Psychol. Inj. and Law (2012) 5:97–106
DOI 10.1007/s12207-012-9132-9

The Necessity of Multiple Test Methods in Conducting Assessments: The Role of the Rorschach and Self-Report

Joni L. Mihura

Received: 13 August 2012 / Accepted: 10 September 2012 / Published online: 30 October 2012

Abstract This article presents a logical and empirical argument for the necessity of a multi-method approach to psychological assessment. Both in clinical and forensic psychology, self-report methods such as questionnaires and interviews are popular. The Rorschach is presented in this article as an additional test method. The article describes recent meta-analyses that evaluate the construct validity of individual Rorschach scales and that serve as major guideposts in the development of a new Rorschach system (Rorschach Performance Assessment System). The combination of self-report and Rorschach methods is used to discuss the importance of multi-method assessment in the context of incremental validity and dissimulation. Practically speaking, the assessor should consider the test method as an indispensable part of the formula when choosing tests, writing reports, and generally understanding the client.

Keywords Rorschach · Psychological assessment · Test methods

Self-report, either through an interview or a questionnaire, is currently the most popular assessment method in clinical and forensic psychology (Archer, Buffington-Vollum, Stredny, & Handel, 2006; Camara, Nathan, & Puente, 2000; Norcross & Karpiak, 2012). Although asking people questions about themselves is a key component of psychological assessment, decades of research show that what people say about themselves is often neither how they behave nor how others see them (e.g., Bargh & Chartrand, 1999; Nisbett & Wilson, 1977; Wilson & Dunn, 2004). Therefore, all psychologists, not just forensic psychologists, should be aware of the limited correspondence between how people describe themselves and how they behave.

The present article argues for the necessity of a multi-method approach to psychological assessment and focuses on the Rorschach (1921/1942) as a valid method of assessment that is not dependent on introspection or the reliability of self-report. Rorschach construct validity meta-analyses are described. The primary focus is on meta-analyses published in *Psychological Bulletin* (Mihura, Meyer, Dumitrascu, & Bombel, 2012) that address the individual variables in the Rorschach Comprehensive System (CS; Exner, 2003), which has been the most popular Rorschach system since the mid-1980s (Meyer, Hsiao, Viglione, Mihura, & Abraham, 2012; Ritzler & Alter, 1986). These and other Rorschach meta-analyses played an important role in the development of a new Rorschach system—the Rorschach Performance Assessment System (R-PAS; Meyer, Viglione, Mihura, Erard, & Erdberg, 2011)—which is also described in this issue (Meyer & Eblin, 2012).

The Relationship Between Self-Report and Behavior and the Need for More than One Method of Assessment

As previously noted, although self-report is currently the most popular method in psychological assessment, a large body of research in personality and social cognition shows that there are often fairly small associations between introspected (self-reported) characteristics and behavior. Said another way, research shows that discrepancies frequently exist between what people say about themselves and what they do (e.g., Nisbett & Wilson, 1977; Wilson & Dunn, 2004).

The R-PAS Manual, web-based scoring service, and other R-PAS products and services are sold by Rorschach Performance Assessment System LLC, in which the author has a financial interest.

J. L. Mihura (✉)
Department of Psychology, University of Toledo,
Mail Stop 948, Toledo, OH 43606, USA
e-mail: joni.mihura@utoledo.edu

Regarding research relevant to personality assessment, a meta-analysis by Greenwald, Poehlman, Uhlmann, and Banaji (2009) found a moderate association between personality characteristics assessed implicitly (via the implicit association test) and by behavior (r=0.28, k=24), but a smaller association between implicitly assessed and self-reported characteristics (r=0.17, k=21). For adult personality disorders, a meta-analysis by Klonsky, Oltmanns, and Turkheimer (2002) found a medium association between self and informant ratings when assessed dimensionally (r=0.36, k=11) and a small association when assessed categorically (r=0.14, k=6). Based on data in Spangler's (1992) meta-analysis, Meyer et al. (2001) show that spontaneous achievement behaviors (e.g., job performance) were more strongly predicted by implicit measures (storytelling narratives; r=0.22, k=82) than by self-report (r=0.15, k=104). Furthermore, there was only a small association between implicitly assessed and self-reported achievement (r=0.09, k=36). Finally, a recent meta-analysis by Cyders and Coskunpinar (2011) found a small association between self-reported and behaviorally assessed impulsivity (r=0.10, k=608).

Thus, what people say is true about their personal characteristics often bears little association to these same qualities as assessed by behavioral performance tasks, though the latter typically show stronger relations to other externally assessed criteria. In the child and adolescent assessment research literature, where it is common practice to collect ratings of psychological characteristics from various sources (e.g., child/adolescent, parents, teachers, clinicians, peers), validity effect sizes (r's) are consistently around 0.20–0.35 when comparing one source of information to another (Achenbach, McConaughy, & Howell, 1987; Meyer, 2002). Based on a large-scale review of meta-analyses by Meyer et al. (2001), the guidelines for expected effect sizes in psychological assessment indicate that the middle third of effect sizes ranges from r=0.21 to 0.33 (Hemphill, 2003). Examples of validity coefficients within this range were (a) continuous performance tests' ability to differentiate between ADHD and controls, (b) the Hare Psychopathy Checklist's ability to predict recidivism, and (c) the ability of WISC distractibility subscales to detect learning disability diagnosis. Examples of validity coefficients in the bottom third of effect sizes (r<0.21) were (a) the Minnesota Multiphasic Personality Inventory (MMPI; Butcher et al., 1989; Hathaway & McKinley, 1943)[1] validity scales' ability to detect known or suspected underreported psychopathology and (b) the relationship between attention and concentration test scores and residual mild head trauma.

Based on findings such as these, empirical arguments have been made for a multi-method approach to assessment practice as well as suggestions about how to implement this approach in practice (e.g., Achenbach, Krukowski, Dumenci, & Ivanova, 2005; Erdberg, 2008; Kraemer et al., 2003; Meyer, 2002). The current article proposes the Rorschach as a viable assessment method to add to a client's self-report as assessed by an interview or a questionnaire. In order to present this case, it is necessary to address the validity of the Rorschach itself as a method of assessment. However, in doing so, we encounter the challenge of evaluating construct validity itself. Only after evaluating this situation can we turn to evaluating the combination of different methods of assessment, followed by the implications of incremental validity studies and malingering.

Is the Rorschach a Valid Method of Assessment?

Although many psychologists believe that the Rorschach is an invalid assessment method (e.g., Herbert, 2009), the research does not support this belief (Hiller, Rosenthal, Bornstein, Berry, & Brunell-Neuleib, 1999; Meyer et al., 2001; Meyer & Archer, 2001; Mihura et al., 2012). In fact, even the Rorschach's staunchest critics do not discredit the whole test, but recognize that it has valid scales. As Garb, Wood, Lilienfeld, and Nezworski (2005) stated, "Even psychologists who are critical of the test generally agree that some scores from various Rorschach systems can be helpful for detecting thought disorder, diagnosing mental disorders characterized by thought disorder, measuring dependency, and predicting treatment outcome" (p. 105). Instead, as articulated in Garb's (1999) article entitled "Call for a Moratorium on the Use of the Rorschach Inkblot Test in Clinical and Forensic Settings," the major problem with using the Rorschach in practice is described as the need to determine "…which Rorschach scores are valid and which ones are invalid" (p. 313). Therefore, the formal argument is not that the Rorschach itself is invalid but that it has a myriad of individual scales, each of which needs validation.

An Essential Sidebar: What Is Construct Validity and Why Should I Care?

The argument that psychological tests and other assessment methods (e.g., interviews, chart reviews) need to be evaluated for their validity is indisputable. However, what constitutes construct validity is more complicated than it initially appears. As is often the case in controversial areas of psychology, the problem is not that only one person or school of thought has irrefutable insight but that validating any measure of a psychological construct is complex. In order to understand why assessing a construct like "anxiety" is so complex, it can help to take a step back and consider

[1] Because many studies in this article include more than one edition of a test, the edition will not be reported unless the issue refers to a specific edition of the test.

the term *construct*. As defined by Merriam-Webster, a construct is "something constructed by the mind." By definition, there are no tangible preexisting psychological constructs "out there" to measure.

Why should this matter to us?

To illustrate this point, the reader can probably imagine participating in a DSM panel that argues for one definition of a disorder over another—such as whether posttraumatic stress disorder (PTSD) is an anxiety disorder or not (e.g., Friedman et al., 2011)—or that even challenges the validity of the disorder itself (e.g., Rosen, Lilienfeld, Frueh, McHugh, & Spitzer, 2010). The reader might also imagine talking to a psychoanalyst, a behaviorist, a physician, or any person off the street about their conception of "trauma." To assess constructs like anxiety, trauma, and PTSD, we have to agree on what it is and how we know it when we see it. But who decides this, and how?

To even begin to answer that question, a succinct summary of the classic writings on construct validity can be useful. Construct validity classics introduced basic concepts such as the *nomological network* (Cronbach & Meehl, 1955) and the *multi-trait/multi-method matrix* (Campbell & Fiske, 1959). These classic articles emphasize several common key elements: (a) There must be a coherent theory with interrelated constructs that are measureable ("observable"); (b) the validation of these constructs must use different methods (because associations based on one method more accurately represent reliability, not validity); and (c) these interrelations must include evidence (observations) that the target construct is associated with the things that it should be (convergent validity) and not with the things that it should not be (discriminant validity). In general, we need to investigate more than one trait (multi-trait) in more than one way (multi-method). And, to return to where we started, all of this must be imbedded in theory (nomological network).

What does this mean for the present topic?

Popular Broadband Methods of Assessing Psychopathology

At the very least, the construct validity literature argues that it is necessary to use more than one method of assessment to achieve validity on constructs such as depression, anxiety, and psychosis. As previously noted, self-report, either by interview or questionnaire, is the most popular assessment method in psychology (Archer et al., 2006; Norcross & Karpiak, 2012). For psychological injury cases, across all psychological tests, Boccaccini and Brodsky (1999) found that 100 % of respondents used the MMPI, followed by the Wechsler Intelligence scales (54 %; Wechsler, 1981, 1997), Millon Clinical Multiaxial Inventory (50 %; Millon, 1987, 1994), Rorschach (41 %), Trauma Symptom Inventory (33 %; Briere, 1995), Beck Depression Inventory (31 %; Beck, Steer, & Brown, 1996), and Structured Interview of Reported Symptoms (26 %; Rogers, Bagby, & Dickens, 1992). On average, psychological injury assessors reported that they used four or five instruments per evaluation. Of the tests reported in Boccaccini and Brodsky's survey, the Rorschach and TAT were the only psychopathology measures that would qualify as a different method of assessment than self-report, and the TAT was used by considerably fewer examiners than the Rorschach (9 vs. 41 %). In contrast to the Rorschach, the TAT did not meet the main criterion deemed important by psychological injury assessors for using a test: the availability of norms. The TAT has some scales with research support; however, these are not accompanied by norms, and clinicians are not typically trained in their use (Groth-Marnat, 2009). Therefore, the Rorschach was the only measure of psychopathology used by psychological injury assessors that was not based on self-report and that also includes (a) standard administration, (b) at least some scales with reliability and validity support, and (c) the availability of norms.

Construct Validity for Individual Scales on the MMPI and Rorschach

Thousands of research studies have been conducted with the Rorschach and MMPI. Although this expanse of research is beneficial, summarizing such a large body of literature per scale for multi-scale tests like the Rorschach and MMPI-2 is a daunting task. In published critiques of test validity, it is often assumed that self-report tests are inherently valid, while performance tests are inherently suspect. For example, Garb et al. (2005) stated, "It is striking that focused meta-analyses have been conducted for so few Rorschach scores" (p. 106), implying that these exist for self-report measures like the MMPI. However, very little professional debate about the MMPI's validity has taken place. The Rorschach has stolen the limelight on this issue.

The validity of the Rorschach and MMPI has been evaluated using global meta-analyses, which aggregate findings across scales and across studies to provide one effect size that represents the overall validity of the test. These studies find that the overall validity of the Rorschach and MMPI is very similar. Meyer and Archer (2001) summarized the effects of previous global meta-analyses of MMPI and Rorschach validity (Atkinson, 1986; Hiller et al., 1999; Parker, Hanson, & Hunsley, 1988) and substantially expanded and reanalyzed the widely cited Parker et al. (1988) dataset to address criticisms about the initial study (Garb, Florio, & Grove, 1998; Hiller et al., 1999). Global validity for the Rorschach was r=0.32 across 523 hypothesized relationships and r=0.29 across 73 samples (N=6,520); global validity for the MMPI was r=0.32 across 533

hypothesized relationships and r=0.29 across 85 samples (N=15,985). However, despite showing equivalent global validity, the calls for focused meta-analyses and a moratorium on its use have focused on the Rorschach, not the MMPI.

MMPI Construct Validity Meta-analyses

Regarding construct validity meta-analyses for individual scales on the MMPI, Gross, Keyes, and Greene (2000) evaluated two depression scales—*Scale 2* (*D*) and the *Depression* (*DEP*) scale—and found a medium effect size association (r=0.35, k=25) with a primary diagnosis of depression. At this writing, no other construct validity meta-analyses have been published for any of the popular MMPI scales.[2,3] Otherwise, the closest fit is McGrath and Ingersoll's (1999a, 1999b) extensive review and meta-analyses of MMPI code types which found that across 19 different code types, the average validity effect size was only r=0.07 (N=8,614). The MMPI code types with the highest association to validity criteria were *1–2–3* (r=0.18), followed by *2–7–8* (r=0.16). These findings speak only to the construct validity of MMPI code types, not the individual scales whose overall validity was the focus of the previously described global meta-analyses. Nevertheless, when I searched the *Social Sciences Citation Index* for cited references, it was striking to see there were *zero* articles over the intervening 13 years that critiqued the MMPI code types by citing McGrath and Ingersoll's findings.

Rorschach Construct Validity Meta-analyses

Recently, the status of construct validity for individual Rorschach scales has advanced with the meta-analyses of Mihura et al. (2012) of individual Rorschach CS variables. Previously, however, the test was not lagging in comparison to the MMPI or other multi-scale tests. Published construct validity meta-analyses existed for five Rorschach variables (Bornstein, 1999; Diener, Hilsenroth, Shaffer, & Sexton, 2011; Jørgensen, Andersen, & Dam, 2000, 2001; Meyer & Handler, 1997).

Regarding the meta-analyses of Mihura et al. (2012), their methodology started with a systematic review of the literature for 65 CS (Exner, 2003) variables; data were sufficient to conduct meta-analyses for 53 variables. The overall validity effect size across individual scales was similar to that found in previous global meta-analyses of Rorschach test validity (r=0.27, k=770). The distribution of validity effect sizes mirrored that found across meta-analyses of psychological test validity more generally (Hemphill, 2003; Meyer et al., 2001).

In comparison to the CS test manual, the meta-analyses of Mihura et al. (2012) reported findings from significantly more peer-reviewed CS validity studies (nine times the number cited in the test manual) and were less globally supportive of its variables. There was a wide variation in how frequently the Rorschach variables were studied (0 to 33 times). Using Hemphill's (2003) guidelines for effect sizes in psychological assessment, of the 53 variables that qualified for inclusion in their meta-analyses, 30 were categorized as having good (r≥0.21, p<0.05, FSN≥10) or excellent (r≥0.33, p<0.001) validity support. Most of the supported variables, or slight variations of them, are included in Rorschach systems that predate their inclusion in the CS. All but 1 of the 30 variables with good to excellent support are included in R-PAS.[4]

The nature of the Rorschach variables[5] with the strongest validity support in the meta-analyses of Mihura et al. (2012) were those that target cognitive and perceptual processes, particularly variables that assess thinking disturbance and reality testing (e.g., *Perceptual-Thinking Index* [*Thought and Perception Composite*], *Form Quality* and *Cognitive scores*, e.g., *X-%* [*FQ-%*], *Lvl2* [*SevCog*], *Popular*), followed by variables that assess psychological resources and mental complexity (e.g., *M*, *EA* [*MC*], *DQ+*[*Synthesis*], *Blends*). The effect sizes for these specific Rorschach variables were r>0.30. In particular, the *Perceptual-Thinking Index* showed a strong ability to detect psychotic disorders within a clinical sample (r=0.47, k=9). Other variables with excellent validity support were those that assess suicide risk (*Suicide Constellation* [*Suicide Risk Composite*]), distressing internal experiences or reactions to stressors (*SumShading* [*YTVC*'], *m*), and preoccupations with body vulnerability or its functioning (*An+Xy* [*An*]). The interested reader should consult this article to understand the methodology, such as the validity criteria used for each of the Rorschach variables, and to obtain a copy of the table cataloguing the strength of the evidence for each of the variables in their meta-analyses.

Other construct validity meta-analyses have been published for individual Rorschach scales that are not in the CS (Exner, 2003). Bornstein's (1999) construct validity meta-analysis for the *Rorschach Oral Dependency* scale (ROD; Masling, Rabie, & Blondheim, 1967) found a medium effect size association (r=0.37, k=21) with externally assessed

[2] This search was conducted on PsycINFO and PubMed for articles written in English.

[3] An exception is meta-analyses for the MMPI validity scales, of which there are several and will be addressed later.

[4] *Organizational Frequency* (*Zf*) was not included in R-PAS due to its redundancy with other variables in the system.

[5] Because the purpose of the present article was to inform current and future decisions, I include the associated R-PAS variable names in brackets when discussing Rorschach variables that are included in R-PAS.

validity criteria. The ROD is a method of coding the Rorschach that focuses on language that falls into two broad categories: (a) oral (e.g., drinking, talking, eating) and (b) dependency (e.g., baby birds, a begging dog). The ROD had been renamed *Oral Dependency Language* (ODL) in R-PAS to emphasize its reliance on language instead of imagery. Additionally, Diener et al. (2011) conducted a construct validity meta-analysis for the *Ego Impairment Index* (Perry & Viglione, 1991) as a measure of psychiatric severity and found a medium effect size relationship (r=0.29, k=59) to validity criteria. Unlike the meta-analyses by Mihura et al. (2012) and Bornstein (1999), Diener et al. did not report the overall effect size for externally assessed validity criteria, but they did report data showing that when limited to self-reported characteristics, the validity effect size drops to r=0.10 (k=4).

Rorschach Performance Assessment System

Rorschach validity meta-analyses by Mihura et al. (2012) and others (e.g., Bornstein, 1999; Diener et al., 2011) have helped form the foundation for a new Rorschach system (i.e., R-PAS; Meyer et al., 2011), described in detail by Meyer and Eblin (2012).[6] In addition to a strong base of empirical support for its validity, this new Rorschach system includes (a) updated administration procedures to address the problem of widely variable numbers of responses, (b) internationally based normative reference values, and (c) a scoring program with output using percentile-based standard scores. Multiple translations of the R-PAS manual and scoring program are currently underway. The development of R-PAS has also been guided by other Rorschach construct validity meta-analyses that are at various stages of publication. These include meta-analyses for *Mutuality of Autonomy* (Graceffo, Mihura, & Meyer, 2012), *Aggressive Content* (Kiss, Mihura, & Meyer, 2012), and an update of Bornstein's (1999) construct validity meta-analysis for the ROD [ODL] (Walsh, Mihura, & Meyer, 2012).

Multi-trait/Multi-method Assessment and Incremental Validity

An obvious reason that clinicians include additional psychological tests or scales in their evaluations is to assess for different content areas (e.g., depression, intelligence, personality disorder, malingering). In general, adding relevant information from different content areas should provide incremental validity in obtaining an overall picture for the particular problem area one is trying to assess. However, another way to provide incremental validity is to use different *methods* to assess the same or very similar constructs. For example, psychosis can be assessed by (a) the client's self-report (interview or questionnaire); (b) performance tests of psychopathology like the Rorschach; (c) formal or informal measures of observer report (e.g., spouse, clinician); and (d) behavioral observation. Although the Rorschach has been classified as a performance test (Meyer & Kurtz, 2006), it also comprised a variety of more specific assessment methods. For example, the methods used to assess psychosis rely heavily on the accuracy and conventionality of one's perceptions (*Form Quality* variables) and the coherence and plausibility of one's communication and visual representations (*Critical Special Scores* [*Cognitive Scores*]). Examples of other methods on the Rorschach include those based on (a) content (e.g., *Sex*), (b) thematic imagery (e.g., *Morbid*), (c) language-based representations (*Oral Dependency Language*), and (d) attentiveness to features of the perceptual environment (e.g., *Diffuse Shading*).

The Rorschach has been challenged to provide incremental validity over information obtained by self-report tests (Lilienfeld, Wood, & Garb, 2000; Meyer & Viglione, 2008). That is, unless the Rorschach can add information to that provided by broadband self-report tests like the MMPI, which require less of the clinician's time (Camara et al., 2000), then it could be challenging to defend its use. In this regard, the meta-analyses of Mihura et al. (2012) also provide important information about incremental validity. Although their meta-analyses did not lend themselves to formal tests of incremental validity, when their results are considered in combination with published MMPI validity meta-analyses, their moderator analyses speak to the incremental validity of the Rorschach. That is, if two measures, such as the Rorschach and MMPI, are associated with the same criterion variable, but the two measures are not associated with each other, then, logically and statistically, they must provide incremental validity when jointly predicting that criterion variable. Regarding the first two parts of this logical formula, meta-analyses have supported the general validity of the MMPI and Rorschach in predicting construct-relevant criteria (Atkinson, 1986; Hiller et al., 1999; Meyer & Archer, 2001; Mihura et al., 2012; Parker et al., 1988). Although Mihura and colleagues found a medium association between the Rorschach and relevant externally assessed criterion variables (r=0.27, k=770), the relationship of Rorschach variables to targeted or similarly named MMPI scales was minimal (r=0.07, k=212).

Therefore, in general, valid Rorschach scores should provide incremental validity over MMPI scores when predicting relevant criteria. Other research supports this logic. When

[6] Four of its developers were members of John Exner's Rorschach Research Council (RRC), and two RRC members were also authors of the CS validity meta-analysis of Mihura et al. (2012).

predicting psychotic disorders, relevant scales from the Rorschach show incremental validity over those on the MMPI (Dao, Prevatt, & Horne, 2008; Meyer, 2000; Ritsher, 2004). Other Rorschach variables that show incremental validity over relevant self-report methods include the *Suicide Constellation*, *Morbid*, and *Inanimate Movement* (Blasczyk-Schiep, Kazén, Kuhl, & Grygielski, 2011; Fowler, Piers, Hilsenroth, Holdwick, & Padawer, 2001; Hartmann & Grønnerød, 2009; Hartmann, Sunde, Kristensen, & Martinussen, 2003; see also Meyer & Viglione, 2008; Viglione & Hilsenroth, 2001).

It is important to understand how the degree of correspondence between the method used by the Rorschach and the criterion variable might moderate the strength of their association. For example, it is possible that Rorschach scores based on language or content would show stronger correspondence to self-report methods as they also rely on language and content. Other variables that are not test-specific may also moderate this association, such as the context of the assessment and the respondent's willingness and ability to access the relevant verbal information about himself or herself (e.g., Berant, Newborn, & Orgler, 2008; Meyer, 1996; Weiner, 2005). More research is needed to hone understanding of the test-, person-, and situation-specific characteristics that contribute to the magnitude of the statistical relationship between different test scales and criterion variables. In the meantime, practitioners should be familiar with similarities and differences between different types of methods and reasonably consider the applicability of each to their particular case (e.g., self-awareness, visual skills, culture, etc.).

The Assessment Method and Dissimulation on the Rorschach and MMPI

Although a thorough discussion of this topic is beyond the scope of the present article, the method of assessment is also important in evaluating the potential for dissimulation. Research on dissimulation and the Rorschach exists (for a review, see Ganellen, 2008; Sewell, 2008), but there is not as much research or as clearly explicated models as there is for the MMPI (Rogers, 2008; Rogers, Sewell, Martin, & Vitacco, 2003). The existing Rorschach malingering research is mixed regarding an examinee's ability to successfully simulate different disorders, such as psychosis, depression, PTSD, and chronic pain (Batchelder, 1994; Caine, Kinder, & Frueh, 1995; Crawford, 2004; Frueh & Kinder, 1994; McDougall, 1996; Meisner, 1988; Miles, 1988; Netter & Viglione, 1994; Overton, 1984; Perry & Kinder, 1992; Spana, 1992).

In contrast, the Rorschach malingering research is clearer in showing that examinees are more likely to focus on the *content* of the response vs. other aspects like form quality or cognitive scores. These malingered contents have been called "dramatic contents," and they contain themes such as morbidity, sex, aggression, blood, fire, and explosions. Increases in dramatic content have been shown to occur during attempts to malinger psychosis (Perry & Kinder, 1992; Seamons, Howell, Carlisle, & Roe, 1981; Spana, 1992), depression (Brock, 2007), and PTSD (Frueh & Kinder, 1994). Furthermore, the malingering groups in these studies typically report more dramatic contents than do patients with the actual disorder (Brock, 2007; Frueh & Kinder, 1994; Perry & Kinder, 1992). A *Dramatic Content* scale, based on formally coded Rorschach contents, has been developed and successfully used to detect malingering in some studies (Brock, 2007; Ganellen, Wasyliw, Haywood, & Grossman, 1996; McDougall, 1996).[7]

For detecting psychosis, there is significantly more overlap between validity indicators and psychopathology on the MMPI than on the Rorschach. On the MMPI, scales designed to assess validity and those designed to assess psychosis each focus on endorsing pathological symptom content. In contrast, on the Rorschach, the method used by *Dramatic Contents* and the methods used by scales specifically assessing for psychosis are more dissimilar. *Dramatic Contents* focuses on reports of seeing pathological content, while Rorschach measures that target psychotic processes focus on the (a) accuracy and conventionality of perceptions and (b) the coherence and plausibility of communication and visual representations. In statistical accordance with these method differences, the association between MMPI indicators of validity and psychosis (*Scale 8* and the *F scale*) is $r=0.70$ in normative samples (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989), and the association between the Rorschach indicators of validity and psychosis (R-PAS *Dramatic Contents* and *Thinking and Perception Composite*) is only $r=0.12$ (calculated from data in Meyer et al., 2011). The greater independence of malingering and psychosis markers on the Rorschach relative to the MMPI should yield gains in applied practice when trying to accurately assess either construct.

The other key pieces to this puzzle are the abilities of the MMPI and Rorschach to detect specific psychiatric disorders. For studies in which the diagnostician does not have access to the test results (i.e., there is no criterion contamination), the meta-analyses of Mihura et al. (2012) found that the *Perceptual-Thinking Index* differentiated psychotic patients from other patients at $r=0.47$ ($k=9$). Although presently there are no published meta-analyses on the

[7] The *Dramatic Content* scale on the Rorschach includes *Aggressive Movement*, *Morbid*, *Blood*, *Sex*, *Explosions*, and *Fire*. R-PAS uses the *Critical Contents* score, which differs from *Dramatic Contents* only in that it also includes the *Anatomy* score.

MMPI's ability to detect psychosis, a dissertation (Zaleswki, 1989) whose meta-analytic findings are summarized by Meyer and Archer (2001; see Table 1) stated that the MMPI's ability to differentiate patients with psychosis from patients with depression is r=0.12. More recent studies without criterion contamination indicate that Zaleski's (1989) findings are not underestimates (Sellbom, Bagby, Kushner, Quilty, & Ayearst, 2012; Wetzler, Khadivi, & Moser, 1998; Wetzler & Marlowe, 1993). Most recently, Sellbom et al. (2012) found that the newer MMPI-2-RF's *RC8* scale differentiated patients diagnosed with schizophrenia from those diagnosed with depression at r=0.10 (d= 0.29, N=477).

To complete this Rorschach–MMPI method picture, malingering studies have found a significant relationship between the Rorschach *Dramatic Contents* and the MMPI *F scale* (Brock, 2007, r=0.32; Ganellen et al., 1996, r=0.45). This magnitude of association is notably higher than that found by Mihura et al. (2012) between the Rorschach and MMPI (r=0.07). Although not conclusive, a higher degree of association is nevertheless in keeping with the expectation that the degree of correspondence between the method used by the Rorschach and the criterion variable (i.e., in this case, the endorsed or reported content) might moderate the strength of their association.

It is important to note that other Rorschach content scales that assess psychopathology have a very strong overlap with *Dramatic Contents*, namely, the R-PAS *Critical Contents*,[8] which was designed as a measure of primitive content and is included in the *Ego Impairment Index*, and the *Trauma Content Index* (Armstrong & Loewenstein, 1990). When these constructs are the focus of assessment under conditions conducive to dissimulation, the examiner should not rely solely on Rorschach content scales but instead should focus on other methods within the test to assess the relevant constructs. As with any test, the examinee's history and the context of the assessment should be carefully considered to sort through the different possibilities (see Ganellen, 2008; Meyer et al., 2011). The value of performance-based personality tests should be actively considered in a practice area such a personal injury assessment in which exaggerated symptoms are fairly common (see Mittenberg, Patton, Canyock & Condit, 2002).

Conclusions

The data clearly speak to the importance of method in conducting psychological assessments. Some particular topics discussed in this article should be examined in greater depth and breadth, both conceptually and empirically. But the main point is clear: Applied practice should not use self-report as its only assessment method. The MMPI and Rorschach were chosen as examples because they are the two most popular tests in clinical and forensic settings that use different methods of assessment. However, the same logic that is used with these tests' methods can be applied to other test methods that are popular in specialty areas of psychological assessment. For example, disorders that rely heavily on the findings of cognitive assessment, such as ADHD, commonly call for the use of performance-based cognitive tests. In addition, observer ratings (e.g., parent, teacher, clinician) are commonly used in assessments with children and adolescents, and discrepancies between these methods of assessment that are designed to target the same symptoms have been discussed in that literature (e.g., Achenbach et al., 1987; Kraemer et al., 2003). For the psychologist in practice, the basic take-home message is that the assessment method must be taken into consideration to understand psychological constructs, and the assessment method should be a major decisive factor when choosing tests, writing reports, and more generally conceptualizing the case.

[8] Similar to *Dramatic Content*, *Critical Contents* also shows very small associations with the *Thinking and Perception Composite* variable in the R-PAS reference sample (r=0.07).

References

Achenbach, T. M., Krukowski, R. A., Dumenci, L. & Ivanova, M. Y. (2005). Assessment of adult psychopathology: Meta-analyses and implications of cross-informant correlations. *Psychological Bulletin, 131*, 361–382.

Achenbach, T. M., McConaughy, S. H. & Howell, C. T. (1987). Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin, 101*, 213–232.

Archer, R. P., Buffington-Vollum, J. K., Stredny, R. V. & Handel, R. W. (2006). A survey of psychological test use patterns among forensic psychologists. *Journal of Personality Assessment, 87*, 84–94.

Armstrong, J. G. & Loewenstein, R. J. (1990). Characteristics of patients with multiple personality and dissociative disorders on psychological testing. *The Journal of Nervous and Mental Disease, 178*, 448–454.

Atkinson, L. (1986). The comparative validities of the Rorschach and MMPI: A meta-analysis. *Canadian Psychology, 27*, 238–247.

Bargh, J. A. & Chartrand, T. L. (1999). The unbearable automaticity of being. *American Psychologist, 54*, 462–479.

Batchelder, K. M. (1994). *Detecting malingered psychotic symptoms with the Rorschach projective technique*. Doctoral dissertation. Available from ProQuest Dissertations and Theses database (UMI no. 9502648).

Beck, A. T., Steer, R. A. & Brown, G. (1996). *Beck Depression Inventory manual* (2nd ed.). San Antonio, TX: Psychological Corporation.

Berant, E., Newborn, M. & Orgler, S. (2008). Convergence of self-report scales and Rorschach indexes of psychological distress: The moderating role of self-disclosure. *Journal of Personality Assessment, 90*, 36–43.

Blasczyk-Schiep, S., Kazén, M., Kuhl, J. & Grygielski, M. (2011). Appraisal of suicide risk among adolescents and young adults through the Rorschach test. *Journal of Personality Assessment, 93*, 518–526.

Boccaccini, M. T. & Brodsky, S. L. (1999). Diagnostic test use by forensic psychologists in emotional injury cases. *Professional Psychology: Research and Practice, 30*, 253–259.

Bornstein, R. F. (1999). Criterion validity of objective and projective dependency tests: A meta-analytic assessment of behavioral prediction. *Psychological Assessment, 11*, 48–57.

Briere, J. (1995). *The trauma symptom inventory professional manual*. Odessa, FL: Psychological Assessment Resources.

Brock, K. D. (2007). *Assessment of malingered depression and pain with the MMPI-2 and Rorschach Inkblot Method*. Doctoral dissertation. Available from ProQuest Dissertations and Theses database (UMI no. 3297906).

Butcher, J. N., Dahlstrom, W. G., Graham, J. R., Tellegen, A. & Kaemmer, B. (1989). *The Minnesota Multiphasic Personality Inventory-2 (MMPI-2): Manual for administration and scoring*. Minneapolis, MN: University of Minnesota Press.

Caine, S. L., Kinder, B. N. & Frueh, B. C. (1995). Rorschach susceptibility to malingered depressive disorders in adult females. In J. N. Butcher & C. D. Spielberger (Eds.), *Advances in personality assessment* (Vol. 10, pp. 165–186). Hillsdale, NJ: Lawrence Erlbaum.

Camara, W. J., Nathan, J. S. & Puente, A. E. (2000). Psychological test usage: Implications in professional psychology. *Professional Psychology: Research and Practice, 31*, 141–154.

Campbell, D. T. & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait–multimethod matrix. *Psychological Bulletin, 56*, 81–105.

Crawford, E. F. (2004). *Multi-method assessment of malingered depression and physical disability using the MMPI-2 and Rorschach inkblot method*. Doctoral dissertation. Available for ProQuest Dissertations and Theses database (UMI no. 3131528).

Cronbach, L. J. & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin, 52*, 281–302.

Cyders, M. A. & Coskunpinar, A. (2011). Measurement of constructs using self-report and behavioral lab tasks: Is there overlap in nomothetic span and construct representation for impulsivity? *Clinical Psychology Review, 31*, 965–982.

Dao, T. K., Prevatt, F. & Horne, H. L. (2008). Differentiating psychotic patients from nonpsychotic patients with the MMPI-2 and Rorschach. *Journal of Personality Assessment, 90*, 93–101.

Diener, M. J., Hilsenroth, M. J., Shaffer, S. A. & Sexton, J. E. (2011). A meta-analysis of the relationship between the Rorschach Ego Impairment Index (EII) and psychiatric severity. *Clinical Psychology & Psychotherapy, 18*, 464–485.

Erdberg, P. (2008). Multimethod assessment as a forensic standard. In C. B. Gacono, F. B. Evans, N. Kaser-Boyd & L. A. Gacono (Eds.), *The handbook of forensic Rorschach assessment* (pp. 461–566). New York: Routledge.

Exner, J. E. (2003). *The Rorschach: A comprehensive system* (4th ed.). New York: Wiley.

Fowler, J. C., Piers, C., Hilsenroth, M. J., Holdwick, D. J. & Padawer, J. R. (2001). The Rorschach suicide constellation: Assessing various degrees of lethality. *Journal of Personality Assessment, 76*, 333–351.

Friedman, M. J., Resick, P. A., Bryant, R. A., Strain, J., Horowitz, M. & Spiegel, D. (2011). Classification of trauma and stressor-related disorders in DSM-5. *Depression and Anxiety, 28*, 737–749.

Frueh, B. C. & Kinder, B. N. (1994). The susceptibility of the Rorschach inkblot test to malingering of combat-related PTSD. *Journal of Personality Assessment, 62*, 280–298.

Ganellen, R. J. (2008). Rorschach assessment of malingering and defensive response sets. In C. B. Gacono, F. B. Evans, N. Kaser-Boyd & L. A. Gacono (Eds.), *The handbook of forensic Rorschach assessment* (pp. 89–119). New York: Routledge.

Ganellen, R. J., Wasyliw, O. E., Haywood, T. W. & Grossman, L. S. (1996). Can psychosis be malingered on the Rorschach? An empirical study. *Journal of Personality Assessment, 66*, 65–80.

Garb, H. N. (1999). Call for a moratorium on the use of the Rorschach Inkblot Test in clinical and forensic settings. *Assessment, 6*, 313–317.

Garb, H. N., Florio, C. M. & Grove, W. M. (1998). The validity of the Rorschach and the Minnesota Multiphasic Personality Inventory: Results from meta-analyses. *Psychological Science, 9*, 402–404.

Garb, H. N., Wood, J. M., Lilienfeld, S. O. & Nezworski, M. T. (2005). Roots of the Rorschach controversy. *Clinical Psychology Review, 25*, 97–118.

Graceffo, R. A., Mihura, J. L., & Meyer, G. M. (2012). Mutuality of Autonomy Scale: A systematic review of the validity literature. In R. Graceffo (Chair), *Explorations into narcissism, aggression, dependency, and object representations with the Rorschach*. Integrated paper session conducted at the Annual Meeting of the Society for Personality Assessment, Chicago, IL.

Greenwald, A. G., Poehlman, T. A., Uhlmann, E. L. & Banaji, M. R. (2009). Understanding and using the Implicit Association Test: III. Meta-analysis of predictive validity. *Journal of Personality and Social Psychology, 97*, 17–41.

Gross, K., Keyes, M. D. & Greene, R. L. (2000). Assessing depression with the MMPI and MMPI-2. *Journal of Personality Assessment, 75*, 464–477.

Groth-Marnat, G. (2009). Thematic Apperception Test. *Handbook of psychological assessment* (pp. 447–484, 5th ed.). New York: Wiley.

Hartmann, E. & Grønnerød, C. (2009). Rorschach variables and Big Five scales as predictors of military training completion: A replication study of the selection of candidates to the Naval Special Forces in Norway. *Journal of Personality Assessment, 91*, 254–264.

Hartmann, E., Sunde, T., Kristensen, W. & Martinussen, M. (2003). Psychological measures as predictors of military training performance. *Journal of Personality Assessment, 80*, 87–98.

Hathaway, S. R. & McKinley, J. C. (1943). *The Minnesota Multiphasic Personality Inventory*. Minneapolis, MN: University of Minnesota Press.

Hemphill, J. F. (2003). Interpreting the magnitudes of correlation coefficients. *American Psychologist, 58*, 78–79.

Herbert, W. (2009). The problem with the Rorschach: It doesn't work. *Newsweek*. Retrieved from http://www.thedailybeast.com/newsweek/2009/07/30/analyze-this.html. Accessed 21 July 2012.

Hiller, J. B., Rosenthal, R., Bornstein, R. F., Berry, D. T. R. & Brunell-Neuleib, S. (1999). A comparative meta-analysis of Rorschach and MMPI validity. *Psychological Assessment, 11*, 278–296.

Jørgensen, K., Andersen, T. J. & Dam, H. (2000). The diagnostic efficiency of the Rorschach Depression Index and the Schizophrenia Index: A review. *Assessment, 7*, 259–280.

Jørgensen, K., Andersen, T. J. & Dam, H. (2001). "The diagnostic efficiency of the Rorschach Depression Index and the Schizophrenia Index: A review": Erratum. *Assessment, 8*, 355.

Kiss, A. B., Mihura, J. L., & Meyer, G. J. (2012). A meta-analytic review of the AGC score and its relationship to real life violence. In R. Graceffo (Chair), *Explorations into narcissism*, *aggression*, *dependency*, *and object representations with the Rorschach*. Integrated paper session conducted at the Annual Meeting of the Society for Personality Assessment, Chicago, IL.

Klonsky, E. D., Oltmanns, T. F. & Turkheimer, E. (2002). Informant-reports of personality disorder: Relation to self-reports and future research directions. *Clinical Psychology: Science and Practice, 9*, 300–311.

Kraemer, H. C., Measelle, J. R., Ablow, J. C., Essex, M. J., Boyce, W. T. & Kupfer, D. J. (2003). A new approach to integrating data from multiple informants in psychiatric assessment and research: Mixing and matching contexts and perspectives. *The American Journal of Psychiatry, 160*, 1566–1577.

Lilienfeld, S. O., Wood, J. M. & Garb, H. N. (2000). The scientific status of projective techniques. *Psychological Science in the Public Interest, 1*, 27–66.

Masling, J., Rabie, L. & Blondheim, S. H. (1967). Obesity, level of aspiration, and Rorschach and TAT measures of oral dependence. *Journal of Consulting Psychology, 31*, 233–239.

McDougall, A. L. (1996). *Rorschach indicators of simulated schizophrenia*. Doctoral dissertation. Available from ProQuest Dissertations and Theses database (UMI no. 9623516).

McGrath, R. E. & Ingersoll, J. (1999a). Writing a good cookbook: I. A review of MMPI high-point code system studies. *Journal of Personality Assessment, 73*, 149–178.

McGrath, R. E. & Ingersoll, J. (1999b). Writing a good cookbook: II. A synthesis of MMPI high-point code system study effect sizes. *Journal of Personality Assessment, 73*, 179–198.

Meisner, S. (1988). Susceptibility of Rorschach distress correlates to malingering. *Journal of Personality Assessment, 52*, 564–571.

Meyer, G. J. (1996). The Rorschach and MMPI: Toward a more scientifically differentiated understanding of cross-method assessment. *Journal of Personality Assessment, 67*, 558–578.

Meyer, G. J. (2000). On the science of Rorschach research. *Journal of Personality Assessment, 75*, 46–81.

Meyer, G. J. (2002). Implications of information-gathering methods for a refined taxonomy of psychopathology. In L. E. Beutler & M. Malik (Eds.), *Rethinking the DSM: Psychological perspectives* (pp. 69–105). Washington, DC: American Psychological Association.

Meyer, G. J. & Archer, R. P. (2001). The hard science of Rorschach research: What do we know and where do we go? *Psychological Assessment, 13*, 486–502.

Meyer, G. J., & Eblin, J. J. (2012). An overview of the Rorschach Performance Assessment System (R-PAS). *Psychological Injury and Law*. doi:10.1007/s12207-012-9130-y.

Meyer, G. J., Finn, S. E., Eyde, L. D., Kay, G. G., Moreland, K. L., Dies, R. R. & Reed, G. M. (2001). Psychological testing and psychological assessment: A review of evidence and issues. *American Psychologist, 56*, 128–165.

Meyer, G. J. & Handler, L. (1997). The ability of the Rorschach to predict subsequent outcome: A meta-analysis of the Rorschach Prognostic Rating Scale. *Journal of Personality Assessment, 69*, 1–38.

Meyer, G. J., Hsiao, W-C., Viglione, D. J., Mihura, J. L., & Abraham, L. H. (2012). A survey of applied clinical validity for the Rorschach. *Journal of Personality Assessment* (in press).

Meyer, G. J. & Kurtz, J. E. (2006). Advancing personality assessment terminology: Time to retire "objective" and "projective" as personality test descriptors. *Journal of Personality Assessment, 87*, 223–225.

Meyer, G. J. & Viglione, D. J. (2008). An introduction to Rorschach assessment. In R. P. Archer & S. R. Smith (Eds.), *Personality assessment* (pp. 281–336). New York: Routledge.

Meyer, G. J., Viglione, D. J., Mihura, J. L., Erard, R. E. & Erdberg, P. (2011). *Rorschach performance assessment system: Administration, coding, interpretation, and technical manual*. Toledo: Author.

Mihura, J. L., Meyer, G. J., Dumitrascu, N., & Bombel, G. (2012). The validity of individual Rorschach variables: Systematic reviews and meta-analyses of the Comprehensive System. *Psychological Bulletin*. doi:10.1037/a0029406

Miles, A. (1988). *The ability of informed fakers to simulate schizophrenia on the Rorschach*. Doctoral dissertation. Available from ProQuest Dissertations and Theses database (UMI no. 8900418).

Millon, T. (1987). *Millon Clinical Multiaxial Inventory—II*. Minneapolis, MN: National Computer Systems.

Millon, T. (1994). *Millon Clinical Multiaxial Inventory—III*. Minneapolis, MN: National Computer Systems.

Mittenberg, W., Patton, C., Canyock, E. M. & Condit, D. C. (2002). Base rates of malingering and symptom exaggeration. *Journal of Clinical and Experimental Neuropsychology, 24*, 1094–1102.

Netter, B. E. C. & Viglione, D. J. (1994). An empirical study of malingering schizophrenia on the Rorschach. *Journal of Personality Assessment, 62*, 45–57.

Nisbett, R. E. & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review, 8*, 231–259.

Norcross, J. C. & Karpiak, C. P. (2012). Clinical psychologists in the 2010s: 50 years of the APA Division of Clinical Psychology. *Clinical Psychology: Science and Practice, 19*, 1–12.

Overton, M. N. (1984). *An examination of naive and role informed faking on Rorschach performance* (*psychological testing*, *malingering*) (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 8411115).

Parker, K. C., Hanson, R. K. & Hunsley, J. (1988). MMPI, Rorschach, and WAIS: A meta-analytic comparison of reliability, stability, and validity. *Psychological Bulletin, 103*, 367–373.

Perry, G. G. & Kinder, B. N. (1992). The susceptibility of the Rorschach to malingering: A critical review. *Journal of Personality Assessment, 54*, 47–57.

Perry, W. & Viglione, D. J. (1991). The Ego Impairment Index as a predictor of outcome in melancholic depressed patients treated with tricyclic antidepressants. *Journal of Personality Assessment, 56*, 487–501.

Ritsher, J. B. (2004). Association of Rorschach and MMPI psychosis indicators and schizophrenia spectrum diagnoses in a Russian clinical sample. *Journal of Personality Assessment, 83*, 46–63.

Ritzler, B. & Alter, B. (1986). Rorschach teaching in APA-approved clinical graduate programs: Ten years later. *Journal of Personality Assessment, 50*, 44–49.

Rogers, R. (2008). Detection strategies for malingering and defensiveness. In R. Rogers (Ed.), *Clinical assessment of malingering and deception* (3rd ed., pp. 14–38). New York: Guilford.

Rogers, R., Bagby, R. M. & Dickens, S. E. (1992). *Structural Interview of Reported Symptoms (SIRS) and professional manual*. Odessa, FL: Psychological Assessment Resources.

Rogers, R., Sewell, K. W., Martin, M. A. & Vitacco, M. J. (2003). Detection of feigned mental disorders: A meta-analysis of the MMPI-2 and malingering. *Assessment, 10*, 160–177.

Rorschach, H. (1942). *Psychodiagnostics*: *A diagnostic test based on perception* (translated by P. Lemkau & B. Kronenberg). Berne, Switzerland: Huber (original work published 1921).

Rosen, G. M., Lilienfeld, S. O., Frueh, B. C., McHugh, P. R. & Spitzer, R. L. (2010). Reflections on PTSD's future in DSM-V. *The British Journal of Psychiatry, 197*, 333–334.

Seamons, D. T., Howell, R. J., Carlisle, A. L. & Roe, A. V. (1981). Rorschach simulation of mental illness and normality by psychotic and nonpsychotic legal offenders. *Journal of Personality Assessment, 45*, 130–135.

Sellbom, M., Bagby, R. M., Kushner, S., Quilty, L. C. & Ayearst, L. E. (2012). Diagnostic construct validity of MMPI-2 Restructured Form (RF) scale scores. *Assessment, 19*, 176–186.

Sewell, H. W. (2008). Dissimulation on projective measures. In R. Rogers (Ed.), *Clinical assessment of malingering and deception* (3rd ed., pp. 207–217). New York: Guilford.

Spana, R. E. (1992). *The effect of instructions to malinger schizophrenia on performance on the Rorschach inkblot test*. Doctoral dissertation. Available from ProQuest Dissertations and Theses database (UMI no. 9310199).

Spangler, W. D. (1992). Validity of questionnaire and TAT measures of need for achievement: Two meta-analyses. *Psychological Bulletin, 112*, 140–154.

Viglione, D. J. & Hilsenroth, M. J. (2001). The Rorschach: Facts, fictions, and future. *Psychological Assessment, 13*, 452–471.

Walsh, S. M., Mihura, J. L., & Meyer, G. J. (2012). An updated meta-analysis of validity for the Rorschach Oral Dependency Scale. In R. Graceffo (Chair), *Explorations into narcissism*, *aggression*, *dependency*, *and object representations with the Rorschach*. Integrated paper session conducted at the Annual Meeting of the Society for Personality Assessment, Chicago, IL.

Wechsler, D. (1981). *Wechsler adult intelligence scale—Revised*. San Antonio, TX: Psychological Corporation.

Wechsler, D. (1997). *Wechsler adult intelligence scale* (3rd ed.). San Antonio, TX: Psychological Corporation.

Weiner, I. B. (2005). Integrative personality assessment with self-report and performance-based measures. In S. Strack (Ed.), *Handbook of personology and psychopathology* (pp. 317–331). Hoboken, NJ: Wiley.

Wetzler, S., Khadivi, A. & Moser, R. K. (1998). The use of the MMPI-2 for the assessment of depressive and psychotic disorders. *Assessment, 5*, 249–261.

Wetzler, S. & Marlowe, D. B. (1993). The diagnosis and assessment of depression, mania, and psychosis by self-report. *Journal of Personality Assessment, 60*, 1–31.

Wilson, T. D. & Dunn, E. W. (2004). Self-knowledge: Its limits, value, and potential for improvement. *Annual Review of Psychology, 55*, 493–518.

Zalewski, C. E. (1989). A meta-analytic examination of group MMPI profiles: Toward the classification and nosology of psychopathology. Doctoral dissertation, University of Virginia. *Dissertation Abstracts International 50*, *4792B*.