Smith's dissertation had concluded that the negative results indicated a lack of narcissism in the severely psychopathic group. By contrast, the article concluded that "the elevated egocentricity index [in the severe psychopathy group] . . . represents a primitive and intense self-absorption. . . ." (p. 296). The article further stated that

Our study . . . supports the utility of the Rorschach for detecting individual differences among CD subjects, and extends the empirical work of Gacono and Meloy (1994) to adolescent psychopathy (p. 289, Abstract).

In a later Erratum, Smith, Gacono, and Kaufman (1998) noted that Smith's dissertation (1994/1995) had arrived at different conclusions than the article. Neither the Erratum nor the article reported an important piece of information, however: The dissertation had compared moderate and severe psychopathic groups in a close replication of Gacono and Meloy's (1994) methodology, and the results had been uniformly negative.

In summary, researchers who have attempted to replicate Gacono and Meloy's (1994) Rorschach markers of psychopathy have been almost completely unsuccessful in groups of male, female, and juvenile offenders. Such failures to replicate suggest that the original positive findings may have been spurious, a result of performing multiple statistical tests without controlling Type I error. The scientific evidence does not justify continued use of the Rorschach to identify psychopathy in forensic settings. Before passing on to other subjects, we will comment specifically on the issue of Reflection responses. In a previous review, two of us (Nezworski & Wood, 1995) concluded that such responses are more frequent among psychopaths than nonpsychopaths. However, new data and a closer attention to methodological details have led us to modify our conclusions.

In the previous review, we cited two early studies (Exner, 1969; Raychaudhuri & Mukerji, 1971) that had found a relationship between Reflection responses and psychopathy. In retrospect, however, it appears that these studies had shortcomings in methodology and reporting. First, neither of these two early studies stated which Rorschach system was used to administer the Rorschach. As Exner (1993) has indicated, different administration procedures can yield markedly different results. It seems unlikely that these early studies used the CS, which was not introduced until about 4 years after they were published (Exner, 1974).

Second, as noted in our previous review (Nezworski & Wood, 1995, pp. 180, 191), participants in these two early studies gave substantially more Reflection responses than would be expected from current normative and reference data. For example, Exner (1969) reported that 35% of college students gave at least one Reflection response, whereas the corresponding number for adult nonpatients in recent normative data is 7% (Exner, 1993). Why did these early studies sometimes yield five times as many Reflection responses as would be expected from later studies? In his Comment on our review, Exner (1995) did not offer any hypotheses. Certainly one possibility is that different administration procedures affected the scores.

Third, the two early studies provided a very limited description of how diagnoses of psychopathy were established. Exner (1969) simply stated that the subjects had "character disorders (diagnosed as sociopath or psychopath)", whereas Raychaudhuri and Mukerji (1971) noted only that subjects with "sociopathic disorders" were identified from case records of convicts. No further diagnostic information was provided in either study. There is some question, therefore, whether the subjects in these studies were "psychopathic" in the classic sense (Cleckley, 1976; Hare et al., 1991), or instead simply may have exhibited high levels of nonspecific behavioral deviance. In addition, the identification of psychopaths from case records alone, as in the study by Raychaudhuri and Mukerji, can be a difficult and questionable procedure unless extremely detailed file information is available (Wong, 1988).

Judged by current standards, the early studies (Exner, 1969; Raychaudhuri & Mukerji, 1971) appear suggestive but weak. Seven recent studies with stronger methodology have examined the topic using various versions of the PCL to measure psychopathy. Two of these studies, with a total of 90 subjects, found a significant relationship between Reflection responses and psychopathy (Gacono et al., 1990; Loving, 1998). However, five of the studies, with a total of 280 subjects, did not find such a relationship (Egozi-Profeta, 1998/1999; Gacono et al., 1992; Murphy-Peaslee, 1993/1995; Ponder, 1998/1999; Smith, 1994/1995; see also Smith et al., 1997, 1998). The most reasonable conclusion seems to be that Reflection responses bear at most a weak or inconsistent relationship to psychopathy.

Conclusions, Recommendations, and Predictions

Conclusions

Our review of the research literature leads to four main conclusions. First, contrary to common claims, only a few Rorschach scores have a well-demonstrated relationship to psychiatric disorders. Deviant verbalizations and bad form on the Rorschach, and indices based on these variables, are related to Schizophrenia, and perhaps to Bipolar Disorder and Schizotypal Personality Disorder. Patients with Borderline Personality Disorder also seem to give an above-average number of deviant verbalizations. Otherwise, the Rorschach has not shown a well-demonstrated relationship to these disorders or to any other

conditions discussed in this article. Our conclusions are not much different from those of Shaffer (1959, p. 288), who forty years ago wrote, "The Rorschach has *some* empirical validities . . . But the Rorschach is also a most imperfect instrument, not qualified to perform the tasks that many psychologists demand of it."

Our mainly negative judgement is consistent with recent meta-analyses of the Rorschach. For example, a recent meta-analysis by Hiller, Rosenthal, Bornstein, Berry, and Brunell-Neuleib (1999; see also Garb, Florio, & Grove, 1998, 1999; Garb, Wood, Nezworski, et al., in press; Parker, Hanson, & Hunsley, 1988; Parker, Hunsley, & Hanson, 1999) recently reported that the weighted mean validity coefficient for a sample of Rorschach studies was .26 and the unweighted mean .29. However, when Hiller and his colleagues separately analyzed studies that used psychiatric diagnoses as a criterion, the mean weighted validity coefficient was only .18 for the Rorschach as compared to .47 for the MMPI (unweighted means were .18 and .37, respectively). This meta-analytic finding conforms with earlier evidence that the MMPI, but not the Rorschach, contributes incremental validity in diagnostic decisions (Garb, 1984, 1998). However, because of flaws in the Hiller meta-analysis, its results cannot be considered conclusive (Garb, 1999; Garb, Wood, Nezworski, et al., in press).

Second, the findings of the present article indicate why Rorschach scales should not be accepted as valid until they have been tested thoroughly and replicated by independent researchers. In the 1960s, it was well known that promising Rorschach findings often failed to replicate (Jensen, 1965). The present review provides several recent examples of the same phenomenon. Although Exner (1986, 1991, 1993) published the *DEPI* as a valid indicator of depression diagnoses, subsequent independent researchers were generally unable to replicate his findings. As another example, although Gacono and Meloy (1994) publicized several Rorschach variables as indicators of psychopathy, subsequent independent research has failed mainly to confirm their claims. Similarly, although Weiner (1996) has argued that Morbid responses and *D* are related to PTSD distress, controlled studies have not supported his conclusions. It is sobering to realize that the *DEPI*, the psychopathy indicators of Gacono and Meloy, and perhaps the PTSD-related variables of Weiner, have been promoted widely and applied in clinical and forensic settings despite an apparent lack of consistent validity. In the future, psychologists should adopt a more conservative approach to Rorschach scores until they have been validated thoroughly by independent researchers.

Third, the present findings support the view that methodological issues are important in evaluating the Rorschach research literature. For example, the Rorschach literature on Borderline PD and Narcissistic PD appears rather promising, until one recognizes that most of the studies have serious methodological flaws.

This leads to our fourth conclusion, that published claims regarding the Rorschach's validity often have been characterized by unjustified optimism and even overstatement (see Wood & Lilienfeld, 1999). In recent years, the Rorschach has been held forth as a measure of depression (Exner, 1991, 1993; Ganellen, 1996a, 1996b), PTSD (Levin, 1993), Borderline PD (Acklin, 1993), narcissism (Exner, 1969, 1991, 1995), and psychopathy (Gacono & Meloy, 1994). As our review indicates, such claims generally are not well supported by the research literature. Enthusiastic overstatements seem especially likely when there is insufficient attention to issues of replication and methodology.

Recommendations

Based on our review, we offer five recommendations to practitioners, teachers, researchers, and reviewers. First, in light of the findings discussed here, the Rorschach should

not be used when formulating psychiatric diagnoses, with a few possible minor exceptions. For example, the Rorschach does not have a well-demonstrated relationship to depression or most personality disorders. If the test is used, even in part, to diagnose these conditions, it is likely to add error rather than accuracy to clinicians' decisions. In the few instances where a relationship between Rorschach scores and diagnoses has been shown, the test still may not add anything useful beyond what can be obtained from careful interviews and self-report tests (Garb, 1984, 1998; Lanyon & Goodstein, 1997).

Second, it seems particularly important that the Rorschach not be used to diagnose individuals in forensic contexts. For example, it would be inappropriate to imply that a parent in a custody case is "narcissistic" or "dependent," if that suggestion is based in part on Rorschach results. Similarly, Rorschach scores should not be used to support the contention that a prisoner is psychopathic and therefore at high risk of recidivism. It should be noted that Garb (1999) recently has called for a moratorium on use of the Rorschach in both clinical and forensic contexts.

Third, given the limited utility of the Rorschach for the purposes discussed here, training programs in clinical, counseling, and school psychology may want to consider eliminating the test from their assessment curricula. Alternatively, they might eliminate formal training in Rorschach administration, but still provide sufficient instruction concerning the test that students can evaluate intelligently the research literature. It is worth noting that the Rorschach was not included in the model assessment curriculum recently recommended by a Task Force of Division 12 of the American Psychological Association (American Psychological Association Division 12 Presidential Task Force, 1999). Perhaps the Rorschach is regarded best as an experimental instrument for personality research rather than a clinical tool.

Fourth, Rorschach researchers should pay more attention to methodological issues, as should journal editors and reviewers. Our reading of the literature suggests that six methodological problems may be especially widespread and serious: (1) Comparing diagnostic groups to normative data; (2) basing criterion diagnoses on procedures other than clinical or structured interviews; (3) failing to blind diagnosticians thoroughly to both direct and indirect influence of Rorschach scores; (4) failing to blind Rorschach administrators and scorers to research hypotheses and patients' diagnostic groups; (5) performing large numbers of statistical tests without adequate adjustment of alpha; and (6) Using parametric instead of nonparametric tests for skewed data and small samples. In Table 1, we have provided a checklist that may be helpful for designing or evaluating Rorschach studies. The 14 criteria in the table are not rigid standards, but can be viewed as useful guidelines for identifying a study's shortcomings.

Fifth, as the present article already has discussed, Rorschach studies sometimes report data in an incomplete or potentially misleading manner. For example, the study of borderline patients by Wixom et al. (1993) reported two positive findings from Wixom's (1988/1989) dissertation, but omitted three negative findings. A study of DID by Scropo et al. (1998) reported positive findings from Scropo's (1996) dissertation, but omitted several negative findings, including an analysis that indicated low validity for a widely cited Rorschach index of DID. An article by Hilsenroth et al. (1997) on NPD reported three variables with positive findings from Hilsenroth's (1996/1997) dissertation, but omitted twelve variables with negative findings. An article on psychopathy by Smith et al. (1997) stated that data from a particular group of subjects had not been used, although Smith's dissertation (1994/1995) reported that these subjects had been included in analyses. Furthermore, Smith et al. interpreted their essentially negative findings as if they confirmed the value of the Rorschach as a measure of narcissism.

Table 1
A Checklist for Evaluating Rorschach Diagnostic Studies

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1. Data were collected in this study from both a diagnostic group and a comparison group (i.e., comparisons were not to normative data only, or to data from earlier studies).
 2. The same administrators and scorers were used to collect Rorschach data from the diagnostic and comparison groups. If no comparison group (see item 1), this item is scored "No."
 3. All Rorschachs included in the study were administrated and scored using the same Rorschach system. If article does not name the specific system used for administration and scoring, this item is scored "No."
 4. Rorschach administrators were blinded to hypotheses of the study and to patient diagnoses. If article does not mention blinding of administrators, this item is scored "No."
 5. Rorschach scorers were blinded to hypotheses of the study and patient diagnoses. If article does not mention blinding of scorers, this item is scored "No."
 6. Rorschach protocols from the diagnostic and comparison groups were intermixed randomly before being scored. If no comparison group (see item 1), this item is scored "No."
 7. Appropriate interrater reliability figures (kappa, intraclass correlation coefficient, or less desirably Spearman's rho) based on a sample of protocols from this study were reported for the individual Rorschach scores analyzed.
 8. Protocols were included only if the number of responses (*R*) was greater than or equal to 14. If article does not say that short protocols were excluded, this item is scored "No."
 9. Participants were diagnosed based on the *DSM-III* or a diagnostic system that provides comparable criteria to those of the current *DSM*, such as the *International Classification of Diseases* (10th Ed.). If article does not say that the *DSM-III* or a comparable manual was used, this item is scored "No."
 10. Diagnoses were established either by (a) a standard diagnostic interview conducted by trained clinicians or (b) a structured or semistructured interview conducted by an appropriately trained individual. If article does not indicate either (a) or (b), this item is scored "No."
 11. Individuals who gathered diagnostic information and/or assigned diagnoses were blinded to patients' Rorschach scores and to formulations potentially influenced by those scores. If article does not mention blinding of diagnosticians, this item is scored "No." If diagnoses were based in part or entirely on chart review, and chart entries may have been influenced directly or indirectly by Rorschach scores, this item is scored "No."
 12. Statistical tests of significance were performed and presented for all reported between-groups differences on Rorschach scores.
 13. Alpha was adjusted appropriately for multiple significance tests between groups. If not, the authors of the article explicitly acknowledged that the analyses must be regarded as exploratory.
 14. Nonparametric significance tests were used for all between-groups comparisons of skewed or truncated variables, or for small samples.
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Similar examples of incomplete reporting of Rorschach data, or unbalanced interpretation of research results, have been discussed in other recent articles (Garb, Wood, Nezworski, et al., in press; Nezworski & Wood, 1995; Wood & Lilienfeld, 1999; Wood et al., 1999). In the future, it seems particularly important that Rorschach researchers report findings in an open and even-handed way. If negative results are not shared along with positive ones, then distortions may enter the research literature, and meta-analyses based on these figures will be biased.

Predictions

We have been invited to offer predictions about the Rorschach's future. In closing, we will offer two. First, it seems that negative consequences are likely to arise if Rorschach proponents do not begin to pay closer attention to methodological issues. Exner and Sendin (1997, p. 155) have warned:

The paucity of contemporary interest in Rorschach research methodology should be cause for concern because future research could easily repeat some of the disasters of the past if certain guidelines are not firmly in place.

We concur with this prediction. In fact, it could be argued that some disasters already have overtaken the Rorschach in recent years because of inadequate attention to methodology.

Second, we are not especially optimistic that future research will uncover important new relationships between the Rorschach and psychiatric disorders, although we are willing to be convinced if new data should appear. Research on this topic has been underway for nearly 80 years, yet the results mainly have been disappointing, as the present review indicates. Evidence of Rorschach diagnostic validity was very limited in the 1940s, 1950s, and 1960s (Cronbach, 1956; Eysenck, 1959; Jensen, 1965; Shaffer, 1959; Wittenborn, 1949), and it is not much better now. There seems little reason to expect that the next half-century will bring major breakthroughs. Clinical psychology probably should look elsewhere for new discoveries and better diagnostic techniques.

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