The Incremental Validity of the MMPI-2: When Does Therapist Access Not Enhance Treatment Outcome?

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The present study examined whether therapist access to the Minnesota Multiphasic Personality Inventory (MMPI-2) predicted favorable treatment outcome, above and beyond other assessment measures. A manipulated assessment design was used, in which patients were randomly assigned either to a group in which therapists had access to their MMPI-2 data or to a group without therapist access to such information. Illness severity, improvement ratings, number of sessions attended, and premature termination were indicators of therapy outcome. Results indicated that therapist access to the MMPI-2 data did not add to the prediction of positive treatment outcome beyond that predicted by other measures in this setting. Findings from this initial study suggest that, compared with other resources, perhaps in clinical settings with an emphasis on diagnosis-based and evidence-based treatment, the MMPI-2 may not provide incrementally valid information. However, these effects warrant replication across different settings and samples. Guidelines for future studies are discussed.

Keywords: incremental validity, MMPI-2, therapy outcome, manipulated assessment design

The Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1943; MMPI-2; Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) has become the most widely used clinical personality inventory. Although it was originally developed as an efficient and reliable means to differentiate among psychiatric disorders in inpatient settings, this instrument is now used in a variety of settings with diverse populations, including inpatient and outpatient psychiatric and medical facilities, penal institutions, and human resources departments. In addition to its widespread use, the MMPI continues to generate a great deal of research interest. The present study contributes to the existing body of research on the MMPI-2 by examining its incremental validity in an outpatient clinical setting that rigorously delivers empirically supported treatments to its patients.

It is widely accepted that the MMPI has been a useful resource to both clinicians and researchers in treatment planning and evaluation (Rouse, Sullivan, & Taylor, 1997). For example, many studies have found evidence of its ability to predict outcome of substance abuse treatment (Belding, Iguchi, Morral, & Husband, 1998; Gilmore, Lash, Foster, & Blosser, 2001), general psychotherapy (Chisholm, Crowther, & Ben-Porath, 1997), and pain rehabilitation programs (Vendrig, Derksen, & de Mey, 1999). In addition, there is evidence that when MMPI-2 data were available, the accuracy of clinical judgments increased (Garb, 1984, 1998),

including the precision of diagnostic decisions (Schwartz & Wiedel, 1981). Other studies have provided evidence of the incremental validity of both the supplementary scales (Archer, Elkins, Aiduk, & Griffin, 1997) and the content scales (Ben-Porath, McCully, & Almagor, 1993; for a review, see Ben-Porath et al., 2000) in outpatient (Barthlow, Graham, Ben-Porath, & McNulty, 1999) and inpatient (Archer, Aiduk, Griffin, & Elkins, 1996; Ben-Porath, Butcher, & Graham, 1991) populations. The present article continues to investigate the incremental validity of the MMPI-2 in the context of its utility in predicting beneficial treatment outcome. Put another way, the present article addresses the following question: Does therapist access to the MMPI-2 enhance treatment outcome, above and beyond other measures?

Meehl (1959) proposed four levels of incremental validity for clinical assessments, two of which are pertinent here. According to his description, for a test to establish its incremental validity, it must provide information that cannot be concurrently and easily obtained from other readily available sources (e.g., other assessment instruments, observations, interviews). A more stringent criterion is that the instrument must also enhance treatment outcome. The latter criterion is concerned with the treatment utility of assessment, which Meehl (1959) considers "ultimately the practically significant one by which the contributions of our techniques must be judged" (p. 116). These two conceptualizations of incremental validity are intricately related, given that, for the results of incremental validity research to have meaningful value to the clinician, there must be evidence that such assessment procedures add to or enhance what is known from other already available measures, especially measures that are either relatively inexpensive or relatively undemanding on patients and clinicians (Hunsley, 2003; Johnston & Murray, 2003).

The importance of evaluating the incremental validity and treatment utility of assessment measures used in clinical settings has

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been emphasized during the past several decades (Garb, 2003; Hayes, Nelson, & Jarrett, 1987; Hunsley & Meyer, 2003; Meehl, 1959) and has been discussed from both the ethical as well as the practical angle. Ethical guidelines dictate that the highest standard and most efficacious treatment available be provided, whereas the growth of managed health care dictates that care is streamlined and cost-effective. Specifically related to the latter point, Yates and Taub (2003) stated that it is critical that clinicians and researchers evaluate the costs, cost-effectiveness, and cost-benefit of assessment in an era in which mental health service providers are increasingly being required to justify their services to third-party payers. Therefore, administering assessment procedures without specification of their incremental validity seems to contradict both of these edicts, especially when evidence suggests that providing information of limited value can result in more decision errors than might otherwise occur (Faust, 1990). These ethical and practical concerns warrant the establishment of a science of assessment (Hunsley, 2002), where evidence on the incremental validity of assessment procedures is essential (cf. Meyer et al., 2001). Despite the need for greater attention to these issues, there is a paucity of research in this area (Hayes et al., 1987; Hunsley & Meyer, 2003).

In addition to the dearth of available research, it appears that most studies in this area have used less than optimal methods, such as post hoc regression analyses (cf. Hayes et al., 1987). Hayes et al. (1987) outlined specific methods of conducting treatment utility/incremental validity of assessment research based on a priori questions and design. The present study utilized the suggested manipulated assessment design to address the question of whether the MMPI-2 predicts positive treatment outcome above and beyond other measures included in the assessment battery. In this design, patients are randomly divided into two or more groups, and either the collection or the availability of assessment data is systematically varied.

Present Study

The present investigation examined whether therapist access to the MMPI-2 provides incrementally valid information predictive of favorable treatment outcome in one particular treatment setting. An a priori, two-group design was used, in which participants were randomized to one of two conditions (i.e., therapist access to their patients' MMPI-2 scores vs. no access). The treatment outcome of the group with therapist access to the MMPI-2 (in combination with other measures in the assessment battery) was compared with the treatment outcome of the group without therapist access to their patients' MMPI-2 scores, but who had access to other measures in the assessment battery. Others have brought to attention the potential gains of the present methodological design. For example, Johnston and Murray (2003) favor randomly assigning clinicians to receive various combinations of assessment information and evaluating the performance of the different combinations in predicting positive outcomes. On the basis of previous findings supporting the beneficial therapeutic effects of psychological assessment (Finn & Tonsager, 1992; Newman & Greenway, 1997), the present study tested the hypothesis that those patients whose therapists had access to their MMPI-2 profiles will experience greater symptom reduction, as reflected by treatment outcome measures.

Method

Participants

One hundred thirty-four adult patients (aged 18 or older at the time of admission) were included in the present study. A power analysis was conducted to determine the number of participants needed for adequate power (.80 level). According to Cohen (1992), 64 participants in each cell would yield adequate power to detect a medium effect size, if one is present. Two groups were formed, with therapist access to the MMPI-2 manipulated. Patients were randomly assigned to either of the two conditions (i.e., therapists with access to MMPI-2 vs. therapists without access to the instrument) after the participants completed application materials (including the MMPI-2 as well as the Beck Depression Inventory, the Beck Anxiety Inventory, the Beck Suicide Scale, the Short Michigan Alcoholism Screening Test, and the Eating Disorder Inventory) and prior to their cases being assigned to the therapists. All patients were advised that test feedback was available (in the case of patients randomized to the "no-therapist-access" group, if patients pursued it, feedback was provided to the patient by the clinic's assistant director, not his or her therapist).

The resultant samples were comprised of 70 adult patients in the group with therapist access to the MMPI-2 and 64 adult patients in the group in which therapists had no access to patients' MMPI-2. All patients included in the study received services at Florida State University (FSU) Psychology Clinic, an outpatient community mental health center. The patients understood and agreed to the research and training environment of the clinic at the time they applied for services, and this study was approved by the FSU institutional review board. Comprehensive data, including demographic information, treatment history, and objective questionnaires, were collected from each patient when he or she was admitted. The patients in this study represented all adult therapy cases admitted from January 2001 through December 2003; all patients were seen for at least one session beyond intake.

No differences between the two groups were found in terms of gender, age, and ethnicity. The combined patient sample was comprised of 66 men and 68 women, and the average age of the sample was 26 years, with ages ranging from 18–58 years ($SD = 8.37$ years). The ethnic composition of this sample was generally representative of patients admitted to the FSU Psychology Clinic and the community of Tallahassee, Florida: 75.7% Caucasian, 12.7% African American, 5.8% Hispanic, and 2.4% other.

The FSU Psychology Clinic is university affiliated; however, the clinic primarily provides services to nonstudents who present with clinical disorders typical of a community mental health outpatient clinic. There are minimal exclusionary criteria used by the clinic, including that actively psychotic or manic persons are not seen unless they are first stabilized on medications, and those who represent an extreme danger to themselves or to others are referred to inpatient hospitalization. Because the FSU Psychology Clinic has a low, sliding fee scale, a relatively low socioeconomic status (SES) sample is present that can be more difficult to treat than higher SES populations.

Therapists

There were a total of 25 therapists-in-training who were conducting treatment services for the patients in this sample. The FSU Psychology Clinic is the first clinical placement for doctoral students in clinical psychology at FSU. Each trainee receives approximately 3–4 hr per week of supervision with a licensed clinical psychologist. In addition, 2 hr per week are spent in staff conferences devoted to case presentations and intensive instruction regarding diagnostics and treatment techniques. All trainees have uniform and reasonable MMPI-2 training. Before entering the clinic, all therapists must pass a graduate assessment class that includes a focus on the administration and interpretation of the MMPI-2. Therapists must satisfactorily interpret several MMPI-2 profiles and demonstrate their proficiency in comprehension and interpretation of the measure as a training requirement in the FSU Psychology Clinic. Seventeen therapists-

in-training had 2 or more years of experience in the clinic, and 8 had less than 2 years of experience. Therapists-in-training have approximately 4–5 hr of patient contact on a weekly basis. The average therapist would have had access to the MMPI for some patients but not for others.

Case Conceptualization and Treatment Selection

All application materials, including assessment data, were available to therapists immediately after their cases were assigned. This means that all therapists had access to the MMPI-2 information during the case conceptualization and treatment selection phases of therapy, with the key exception that the MMPI-2 data were withheld from the therapists of patients randomized to the no-access group. Therapists whose patients were in the control group condition had access to the computer-generated "Extended Score Report." This includes the scores (e.g., raw and *T* scores) for the validity, clinical, content, and supplementary scales. Computer-generated interpretations of the scores were not available.

Therapists with access to the MMPI-2 score profiles were required to interpret, and provide feedback on, the results. It is important to note that MMPI-2 information, when available to therapists, was routinely used to make decisions regarding patients' diagnoses as well as in selecting treatment modality. Therapists thus had the flexibility to make treatment decisions and modifications on the basis of MMPI-2 information, when available (i.e., for patients not in the experimental group). For example, in one case, a therapist and supervisor chose, on the basis of personality characteristics revealed on the MMPI-2, interpersonal psychotherapy over cognitive–behavioral therapy for a client diagnosed with major depressive disorder. This example is an illustration of the flexibility of how the MMPI-2 results were utilized, in an instance when no scientific evidence clearly favored one empirically validated treatment over another.

Eight available therapists were surveyed regarding the extent to which they believed treatment assignment was influenced by MMPI-2 access. All responses confirmed that access versus no access was a random process and that assignment to treatment modality was to be made on available information.

MMPI-2 Feedback

Although it was clearly emphasized to patients in the experimental "no-access" group that they had the option of receiving MMPI-2 feedback from the assistant clinic director, only 10 patients pursued feedback. According to anecdotal reports of therapists, in no case did any of these patients communicate the results of their MMPI-2 to their therapists.

Clinic Setting

The FSU Psychology Clinic specializes in diagnosis- and evidence-based treatments. Trainees receive intensive instruction and supervision to guide in the implementation of empirically validated treatments (EVTs). EVTs commonly implemented in our clinic include cognitive–behavioral therapy, cognitive therapy (e.g., Beck, Rush, Shaw, & Emery, 1979), exposure treatments for anxiety disorders (see Nathan & Gorman, 1998), and interpersonal therapy (Klerman, Weissman, Rousaville, & Chevron, 1984). In cases where there was no EVT (e.g., nonborderline personality disorders), an EVT is adapted to the disorder (e.g., cognitive–behavioral therapy). Results of a recent study indicate that patients who began therapy after the clinic implemented the strict use of EVTs showed significantly more improvement and a greater reduction in symptomatology over time than did those who were treated before the mandatory EVT policy was in place (Cukrowicz et al., 2005). Adherence to the use of EVTs is strictly monitored in weekly supervision meetings with the trainees.

Measures and Procedures

MMPI-2 (Butcher et al., 1989). As one of the most widely used personality inventories, the MMPI-2, along with its predecessor, the MMPI (Hathaway & McKinley, 1943), is often administered in outpatient clinics as the primary method of assessing personality traits and psychological disorders (Chisholm, Crowther, & Ben-Porath, 1997). As part of a questionnaire battery that is routinely collected at intake at the FSU Psychology Clinic, the MMPI-2 was administered to all patients. Butcher et al. (1989) reported reliability estimates for the Clinical scales in the range of .34 to .85 for men and in the range of .37 to .87 for women.

Global Assessment of Functioning (GAF; DSM–IV–TR; American Psychiatric Association, 2000). The GAF scale allows the therapist to rate the patient's symptom severity and/or general functioning in educational, interpersonal, or occupational settings (APA, 2000). All 134 patients from the total sample had complete data for the GAF. The GAF ratings are reliably associated with clinical diagnosis, psychiatric symptoms, and other clinical outcome ratings (Friis, Melle, Opjordsmoen, & Retterstol, 1993; Moos, McCoy, & Moos, 2000). The reliability and concurrent validity of the GAF have been supported in the FSU Psychology Clinic (Lyons-Reardon, Cukrowicz, Reeves, & Joiner, 2002). The GAF is a useful index of outcome in situations, like the present one, in which outcome is evaluated across various diagnoses and clinical presentations.

Clinical Global Impressions (CGI; Guy, 1976). The CGI scale serves as an index of symptom severity and symptom improvement. The therapist rated the patient's illness at both intake and termination sessions. The patients' illness severity was rated on a 7-point Likert scale ranging from 1 (*normal*) to 7 (*among the most extremely ill*). At termination, the therapists also rated their patients' symptom amelioration, indexed along a 7-point Likert scale ranging from 1 (*very much improved*) to 7 (*very much worse*). All 134 patients had complete therapist CGI symptom severity ratings for intake and termination, and 97 had complete therapist CGI symptom amelioration ratings. The CGI scale has demonstrated acceptable internal consistency and concurrent validity in adults diagnosed with anxiety and depression (Leon, Shear, Klerman, & Portera, 1993) and has also been validated in severe patient populations (e.g., schizophrenic patients; Stern et al., 1998). In addition, the reliability and concurrent validity of the CGI has been supported in the FSU Psychology Clinic (e.g., good agreement between a first rater and a blind second rater's CGI ratings [$\alpha = .84$]; Lyons-Reardon et al., 2002). Like the GAF, the CGI is a useful index of outcome in situations, like the present one, in which outcome is evaluated across various diagnoses and clinical presentations.

Premature termination. A dichotomous variable representing premature termination was created. A case was coded as "premature termination" in situations in which the patient stopped attending therapy before the end of the course of therapy and against the recommendation of the therapist. This included patients who indicated a variety of excuses for terminating therapy, such as time, money, and other priorities. A case was coded as "not premature termination" in situations in which the patient attended therapy to the end of treatment, the therapist initiated termination, or it was very clear that the patient had some external reason (e.g., moving) that made termination necessary. In the present sample of 134 patients, 54% ended the therapeutic process prematurely, and this rate is very consistent with estimates from other studies (e.g., Pekarik, 1983; see Table 3 for distribution of the number of premature termination across both patient groups).

Results

Preliminary Analyses

A case analysis was conducted for all variables of interest, and one univariate outlier was detected for the intake GAF variable by using the mean plus or minus 3 standard deviations criterion. This data point was brought down to the upper criterion as determined by the mean plus 3 standard deviations. Scatter plots were examined for bivariate outliers, and none were detected. The distributions were examined for skewness and kurtosis. The distribution for the MMPI access variable is platykurtic, as is expected for a dichotomous index.

To examine the degree of severity across both patient groups, their MMPI-2 *T* scores on the clinical scales were compared for all cases with valid MMPI-2 profiles (as indicated by their validity indexes). Independent *t* tests were conducted, with the average score on Scales 1–4 and 6–9 as the test variable and MMPI-2 therapist access as the grouping variable, to assess whether there were any preexisting differences on illness severity variables between MMPI-2 access groups. Results indicated no significant difference between the groups, as measured by the MMPI-2, $t = -0.32$, $p = .75$. Further, this severity index (average *T* score on selected clinical scales) demonstrated significant associations with the outcome measures. As expected, the average *T* score on the MMPI-2 clinical scales was significantly and positively correlated with the intake CGI ($r = .43$, $p < .01$) and significantly and inversely correlated with the intake GAF ($r = -.43$, $p < .01$). The two outcome measures were also significantly and inversely related to one another ($r = -.64$, $p < .01$). Overall, these patterns of correlations suggest that the MMPI-2 provided information relevant to diagnosis and case conceptualization and add further validity data to the CGI and GAF outcome measures.

Sample Characteristics

Tables 1 and 2 provide information describing the nature of the treated sample and the treatment modalities that were used. The frequency of *DSM–IV* diagnoses in both the experimental and control groups as well as the average number of sessions attended for each of the diagnoses are presented in Table 1. Table 2 contains information regarding the breakdown and the frequency of the forms of therapy offered to the patients in the present sample.

Most patients in the present sample received up to three different treatment modalities, which were coded in a manner similar to what is depicted in Table 2. Only 1 patient (in the experimental group) received four treatment modalities. Three chi-square analyses were conducted to evaluate whether forms of therapy administered differed between the control and experimental groups, corresponding to any possible differences between the first, second, and third treatments selected per each group. In no case did these chi-square analyses produce significant results. These findings suggest that assignment to treatment modalities did not differ for patients in the two conditions.

Table 1
Frequency of DSM-IV Diagnoses in Experimental and Control Groups and Average Number of Sessions Attended

Measure	*DSM-IV* diagnostic category							
	1	2	3	4	5	6	7	8
Therapist access								
Frequency	35	33	14	2	2	6	15	6
Mean no. of sessions	9	10	12	5	7	12	10	5
No therapist access								
Frequency	44	11	15	5	4	2	12	3
Mean no. of sessions	12	9	8	6	10	16	10	2

Note. 1 = mood disorders, 2 = anxiety disorders; 3 = substance-related disorders; 4 = adjustment disorders; 5 = relational problems; 6 = eating disorders; 7 = personality disorders; 8 = other *DSM-IV* diagnoses.

Table 2
Frequency of Treatment Modalities in Experimental and Control Groups

Treatment modality	Therapist access group	No therapist access group
1. Cognitive behavioral (CBT, cognitive–behavioral analysis system of psychotherapy, etc.)	43	44
2. Interpersonal psychotherapy (IPT)	10	7
3. Motivational interviewing	13	8
4. Social rhythms (SR) or SR/IPT	4	6
5. Cognitive processing (CPT) or exposure	5	6
6. Exposure with relapse prevention	5	1
7. Dialectical behavioral (DBT)	2	0
8. Relaxation training	5	0
9. Cognitive therapy	6	4
10. Other therapies	13	4

Main Study Analyses

Our primary area of interest was the relationship between therapist access to the MMPI-2 and patient improvement (as measured by therapist-rated GAF scores and CGI ratings). We also investigated the relationship between therapist access to the MMPI-2 and patients' premature termination from therapy. The (unadjusted) means and standard deviations for all variables of interest (for the sample as a whole and also by MMPI-2 therapist access group) in this study are presented in Table 3.

To investigate whether therapist access to the MMPI-2 affected therapist-rated patient improvement, an analysis of covariance (ANCOVA) was conducted with each of the three indices of patient improvement used in this study (i.e., GAF, CGI Termination, and CGI Amelioration). An ANCOVA was chosen for this study because of its ability to test the statistical significance of a mean difference between the MMPI-2 access groups on treatment outcome ratings while controlling for any preexisting individual differences among participants on the concomitant variable (covariate; in this case, the intake rating of symptom severity).

The first ANCOVA was designed to test whether therapist access to the MMPI-2 affected patients' Axis V GAF ratings at termination (while controlling for the intake GAF rating). In this ANCOVA, the patients' GAF rating at termination was entered as the dependent variable, the therapists' access to the patients' MMPI-2 results was the independent variable, and the patients' GAF rating at intake was entered as the covariate. Results indicated null findings with respect to the influence of therapist access to the MMPI-2 on patients' improvement over time in therapy as measured by GAF score, $F(1, 131) = .17$, $p = .68$.

In a similar fashion, a second ANCOVA was performed to investigate whether therapist MMPI-2 access had an effect on CGI ratings at termination, controlling for CGI ratings at intake. Results indicated a significant effect for therapist access to the MMPI-2 while removing the effects of the covariate, $F(1, 131) = 6.18$, $p = .01$. A comparison of pairwise mean differences was performed following the ANCOVA, with an adjustment made to the significance level (Bonferroni correction) for multiple comparisons. This test revealed that the patients of those therapists who had access to their MMPI-2 profiles ($M = 3.43$, $SD = .13$) actually had more severe symptoms, on average, at termination as measured by

Table 3
Descriptive Statistics for Variables of Interest

	MMPI-2: Therapist access ($n = 70$)		MMPI-2: No therapist access ($n = 64$)		Whole sample ($N = 134$)	
	Raw mean	SD	Raw mean	SD	Raw mean	SD
Intake GAF	59.27	11.02	59.95	8.73	59.60	9.96
Intake CGI	3.84	1.20	3.78	1.02	3.81	1.11
Termination GAF	66.24	14.55	67.55	11.72	66.87	13.24
Termination CGI	3.46	1.53	2.95	1.32	3.22	1.45
CGI amelioration	2.73	1.10	3.00	1.10	2.86	1.10
Sessions attended	9.39	7.78	9.91	8.04	9.63	7.88
Premature termination	$n = 40$		$n = 33$		$N = 73$	

Note. MMPI-2 = Minnesota Multiphasic Personality Inventory; GAF = Global Assessment of Functioning; CGI = Clinical Global Impressions.

the CGI than did the patients of therapists who did not have access to patients' MMPI-2 profiles ($M = 2.98$, $SD = .13$).

A third ANCOVA was performed to investigate whether therapist MMPI-2 access had an effect on therapists' CGI rating of patients' symptom amelioration at termination, controlling for CGI severity ratings at intake. Results indicated null findings with respect to the influence of therapist access to the MMPI-2 on patients' symptom amelioration as measured by the CGI, $F(1, 94) = 1.7$, $p = .17$.

The final relationship of interest in this study was that between therapist access to the MMPI-2 and patients' premature termination from therapy. A chi-square test was used to test the significance of this relationship, with nonsignificant results ($\chi^2 = .55$, $p = .46$). These results appear to indicate that therapist access to patients' MMPI-2 profiles was not associated with whether their patients terminated prematurely from therapy. To investigate this relationship further, we also examined whether the patient groups (those whose therapists had access to the MMPI and those whose therapists did not) differed with regard to the number of therapy sessions they attended. An ANCOVA was run, with the number of sessions attended as the dependent variable, the intake GAF as a covariate[1] (so as to control for initial symptom severity), and the therapist access to the MMPI as a fixed factor. Results were not significant, $F(2, 131) = .24$, $p = .79$.

Effect Size and Confidence Intervals

The effect size for the significant ANCOVA results (i.e., difference on CGI severity at termination) was conducted following the guidelines of Olejnik and Algina (2000). The standardized mean difference effect size using Cohen's standardizer was .7, representing a medium size effect, according to Cohen. The 95% confidence interval for the mean difference on CGI symptom severity at termination between the two MMPI-2 access groups was .09–.81. In the case of all nonsignificant findings, confidence intervals did not include values corresponding to $p = .05$ or lower.

Discussion

The present study examined the incremental validity of the MMPI-2 in predicting positive treatment outcome in a specific treatment setting, above and beyond other measures included in the assessment battery, in the context of Meehl's (1959) criteria for the

utility of clinical assessments. Two experimental groups (therapists with access to their patients' MMPI-2 results and therapists with no access) were compared across several key factors relevant to therapy outcome: illness severity, improvement ratings, number of sessions attended, and whether therapy ended prematurely. Contrary to expectations, all four indices converged on the same general trend, indicating null findings across most analyses conducted. Where a significant difference was found, results indicated that patients of therapists who had access to the MMPI-2 showed less reduction in their symptom severity at termination than did patients of therapists who did not have access to their MMPI-2 results. However, we caution that the reliability and generalizability of this effect should be established prior to making interpretations that the MMPI-2 could perhaps have a negative impact on therapy outcome. In addition, it is necessary to interpret the present findings only as the scope of the data permits. The present results suggest that the MMPI-2 may not provide incremental validity over the other assessment measures available to therapists in this particular treatment setting, and the aim of the present study was not to examine whether the MMPI-2 would be useful in lieu of the other measures. However, studies in the future may be constructed to answer this question.

The consistency of the null findings in the present article could be the result of several scenarios. First, the therapists restricted from the MMPI-2 profiles could have obtained similar information as what is provided by the MMPI from other sources (e.g., other assessment measures, clinical interviews). Second, perhaps the MMPI-2 did not provide treatment-relevant information in those cases in which therapists had access to their patients' profiles. In other words, the information generated by this instrument may not be vital to change. Third, it is conceivable that MMPI results served as a distraction from other information that was perhaps crucial to change (e.g., diagnosis). However, it is imperative that the reliability of the present results be established. If this is the case, then future studies could methodologically examine whether the reasons outlined here explain the lack of significant differences between the two patient groups. It is also unclear whether our results would generalize to other clinical settings.

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[1] The same analysis was run with intake CGI as the covariate, which also yielded a nonsignificant result.

The present results are a step toward building the science of assessment advocated by Hunsley (2002) and others (Hayes et al., 1987; Johnston & Murray, 2003). In a science of assessment, the incremental validity of an assessment procedure is conditional on the properties of other assessment information that is available (Haynes, 2001). In light of this observation, we in no way conclude that the MMPI-2 possesses no incremental validity or treatment utility; rather, these properties of the MMPI-2 (and any other assessment procedure) should be evaluated further, and the conditions under which they occur should be delineated.

Specifying the settings and conditions in which an assessment procedure demonstrates its incremental validity is consistent with the ethical and practical concerns discussed earlier. Given that the incremental validity of an assessment procedure is more likely to be conditional rather than global, it is important to recognize that the present findings are limited to a setting in which diagnosis-based and evidence-based treatment are required. Perhaps it is the case that, because of their established efficacy, the use of EVTs might limit the impact of assessment information. If this is corroborated, then this information is of value in similar settings, given the increasing pressure clinics face to become more efficient (e.g., regarding time and monetary expenditures) in their delivery of services resulting from limited health care resources. Although the authors feel that the use of EVTs is becoming the modal setting, generalization of the present results to other settings remains to be seen, and the present results should not be extrapolated to different settings or populations.

The results of the present article should be interpreted in light of the following limitations. A potential weakness of the present study is the lack of indices regarding the actual use of MMPI-2 data among therapists who were allowed access. For instance, although the profiles were interpreted by therapists (and reviewed by supervisors) and available to them prior to making decisions regarding diagnoses and treatment approach, the extent to which results were utilized was not systematically assessed. It may have been the case that the mean difference between groups refers to a lack of incremental validity on the part of the MMPI in this setting, or perhaps the difference may denote the degree to which information from MMPI-2 profiles was actually utilized. However, judging from the anecdotal reports of therapists and supervisors who were denied access, most of which were along the lines of "I really miss having the MMPI to consider," we doubt that this constitutes a full explanation. Nevertheless, this issue represents an interesting and potentially informative direction for future research. Thus, investigators may wish to develop assessments to determine whether clinicians use the information from the MMPI-2, and if so, how such use is impacting case conceptualization and treatment. Also, it was not possible to blind therapists regarding assignment of their patients to access versus no-access groups, and this issue should be considered in interpreting our results. Further, the present study evaluated the effects of MMPI access on therapy outcome exclusively in a training clinic where patients are predominantly characterized by low SES. These limitations make this study preliminary, and we stress the importance of replication across different settings and samples.

Two other considerations and cautions deserve note. First, statistical power was adequate to detect medium or large effects but was not sufficient to detect subtle effects. It is possible that MMPI access may have had a subtle effect that we were unable to identify, such that access benefited treatment outcome. On the other hand, we suggest that our data provide very little indication that this was the case, given the obtained medium size effect, in the opposite direction, for the one significant difference reported. Second, although therapist access was under full experimental control, patient feedback was not, because patients in the "no-access" group could still obtain MMPI feedback from the clinic's assistant director. If it were the case that MMPI feedback was similar across the two groups, this could account for our null findings (but would not account for the one significant finding in which access related to worse outcome). However, feedback was not equivalent across groups; patients in the "access" group received feedback, whereas those in the "no-access" group rarely pursued it (although they were encouraged to do so; we decided not to mandate feedback but instead to encourage it). Although it has been documented that MMPI-2 feedback alone can contribute to symptom reduction (Finn & Tonsager, 1992; Newman & Greenway, 1997), the small percentage of patients in the no-access group that received MMPI-2 feedback suggests that this issue cannot fully explain our results. Nevertheless, this remains a potential confound that future studies can address with adequate methodologies to control for this alternative explanation.

If these findings are replicated, the next step may be to investigate the processes underlying the present results. For example, perhaps the MMPI-2 could provide incrementally valid information in situations in which information provided by this instrument leads the therapists to choose a different treatment modality or perhaps to conceptualize the presenting problems differently than would otherwise have been the case. Another avenue for future research concerns investigating the value of therapist access to their patients' MMPI-2 in specific diagnostic categories; it is possible that the clinical utility of the MMPI-2 may vary as a function of patient diagnosis. As an example, it could be that the information provided by the MMPI-2 in substance abuse disorders may be more relevant to the treatment of that condition than is the information provided for patients for social phobia. Whether our results replicate across different clinical settings represents another avenue for future research in this area.

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