Archives of Assessment Psychology, Vol. 9, No. 1, (87-112)
Printed in U.S.A. © 2019 American Board of Assessment Psychology
All rights reserved

A comparison of MMPI-2-RF scores between White and African American college students

Yelena Gonzalez, Psy.D., Elizabeth A. Smith, Psy.D., Jennifer E. Keane, M.S., Audra L. Biermann, M.S., Kaitlin M. Keister, M.S., Courtney N. Wiesepape, M.S., and P. Kevin Bolinskey, Ph.D.

Abstract

Sixty-plus years of research have demonstrated an inconsistent pattern of differences between African American and White respondents on the earlier forms of the MMPI (i.e., MMPI and MMPI-2). Relatively little research has examined the possibility of racial and/or ethnic differences in scores on the newer MMPI-2-RF. The present study compared MMPI-2-RF scores of college students, both by gender and combined, by self-reported race. Results revealed significant differences in scores on some scales of the MMPI-2-RF, along with differences in the distributions of clinically elevated scores. The majority of scales, however, did not evidence any significant pattern of racial/ethnic differences. Of particular interest is the finding that women's MMPI-2-RF scores appear to be vary more between races than do the scores of men. Implications of the findings were discussed.

MMPI-2-RF differences among White and African American College Students

The suitability of the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1943) for use with individuals of diverse racial and ethnic backgrounds first came under increased inquiry after the publication of a number of studies noting differences in scaled scores between White individuals and those from racial and/or ethnically diverse backgrounds (Dahlstrom, Lachar, & Dahlstrom, 1986). Suggested responses to these score differences have ranged from "proceed as usual" approaches, to proposals for further study and the examination of extra-test variables, to some calling for the creation of separate MMPI norms for use with racial and/or ethnically diverse groups. The debate over racial differences and multiple calls for the creation of separate norms was somewhat quelled with the introduction of the MMPI-2 (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989), largely due to the inclusion of a representative proportion of individuals from diverse racial/ethnic backgrounds in its normative sample (Arbisi, Ben-Porath, & McNulty, 2002).

Nevertheless, doubts remained about the applicability of the MMPI-2 norms to diverse populations. Research on racial differences on the MMPI-2 continued, ultimately resulting in several reported findings that were antithetical to one another. Although some studies have noted differences between groups (e.g., Ben-Porath, Shondrick, & Stafford, 1995; Frueh, Smith, & Libet, 1996; McNulty, Graham, Ben-Porath, & Stein, 1997), others have failed to produce such differences (e.g., Frueh, Gold, de Arellano, & Brady, 1997; Hall, Bansal, and Lopez, 1999; Timbrook & Graham, 1994).

No consistent pattern of score differences between African Americans and Whites has been documented for the MMPI-2. For instance, Timbrook and Graham (1994) studied mean scale

differences between White and African American men and women who were part of the MMPI-2 normative sample. They reported that African American men scored significantly higher than White men on scale 8 (Schizophrenia), and African American women scored higher than White women on scales 4 (Psychopathic Deviate), 5 (Masculinity/Femininity), and 9 (Hypomania), but these differences did not reach clinical significance as determined by an overall T score cutoff difference of five points between races on these scales. In a meta-analysis that included 25 studies of African American men versus White men and 12 studies of African American women versus White women, however, Hall, Bansal, and Lopez (1999) demonstrated that African American men tend to score higher than their White counterparts on scales F (Infrequency), 8 (Schizophrenia), and 9 (Hypomania). In contrast, the only reliable difference between female groups was that African Americans scored higher than Whites on scale 9 (Hypomania). However, the aggregate effect size (Cohen's d) for these differences ranged only from .17 to .24, which equates to a difference of less than three T points. Friedman, Bolinskey, Levak, and Nichols (2015) have suggested that although these differences may be statistically significant, they are not clinically significant.

Ben-Porath et al. (1995) compared the MMPI-2 scores of White and African American men undergoing a court-ordered evaluation and found that the groups displayed significant differences on the content scales CYN (Cynicism) and ASP (Antisocial Practices), with African Americans scoring higher than Whites. African Americans tended to endorse more items suggesting skepticism about the motives and goodness of people; they also endorsed more items related to disregard for the law and other antisocial attitudes. Nevertheless, neither group differed in reports of specific antisocial behaviors. Later, Frueh et al. (1996) found statistically significant differences on scales 6 (Paranoia), 8 (Schizophrenia), and F - K (F minus K) between groups of African American and White combat veterans seeking evaluation for Post-traumatic Stress Disorder (PTSD). A subsequent attempt to replicate these findings was unsuccessful, with no differences being found on any of the MMPI-2 scales examined between a group of African American and White veterans seeking an outpatient evaluation for PTSD (Frueh et al., 1997).

Freuh et al. (2002) revisited this line of research by examining whether race influenced the clinical presentation and symptomatology in combat veterans with PTSD. They discovered significant differences between races on clinician ratings of psychotic symptoms, and African Americans evidenced a higher score on scale 6 (Paranoia) while also endorsing more paranoid and dissociative symptoms compared to Whites. Likewise, Monnier and colleagues examined racial differences on the MMPI-2 in individuals seeking treatment at a veterans' outpatient PTSD treatment program (Monnier, Elhai, Freuh, Sauvageot, & Magruder, 2002). African Americans were significantly more likely to endorse BIZ (Bizarre Mentation) items on the MMPI-2, after accounting for demographic variables and symptoms.

McNulty, Graham, Ben-Porath, and Stein (1997) contrasted MMPI-2 mean scale scores with therapist ratings on a Patient Description Form (PDF) with 123 African American and 561 White individuals at a community mental health center. African American men (N = 42) evidenced significantly elevated scores on L (Lie), 9 (Hypomania), FRS (Fears), BIZ (Bizarre Mentation), CYN (Cynicism), and SOD (Social Discomfort) compared to White men. African American women significantly elevated scales 9 (Hypomania), FRS (Fears), and BIZ (Bizarre Mentation) compared to White women; interestingly, LSE (Low Self Esteem) was significantly elevated in White women compared to both African American men and women. Further, there were no significant between-groups differences between MMPI-2 scores and patient description ratings, signifying that extra-test client characteristics and MMPI-2 scores were not affected by

race. The authors suggested that these positive correlations between mean scale scores and therapist ratings indicate that the elevations seen across these groups are reflective of individual differences in psychopathology. Thus, mean score differences could be indicative of valuable information pertaining to individual differences in behavior and the presentation of symptoms.

Similarly, Muley, Morris, Murray, and Baines (2001) compared a matched sample of African American and White veterans at an inpatient psychiatric unit and also discovered significant differences between groups on four content scales, FRS (Fears), BIZ (Bizarre Mentation), CYN (Cynicism), and ASP (Antisocial Practices), with African Americans scoring higher than Whites. All but ASP (Antisocial Practices) reached clinical significance (T score difference of more than five points). Notably, only those differences on ASP (Antisocial Practices) could be accounted for by drug abuse. The researchers hypothesized that differences on some FRS (Fears), CYN (Cynicism), and BIZ (Bizarre Mentation) scale items between races might reflect divergent worldviews, perceiving the world as hostile and unsafe, as well as potentially relate to cultural, religious factors, and oppressive conditions.

The influence of ethno-cultural and socioeconomic factors has also been proposed as a potential explanation for differences observed between African Americans and Whites on the MMPI/MMPI-2 (Whaley, 2001; Widiger & Samuel, 2005). The concept of cultural mistrust has been historically used to describe adaptive, paranoid-like behaviors that African Americans may engage in due to their experiences, both present and past, with overt and covert forms of racism and oppression (Whaley, 2001). Studies on the effects of high cultural mistrust with African American populations have found several potential negative assessment and treatment implications. For example, African American students who obtained high cultural mistrust scores were found to obtain poorer scores on IQ tests when the administrator was White versus African American (Terrell & Terrell, 1983), as well as tended to have more negative views of their White counselor (Grant-Thompson & Atkinson, 1997) and were found more likely to prematurely end the therapeutic relationship (Terrell & Terrell, 1984). The experience of cultural paranoia then may serve as an adaptive function that also happens to have significant assessment and treatment implications. Differences in scores on the MMPI/MMPI-2 may thus reflect cultural differences in experience that are true to the individual and may be reflected in elevations in certain scales.

Further, although the Minnesota Multiphasic Personality Inventory-2-Restructured Form (MMPI-2-RF; Ben-Porath & Tellegen, 2008) has been in use for some time now, there is a dearth of research focusing on the use of the assessment measure with racial and/or ethnically diverse groups. In a review of studies published since 2008 on the MMPI-2-RF, only one publication was found examining the influence of ethnicity on the scores in the measure. In this study, the authors explored the validity and possible differences in MMPI-2-RF scores based on age, gender, and ethnicity in pre-surgical and bariatric surgery candidates (Marek, Ben-Porath, Sellbom, McNulty, & Heinberg, 2015). They found that women aged 65 and older tended to score higher than women aged 18-35 on MSF (Multiple Specific Fears). A few small gender differences were also noted, with women scoring higher on the FBS-r (Symptom Validity) and MSF (Multiple Specific Fears) scales and lower on the BXD (Behavioral/Externalizing Dysfunction) and MEC (Mechanical-Physical Interests) scales compared to men. Ethnicity was also a factor, as African American men scored higher on L-r (Uncommon Virtues) and lower on INTR-r (Introversion/Low Positive Emotionality-Revised) than White men, and African American women scored higher on MSF (Multiple Specific Fears) and AGGR-r (Aggressiveness-Revised) compared to White women. A greater proportion of African American men also scored at or above the interpretative cutoff on L-r (Uncommon Virtues) compared to White men, a greater percentage of White men reached the

threshold for INTR-r (Introversion/Low Positive Emotionality-Revised), and a greater number of African American women scored at or above the clinical threshold on MSF (Multiple Specific Fears) and AGGR-r (Aggressiveness-Revised). However, none of these differences were clinically significant. Because few meaningful scale differences were found and those that were did not appear to generalize across genders, the authors concluded that MMPI-2-RF scores could be interpreted in a similar way across ages, gender, and ethnicities.

In an unpublished doctoral dissertation, Baker (2015) examined the effects of demographic differences on scores on the MMPI-2-RF Higher Order scales. The author found differences by gender, with men having higher mean scores on the BXD (Behavioral/Externalizing Dysfunction) scale compared to women. Similarly, when compared to individuals with high educational attainment, those with lower educational attainment were found to have higher mean scores on the BXD (Behavioral/Externalizing Dysfunction) scale. Older adults were also found to have higher mean scores on the THD (Thought Dysfunction) scale compared to younger adults. The author concluded that the MMPI-2-RF is an unbiased instrument for use with individuals across different ages, races and genders, and educational level.

The Present Study

The present study was based on the history of racial differences found on the previous versions of the MMPI and the shortage of research focusing on race and the MMPI-2-RF. We sought to compare mean scale scores between White and African American college students by gender and self-reported race. We took into account previous research indicating that the existence of statistical differences in mean score elevations between groups may, at times, be inconsequential to diagnosis and treatment, with some arguing for the use of score differences of at least 4 – 6 T score points to indicate clinical significance (Friedman et al., 2015; Greene, 1987). Thus, this study focused on differences that are of clinical relevance, as those might impact interpretation of the instrument in a clinical or human resource setting. Finding significant differences between the groups in this study would provide valuable psychodiagnostic information for the use of the MMPI-2-RF with diverse populations, as well as call for the examination of possible demographic and ethnocultural variables that may or may not account for these differences.

Methods

Participants. Our sample included 1,458 (390 men, 1,068 women) Midwestern college students between the ages of 18 and 23 years (M = 18.6, SD = 2.3) who were recruited for participation in a larger study. The current study participants, along with data analyses, are original and have not been included in a previously published investigation. Of the 390 men, 337 identified as White and 53 identified as African American; for females, these numbers were 894 and 174, respectively. There were no significant differences in age by gender, race, or their interaction.

For inclusion in the study, participants' responses had to meet the following MMPI-2-RF validity criteria: *VRIN-r* T score < 80, *TRIN-r* T score < 80, *F-r* T score < 111, *Fp-r* T score < 100, *L-r* T score ≤ 81, and omitted items ≤ 10. There were no exclusions for any physical or mental health issues.

Measure. The MMPI-2-RF (Ben Porath & Tellegen, 2011) is a 338-item self-report measure designed to assess an array of clinical behaviors and conditions. Items are endorsed in either a "True" or "False" direction. The MMPI-2-RF is composed of nine validity scales, three higher order scales, nine restructured clinical scales, five somatic and cognitive scales, nine internalizing scales, four externalizing scales, five interpersonal scales, two interest scales, and

five PSY-5 scales. The scales of the MMPI-2-RF have been demonstrated to have adequate test-retest reliability and internal consistency across multiple samples (Tellegen & Ben-Porath, 2011; Gonzalez et al., 2017)

Procedures. Participants were recruited from Introductory Psychology courses and received course credit for their participation in a larger study. Participants completed the full paper-and-pencil MMPI-2 form in a group testing format in a general lecture classroom provided by the university with no more than 60 participants at any given time. Study ID numbers were incorporated so that no responses could be linked to an individual. Adequate space was provided around each participant to ensure privacy of their responses. Participants were allowed three hours to complete the measure, although none required the full allotted time. All protocols were computer scored using a scoring software designed for use with the MMPI-2/MMPI-2-RF. It has been demonstrated that MMPI-2-RF scale scores obtained from an MMPI-2 administration are comparable to those obtained with the MMPI-2-RF booklet (Tellegen & Ben-Porath, 2011; van der Heijden, Egger, & Derksen, 2010); thus, MMPI-2-RF scores were derived from the full set of MMPI-2 item responses in the computer scoring routine. More information on the scoring of the MMPI-2-RF can be found in its scoring and interpretative manual (Ben Porath & Tellegen, 2008/2011).

Data analytic strategy. Two series of separate one-way analyses of variance (ANOVAs) were performed for each of the MMPI-2-RF scales using racial group identification as the independent variable and alpha set at .01. In the first series of analyses, male and female college students were combined; in the second series, analyses were conducted separately by gender and compared on the basis of race. Effect sizes (Cohen's *d*)[1] greater than .40, which represent, on average, a difference of four or more T points, as well as an absolute difference of at least 4 T points were required for a difference to be considered clinically relevant.

We then tested for differences in the distribution of clinically elevated (i.e., above 65) T scores using χ^2 tests for independence; odds ratios were also calculated for each comparison. Again, these analyses were performed separately for a combined-gender group and independently for men and women. For the purpose of this study, we only considered a difference in the distribution of elevated scores to be relevant if two conditions were met: 1) the χ^2 test must be significant with alpha set at .01, or, if at least one cell had an expected count of less than zero, the Fisher's exact test must be significant at alpha of .01, and 2) the odds ratio must indicate that African American students are more than twice as likely (i.e., OR $\geq$ 2.0) or less than half as likely (i.e., OR $\leq$ 0.5) to produce elevated scores.

Results

Combined Gender Comparisons. Results from the series of one-way ANOVAs are shown in Table 1. Significance values have been adjusted to account for adjustments to degrees of freedom for variance inequalities. Employing an alpha value of .01, there were significant differences in mean scores between White and African American students on 28 of the 51 MMPI-2-RF scales. Of these, nine and 17 group differences met our criteria for clinical relevance when separated by race alone and by gender on the basis on race, respectively.

[1] Cohen's *d* is calculated by the formula $d = \frac{M_1 - M_2}{S_{Pooled}}$ where $s_{Pooled} = \sqrt{\frac{df_1}{df_{Total}}(s_1{}^2) + \frac{df_2}{df_{Total}}(s_2{}^2)}$

Table 1

Means and standard deviations for the combined-sex sample of college students on MMPI-2-RF scales by race, with associated F values and effect sizes, chi square values for differences in the distribution of clinically elevated scores, and the odds ratios for obtaining an elevated score.

Scale	*Group*	*M*	*SD*	*F*	*d*	χ^2	*OR*
VRIN-r	White	53.9	10.0	21.11**	0.33	16.94**	2.03
	Black	57.2	10.6				
TRIN-r	White	56.9	6.8	6.72	0.19	6.33	1.49
	Black	58.1	7.2				
F-r	White	56.9	14.8	20.17**	0.32	13.65**	1.74
	Black	61.8	15.9				
Fp-r	White	57.6	12.7	15.09**	0.28	6.47*	1.47
	Black	61.2	13.1				
Fs	White	58.4	13.9	11.25*	0.24	8.95*	1.55
	Black	61.8	14.0				
FBS-r	White	53.9	12.2	0.53	0.05	3.42	0.67
	Black	53.3	10.1				
RBS	White	56.6	12.7	1.45	0.09	0.07	0.96
	Black	57.7	12.6				
L-r	White	50.0	8.6	26.02**	0.37	1.45	1.38
	Black	53.2	8.6				
K-r	White	44.1	9.5	0.42	0.05	0.96	0.56
	Black	44.5	9.1				
EID	White	55.3	11.8	2.00	0.10	7.36*	0.59
	Black	54.2	9.7				
THD	White	54.4	10.9	44.94**	**0.48**	24.17**	2.26
	Black	59.8	12.4				
BXD	White	50.3	8.6	68.61**	**0.60**	19.97**	2.50
	Black	55.4	8.7				
RCD	White	56.6	10.8	0.57	0.05	0.1	1.06
	Black	57.1	9.6				
RC1	White	57.7	11.4	6.24	0.18	1.15	1.19
	Black	59.7	9.3				
RC2	White	52.0	11.7	6.64	0.19	4.96	0.60
	Black	49.9	10.4				
RC3	White	56.7	9.4	29.88**	0.39	25.14**	2.11
	Black	60.5	9.9				

RC4	White	50.9	9.0	41.83**	**0.47**	3.62	1.51
	Black	55.0	8.5				
RC6	White	57.2	11.2	35.53**	**0.43**	8.36*	1.55
	Black	62.1	12.5				
RC7	White	57.6	12.3	0	0.00	0.23	0.93
	Black	57.6	11.1				
RC8	White	55.9	11.7	37.55**	**0.44**	22.50**	2.05
	Black	61.1	12.5				
RC9	White	54.0	10.3	21.3**	0.33	7.03*	1.57
	Black	57.5	10.6				
MLS	White	53.7	9.9	1.75	0.10	2.25	1.36
	Black	54.6	9.8				
GIC	White	54.6	13.1	0.40	0.05	1.99	0.75
	Black	54.0	12.1				
HPC	White	56.2	12.0	0.62	0.06	0.12	0.95
	Black	55.6	11.0				
NUC	White	58.1	11.6	11.28*	0.24	6.17*	1.44
	Black	60.9	10.8				
COG	White	58.0	12.5	17.38**	0.30	8.73*	1.57
	Black	61.8	11.8				
SUI	White	50.5	12.2	1.73	0.10	3.28	1.36
	Black	51.7	12.6				
HLP	White	51.2	11.2	1.47	0.09	1.52	0.74
	Black	50.2	10.5				
SFD	White	57.3	12.8	21.99**	0.34	19.28**	0.49
	Black	53.0	11.7				
NFC	White	56.8	11.3	0.79	0.06	0.18	0.98
	Black	57.5	10.5				
STW	White	55.5	11.5	0.12	0.02	1.94	0.80
	Black	55.2	10.4				
AXY	White	60.2	14.7	0.84	0.07	0.56	0.89
	Black	59.2	13.2				
ANP	White	54.6	11.5	12.07*	0.25	7.70*	1.54
	Black	57.5	12.0				
BRF	White	57.3	13.0	5.27	0.17	1.36	1.22
	Black	59.5	12.6				
MSF	White	49.3	7.9	87.69**	**0.68**	49.49**	3.71
	Black	54.8	9.3				
JCP	White	47.3	8.3	112.56**	**0.77**	19.66**	3.40

	Black	53.8	9.3				
SUB	White	50.8	11.0	0.07	0.02	1.07	0.77
	Black	51.0	9.7				
AGG	White	51.2	10.8	13.93**	0.27	3.68	1.46
	Black	54.1	10.8				
ACT	White	56.0	12.1	6.20	0.18	7.87*	1.52
	Black	58.2	12.0				
FML	White	53.5	10.9	5.43	0.17	0.14	1.08
	Black	55.4	10.6				
IPP	White	49.1	9.5	26.87**	0.37	4.83	0.45
	Black	45.6	8.3				
SAV	White	49.0	11.7	5.30	0.17	16.15**	0.31
	Black	47.1	9.0				
SHY	White	53.3	11.2	11.14*	0.24	18.80**	0.40
	Black	50.7	8.3				
DSF	White	52.6	11.2	17.38**	0.30	18.85**	2.07
	Black	56.0	13.0				
AES	White	42.2	8.5	21.73**	0.34	0.84	0.51
	Black	45.0	7.0				
MEC	White	47.9	8.9	34.09**	**0.42**	15.24**	0.10
	Black	44.2	6.5				
AGGR-r	White	49.6	9.6	39.73**	**0.45**	11.65*	1.91
	Black	54.0	10.4				
PSYC-r	White	54.6	10.9	52.33**	**0.52**	37.97**	2.59
	Black	60.4	11.8				
DISC-r	White	50.2	8.5	9.52*	0.22	0.17	1.12
	Black	52.1	8.2				
NEGE-r	White	57.3	12.1	0.01	0.01	1.23	0.83
	Black	57.2	10.8				
INTR-r	White	48.3	11.3	12.82**	0.26	9.61*	0.31
	Black	45.5	9.2				

Note: *N* = 1231 for White college students; *N* = 227 for Black students. *VRIN-r* = Variable Response Inconsistency. *TRIN-r* = True Response Inconsistency. *F-r* = Infrequent Responses. *Fp-r* = Infrequent Psychopathology Responses. *Fs* = Infrequent Somatic Responses. *FBS-r* = Symptom Validity. *RBS* = Response Bias. *L-r* = Uncommon Virtues. *K-r* = Adjustment Validity. *EID* = Emotional/Internalizing Dysfunction. *THD* = Thought Dysfunction. *BXD* = Behavioral/Externalizing Dysfunction. *RCd* = Demoralization. *RC1* = Somatic Complaints. *RC2* = Low Positive Emotionality. *RC3* = Cynicism. *RC4* = Antisocial Behavior. *RC6* = Ideas of Persecution. *RC7* = Dysfunctional Negative Emotions. *RC8* = Aberrant Experiences. *RC9* = Hypomanic Activation. *GIC* = Gastrointestinal Complaints. *HPC* = Head Pain Complaints. *NUC* = Neurological Complaints. *COG* = Cognitive Complaints. *SUI* = Suicidal/Death Ideation. *HLP* = Helplessness/Hopelessness. *SFD* = Self-Doubt. *NFC* = Inefficacy. *STW* = Stress/Worry. *AXY* =

Anxiety. *ANP* = Anger Proneness. *BRF* = Behavior-Restricting Fears. *MSF* = Multiple Specific Fears. *JCP* = Juvenile Conduct Problems. *SUB* = Substance Abuse. *AGG* = Aggression. *ACT* = Activation. *FML* = Family Problems. *IPP* = Interpersonal Passivity. *SAV* = Social Avoidance. *SHY* = Shyness. *DSF* = Disaffiliativeness. *AES* = Aesthetic Interests. *MEC* = Mechanical Interests. *AGGR-r* = Aggressiveness PSY-5. *PSYC-r* = Psychoticism PSY-5. *NEGE-r* = Negative Emotionality/Neuroticism PSY-5. *INTR-r* = Introversion PSY-5. *d* = Cohen's *d*; * = $p < .01$, ** = $p < .001$.

Validity scales. As illustrated in Table 1, African American students scored significantly higher than White students on six of the nine validity scales. However, none of these differences met our criteria for clinical relevance. Although the difference in their mean *T* scores was not considered clinically relevant, African American students were found to be twice as likely to obtain an elevated score on *VRIN-r (Variable Response Inconsistency)* as White students.

Higher Order scales. African American students scored significantly higher than White students on two of the three Higher Order scales. Differences between the groups were significant on *THD* (*Thought Dysfunction*, *d* = 0.48) and *BXD* (*Behavioral/Externalizing Dysfunction*, *d* = 0.60), with African American students scoring more than 5 *T* points higher than White students on each scale. As such, these differences were considered clinically relevant. In addition, African American students were found to be more than twice as likely as White students to obtain elevated *T* scores on both *THD (Thought Dysfunction)* and *BXD (Behavioral/Externalizing Dysfunction)*.

Restructured Clinical (RC) scales. On the RC scales, African American students scored significantly higher than White students on five of the nine scales. However, only three of these

met our criteria for clinical significance, with medium effect sizes were observed for *RC4* (*Antisocial Behavior*, *d* = 0.47), *RC6* (*Ideas of Persecution*, *d* = 0.43), and *RC8* (*Aberrant Experiences*, *d* = 0.44). Group differences on these scales ranged from 4.1 to 5.2 *T* points and were considered clinically relevant. Further, African American students were found to be more than twice as likely as White students to obtain elevated scores on *RC3 (Cynicism)* and *RC8 (Aberrant Experiences)*.

Somatic/Cognitive scales. African American students scored higher than White students on two of the five Somatic/Cognitive scales. However, neither the observed difference for *NUC (Neurological Complaints)* nor *COG* (*Cognitive Complaints*, *d* = 0.24 and 0.30, respectively) met our criteria for clinical relevance. Further, there were no meaningful differences in the distribution of elevated scores.

Internalizing scales. African American students scored significantly higher than White students on three of the nine Internalizing Scales; however, only differences on one of these scales, *Multiple Specific Fears* (*MSF*), met clinical relevance. A medium effect was observed for this scale (*MSF*, *d* = 0.68), which reflected a difference of 5.5 *T* points between groups.

With regard to differences in the distribution of elevated scores, African American students were more than three times as likely as White students to obtain elevated *T* scores on *MSF (Multiple Specific Fears)*. In contrast, African American students were less than half as likely as White students to obtain an elevated score on *SFD (Self-Doubt)*.

Externalizing scales. There were significant differences in mean scores between the African American and White samples on two Externalizing scales, but with only one of these scales meeting the criteria set for clinical relevance. African American students scored 6.5 *T* points (*d* = 0.77) higher on *JCP (Juvenile Conduct Problems)* than did White students; this was a clinically relevant difference indicating that African American students were more than three times as likely as White students to obtain elevated scores on *JCP (Juvenile Conduct Problems)*.

Interpersonal scales. African American students scored significantly higher than White students on one of the five Interpersonal scales and lower on two. The effects for each of the comparisons, however, were small and not of clinical significance.

Regarding differences in the distribution of elevated scores, African American students were more than twice as likely as White students to obtain elevated *T* scores on *DSF (Disaffiliativeness).* However, they were less than half as likely as White students to obtain elevated scores on both *SAV (Social Avoidance)* and *SHY (Shyness).* Although the odds ratio for *IPP (Interpersonal Passivity)* met our criterion, the significance of the distribution differences did not.

Interest scales. No clinically relevant differences were found for the Interest scales between racial groups. African American students, however, were approximately 10 times less likely than their White counterparts to obtain an elevated score on *MEC (Mechanical-Physical Interests).* The distribution difference for elevated scores on *AES (Aesthetic-Literary Interests)* was not significant.

PSY-5 (Personality Psychopathology Five) scales. Finally, African American students scored significantly higher than White students on three of the PSY-5 scales and lower on one, with only two of these scales meeting the criteria for clinical significance. Both *AGGR-r* (*Aggressiveness-Revised, d* = 0.45) and *PSYC-r* (*Psychoticism-Revised, d* = 0.52) evidenced medium effect sizes and clinically relevant *T* score differences of 4.4 and 5.8 *T* points, respectively, with African American students scoring higher on each.

A comparison of the distribution of elevated and non-elevated scores reveals that African American students were more than twice as likely to obtain elevated *T* scores on *PSYC-r (Psychoticism-Revised)* than were the White students; the odds ratio for *AGGR-r (Aggressiveness-Revised)* fell just short of our 2.0 criterion. White students were more than three times as likely to obtain elevated scores on *INTR-r (Introversion/Low Positive Emotionality-Revised).*

Comparisons by Gender

Validity scales. As seen in Table 2, African American men scored significantly higher than White men on two of the nine validity scales; these differences were considered clinically relevant as both demonstrated medium effect sizes with differences of 4.7 *T* points on *VRIN-r (Variable Response Inconsistency, d* = 0.45*)* and 6.4 *T* points *on Fp-r (Infrequent Psychopathology Responses, d* = 0.46*).* Although African American women scored significantly different from White students on five of the nine validity scales, none of these differences were considered clinically relevant.

Table 2

Means and standard deviations for college students on MMPI-2-RF scales, by sex and race, with associated F values and effect sizes, chi square values for differences in the distribution of clinically elevated scores, and the odds ratios for obtaining an elevated score.

		Males						Females					
Scale	*Group*	*M*	*SD*	*F*	*d*	χ^2	*OR*	*M*	*SD*	*F*	*d*	χ^2	*OR*
VRIN-r	White	53.6	10.4	9.31*	**0.45**	2.68	1.84	54.0	9.8	12.53**	0.29	13.60**	2.07
	Black	58.3	9.1					56.9	11.0				
TRIN-r	White	56.9	6.9	2.40	0.23	2.29	1.62	56.8	6.8	4.46	0.18	4.18	1.46
	Black	58.5	8.4					58.0	6.9				
F-r	White	56.1	14.8	2.53	0.23	3.75	1.83	57.2	14.7	17.53**	0.35	9.58*	1.70
	Black	59.6	13.8					62.4	16.5				
Fp-r	White	55.8	13.0	9.49*	**0.46**	6.85*	2.22	58.3	12.5	6.82*	0.22	1.99	1.28
	Black	61.8	13.6					61.0	12.9				
Fs	White	56.7	13.2	0.52	0.11	0.35	1.20	59.0	14.1	10.84*	0.27	9.29*	1.66
	Black	58.1	13.1					62.9	14.1				
FBS-r	White	49.4	10.8	0.01	0.01	0.41	1.36	55.6	12.2	1.29	0.09	5.89	0.56
	Black	49.3	11.3					54.5	9.4				
RBS	White	55.4	11.8	0.02	0.02	0.12	0.87	57.1	13.0	1.38	0.10	0.05	0.96
	Black	55.6	11.5					58.4	12.8				
L-r	White	52.1	9.0	4.88	0.33	0.00	0.99	49.2	8.2	24.11**	**0.41**	2.37	1.58
	Black	55.0	8.0					52.6	8.7				
K-r	White	46.5	9.1	0.29	0.08	0.20	0.63	43.1	9.5	0.47	0.06	0.72	0.54
	Black	47.2	8.6					43.7	9.1				
EID	White	51.1	11.3	0.59	0.11	3.97	0.25	56.9	11.6	2.43	0.13	5.35	0.62
	Black	49.9	7.5					55.5	10.0				
THD	White	55.0	11.8	4.83	0.32	1.44	1.50	54.2	10.5	42.71**	**0.54**	26.71**	2.69
	Black	58.8	10.9					60.1	12.8				

BXD	White	53.0	8.8	8.42*	**0.43**	2.45	1.79	49.2	8.3	69.64**	**0.69**	22.24**	3.24
	Black	56.8	9.1					55.0	8.5				
RCD	White	53.8	10.7	0.02	0.02	0.69	0.68	57.6	10.7	0.52	0.06	0.33	1.13
	Black	53.6	8.0					58.2	9.7				
RC1	White	53.5	10.7	3.88	0.29	2.95	1.82	59.3	11.2	2.29	0.13	0.05	1.04
	Black	56.6	9.9					60.7	9.0				
RC2	White	49.4	11.3	0.54	0.11	1.94	0.43	53.0	11.7	7.48*	0.23	3.64	0.63
	Black	48.2	9.1					50.4	10.7				
RC3	White	56.2	9.1	3.87	0.29	3.75	1.83	56.9	9.5	26.03**	**0.42**	21.51**	2.20
	Black	59.0	11.4					60.9	9.4				
RC4	White	51.7	9.3	10.94*	**0.49**	0.44	1.32	50.6	8.8	32.04**	**0.47**	3.64	1.62
	Black	56.2	8.2					54.7	8.5				
RC6	White	56.5	11.6	4.56	0.32	0.67	1.30	57.4	11.1	31.29**	**0.46**	7.82*	1.62
	Black	60.2	12.4					62.7	12.6				
RC7	White	53.1	11.2	0.01	0.01	0.47	1.29	59.4	12.3	0.08	0.02	1.37	0.83
	Black	52.9	10.5					59.1	10.9				
RC8	White	56.8	12.2	4.98	0.33	3.27	1.74	55.5	11.5	34.29**	**0.49**	20.40**	2.20
	Black	60.8	11.9					61.2	12.7				
RC9	White	55.5	10.8	1.07	0.15	0.06	0.92	53.5	10.1	23.84**	**0.40**	11.18*	1.90
	Black	57.2	10.7					57.6	10.6				
MLS	White	50.6	8.6	0.04	0.03	0.08	1.20	54.8	10.1	1.25	0.09	1.72	1.33
	Black	50.9	7.9					55.7	10.1				
GIC	White	51.9	11.3	0.60	0.11	0.96	0.59	55.6	13.5	0.28	0.04	1.52	0.76
	Black	50.6	10.5					55.1	12.4				
HPC	White	51.9	10.2	0.87	0.14	0.70	1.47	57.9	12.2	2.66	0.14	1.15	0.83
	Black	53.4	10.7					56.2	11.0				
NUC	White	56.6	11.3	3.45	0.27	0.31	1.19	58.7	11.6	7.32*	0.22	5.98	1.50
	Black	59.6	10.5					61.2	10.9				

COG	White	56.4	12.0	4.20	0.30	0.60	1.30	58.6	12.6	12.38**	0.29	8.07*	1.63
	Black	60.0	11.4					62.3	11.9				
SUI	White	50.5	12.5	0.47	0.10	0.89	1.39	50.5	12.1	1.26	0.09	2.37	1.35
	Black	51.8	13.0					51.6	12.5				
HLP	White	49.7	11.0	0.35	0.09	0.83	0.57	51.7	11.2	1.38	0.10	0.97	0.77
	Black	48.8	9.5					50.6	10.8				
SFD	White	53.3	12.0	2.20	0.22	1.49	0.63	58.9	12.8	23.51**	**0.40**	20.89**	0.44
	Black	50.7	9.8					53.8	12.1				
NFC	White	52.6	10.3	1.38	0.17	0.95	1.48	58.4	11.3	0.01	0.01	0.58	0.87
	Black	54.4	10.7					58.5	10.3				
STW	White	52.1	11.0	0.12	0.05	0.27	1.20	56.8	11.5	0.71	0.07	3.89	0.69
	Black	52.7	10.2					56.0	10.4				
AXY	White	54.6	13.1	0.21	0.07	0.17	0.86	62.3	14.7	1.33	0.10	0.82	0.86
	Black	53.7	11.8					60.9	13.1				
ANP	White	51.2	10.7	1.22	0.16	0.12	1.14	55.9	11.5	9.80*	0.26	7.53*	1.61
	Black	53.0	10.4					58.9	12.2				
BRF	White	51.6	10.8	4.02	0.30	1.55	1.75	59.5	13.1	1.71	0.11	0.30	1.10
	Black	54.8	10.0					60.9	13.0				
MSF	White	45.1	6.4	14.16**	**0.56**	3.98	3.98	50.9	7.9	74.69**	**0.72**	42.81**	3.66
	Black	48.7	6.9					56.6	9.1				
JCP	White	48.5	9.2	30.05**	**0.81**	9.35*	3.82	46.9	7.9	87.08**	**0.77**	11.77*	3.41
	Black	56.1	10.1					53.1	9.0				
SUB	White	51.4	11.1	0.02	0.02	0.03	0.92	50.6	11.0	0.08	0.02	1.16	0.73
	Black	51.6	9.9					50.8	9.7				
AGG	White	53.0	11.2	0.15	0.06	0.02	1.05	50.5	10.5	18.31**	0.35	5.41	1.70
	Black	53.7	12.1					54.2	10.4				
ACT	White	53.3	11.8	2.89	0.25	2.20	1.62	57.0	12.1	3.02	0.14	5.08	1.47
	Black	56.3	12.0					58.7	11.9				

FML	White	51.7	10.6	2.66	0.24	0.05	0.90	54.2	10.9	2.69	0.14	0.17	1.10
	Black	54.2	9.3					55.7	11.0				
IPP	White	46.8	9.3	0.52	0.11	0.31	0.66	50.0	9.5	33.36**	**0.48**	4.90	0.40
	Black	45.8	8.8					45.6	8.1				
SAV	White	50.3	11.0	3.18	0.26	2.75	0.42	48.5	11.9	2.46	0.13	13.43**	0.28
	Black	47.5	9.7					47.0	8.9				
SHY	White	50.7	10.0	0.94	0.14	0.33	0.77	54.2	11.5	11.96*	0.29	21.86**	0.33
	Black	49.3	8.6					51.1	8.2				
DSF	White	54.1	12.7	4.62	0.32	9.63*	2.63	52.0	10.5	13.87**	0.31	10.79*	1.92
	Black	58.0	11.4					55.4	13.4				
AES	White	40.8	7.8	3.93	0.29	0.48	-	42.8	8.7	16.59**	0.34	0.59	0.57
	Black	43.0	6.1					45.6	7.2				
MEC	White	55.3	10.0	17.56**	**0.62**	14.51**	0.06	45.0	6.6	19.95**	0.37	1.03	0.36
	Black	49.3	7.2					42.7	5.4				
AGGR-r	White	53.0	10.3	0.90	0.14	0.17	1.17	48.3	8.9	53.35**	**0.60**	17.71**	2.57
	Black	54.4	10.4					53.8	10.4				
PSYC-r	White	55.0	11.4	5.48	0.35	2.80	1.71	54.4	10.7	49.31**	**0.58**	39.36**	3.03
	Black	58.9	10.8					60.8	12.0				
DISC-r	White	55.0	9.0	0.15	0.06	0.00	1.00	48.5	7.6	17.67**	0.35	1.00	1.47
	Black	55.5	9.5					51.1	7.6				
NEGE-r	White	52.7	11.0	0.24	0.07	0.69	0.68	59.0	12.0	0.05	0.02	1.27	0.82
	Black	51.9	9.8					58.8	10.7				
INTR-r	White	48.9	10.9	3.44	0.27	0.62	0.61	48.1	11.5	9.11*	0.25	9.70*	0.23
	Black	46.0	9.5					45.4	9.1				

Note: For men *N* = 337 for White college students; *N* = 53 for Black students. For women *N* = 894 for White college students; *N* = 174 for Black students. *VRIN-r* = Variable Response Inconsistency. *TRIN-r* = True Response Inconsistency. *F-r* = Infrequent Responses. *Fp-r* = Infrequent Psychopathology Responses. *Fs* = Infrequent Somatic Responses. *FBS-r* = Symptom Validity. *RBS* = Response Bias. *L-r* = Uncommon Virtues. *K-r* = Adjustment Validity. *EID* = Emotional/Internalizing Dysfunction. *THD* = Thought Dysfunction. *BXD* = Behavioral/Externalizing Dysfunction. *RCd* = Demoralization. *RC1* = Somatic

Complaints. *RC2* = Low Positive Emotionality. *RC3* = Cynicism. *RC4* = Antisocial Behavior. *RC6* = Ideas of Persecution. *RC7* = Dysfunctional Negative Emotions. *RC8* = Aberrant Experiences. *RC9* = Hypomanic Activation. *GIC* = Gastrointestinal Complaints. *HPC* = Head Pain Complaints. *NUC* = Neurological Complaints. *COG* = Cognitive Complaints. *SUI* = Suicidal/Death Ideation. *HLP* = Helplessness/Hopelessness. *SFD* = Self-Doubt. *NFC* = Inefficacy. *STW* = Stress/Worry. *AXY* = Anxiety. *ANP* = Anger Proneness. *BRF* = Behavior-Restricting Fears. *MSF* = Multiple Specific Fears. *JCP* = Juvenile Conduct Problems. *SUB* = Substance Abuse. *AGG* = Aggression. *ACT* = Activation. *FML* = Family Problems. *IPP* = Interpersonal Passivity. *SAV* = Social Avoidance. *SHY* = Shyness. *DSF* = Disaffiliativeness. *AES* = Aesthetic Interests. *MEC* = Mechanical Interests. *AGGR-r* = Aggressiveness PSY-5. *PSYC-r* = Psychoticism PSY-5. *NEGE-r* = Negative Emotionality/Neuroticism PSY-5. *INTR-r* = Introversion PSY-5. *d* = Cohen's *d*; * = $p < .01$, **= $p < .001$. When at least one expected cell count was less than 5 for χ^2 analysis, significance value for Fisher's exact test was used.

Regarding differences in the distribution of elevated scores, African American men were more than twice as likely to obtain elevated *T* scores on *Fp-r (Infrequent Psychopathology Responses)* as White men. African American women, on the other hand, were more than twice as likely as White women to elevate *VRIN-r (Variable Response Inconsistency)*.

Higher Order scales. Among the Higher Order scales, African American men scored significantly higher than White men on one scale but this difference did not meet the threshold for clinical significance. African American women scored significantly higher than White women on *THD (Thought Dysfunction)* and *BXD* (*Behavioral/Externalizing Dysfunction*, $d = 0.54$ and 0.69, respectively), with clinically relevant differences of 5.9 and 5.8 *T* points.

A comparison of the distribution of elevated and non-elevated scores reveals that African American women were more than twice as likely to obtain elevated *T* scores on *THD (Thought Dysfunction)* and *BXD* (*Behavioral/Externalizing Dysfunction)* as were White women. Although White men were approximately four times more likely to obtain elevated scores on *EID (Emotional/Internalizing Dysfunction)* as African American men, the difference in the distribution of elevated scores was not significant.

RC scales. African American men scored significantly higher than White men on *RC4 (Antisocial Behavior)*. The medium ($d = 0.51$) effect size and difference of 4.5 *T* points meets our criteria for clinical relevance.

African American women scored significantly higher than White women on five of the nine RC scales; they scored lower on one, however. Clinically relevant differences were found for four of these scales. Medium effects were noted for *RC3* (*Cynicism*, $d = 0.42$), *RC4* (*Antisocial Behavior*, $d = 0.47$), *RC6* (*Ideas of Persecution*, $d = 0.46$), *RC8* (*Aberrant Experiences*, $d = 0.49$) and *RC9* (*Hypomanic Activation*, $d = 0.40$), with African American women scoring from 4.1 to 5.7 *T* points higher on these scales than White women.

There were no significant differences in the distribution or odds of obtaining an elevated score for males. African American women were more than twice as likely to obtain elevated *T* scores on *RC3 (Cynicism)* and *RC8 (Aberrant Experiences)* as White women, however. Although there were significant differences in the distributions of elevated scores for *RC6 (Ideas of Persecution)* and *RC9 (Hypomanic Activation)*, the odds ratio estimates fell short of our criterion of 2.0.

Somatic/Cognitive scales. Among the somatic and cognitive scales, there were no significant, or clinically relevant, differences in mean scores, the distribution of elevated scores, or the odds of obtaining an elevated score between African American and White men.

Similarly, there were no clinically significant differences observed between women on these scales. Although there was a significant difference in the distributions of elevated scores for *COG (Cognitive Complaints)*, the odds ratio estimate of 1.63 fell short of our criterion.

Internalizing scales. No clinically significant differences were found between men among the Internalizing scales. Although African American men were almost four times more likely to produce an elevated score on *MSF (Multiple Specific Fears)*, it should be noted that this difference reflects a very low base rate of elevated scores and a non-significant difference.

Conversely, African American women obtained significantly higher scores on two Internalizing scales and lower scores on one, but with only two of these scales meeting clinical relevance. White women scored 5.1 *T* points higher on *SFD* (*Self-Doubt*, $d = 0.40$); this difference was clinically noteworthy. A large effect was noted for *MSF* (*Multiple Specific Fears*, $d = 0.72$) with African American women averaging 5.7 *T* points higher. African American women were more than three times more likely to obtain elevated *T* scores on *MSF (Multiple Specific Fears)*

than were White women; unlike what was observed for men, this difference is both significant and meaningful, as the base rate of elevated scores is higher. Finally, African American women were less than half as likely as White women to obtain elevated scores on *SFD (Self-Doubt).*

Externalizing scales. African American men scored significantly higher than White men on one of the four Externalizing scales. A large effect size (d = 0.81) was observed for *JCP (Juvenile Conduct Problems)* with African American men scoring 7.6 *T* points higher than White men. African American women scored significantly higher than White women on two scales, with only one scale reaching clinical relevance. A clinically relevant difference of 6.2 was observed on *JCP* (*Juvenile Conduct Problems, d* = 0.77).

For both African American men and women only, *JCP (Juvenile Conduct Problems)* produced meaningful differences in the distribution of elevated *T* scores, with African American men and women being more than three times as likely to elevate *JCP (Juvenile Conduct Problems)* as their White counterparts.

Interpersonal scales. There were no statistically or clinically significant differences between scores obtained by African American men and White men on any of the five Interpersonal scales. African American women, however, scored significantly lower than White women on two scales and higher on one. Only one of these scales met the threshold for clinical significance: African American women scored 4.4 *T* points lower than White women on *IPP* (Interpersonal Passivity, d = 0.48).

The pattern of meaningful differences is somewhat different with regard to the distributions of elevated scores. Although there were no significant differences in mean scores on *DSF (Disaffiliativeness)* between African American and White men, there was a difference in the distribution of elevated scores, as 36% of African American men produced elevated scores, as opposed to 18% of White men; this difference was both statistically significant and clinically meaningful.

Among women, although the mean difference between African American and White women's scores on *IPP (Interpersonal Passivity)* was significant, the difference in the distribution of elevated scores was not significant and did not meet our odds ratio requirement. White women were more than three times more likely to elevate *SAV (Social Avoidance)* and *SHY (Shyness)* than African American women, despite a lack of clinically relevant differences in mean scores. Approximately 28% of White women produced elevated *SHY (Shyness)* scores, as opposed to 11% of African American women; likewise, approximately 15% of White women produced elevated *SHY (Shyness)* scores, as opposed to 5% of African American women. Finally, although the difference in the distribution of elevated scores between African American and White women on *DSF (Disaffiliativeness)* was statistically significant, it fell just below our odds ratio requirement of 2.0.

Interest scales. African American men scored significantly lower than White men on the *MEC* (*Mechanical-Physical Interests, d* = 0.62) scale; the difference of 6.0 *T* points was clinically relevant. No clinically relevant differences were observed between women. White men were far more likely than African American men to obtain an elevated score on *MEC (Mechanical-Physical Interests).*

PSY-5 scales. By our criteria, there were no significant or clinically relevant differences between African American and White men among the PSY-5 scales. African American women, however, scored significantly higher than White women on three PSY-5 scales and lower on one. Clinically relevant effects were observed on two of the scales on which they scored higher, as

AGGR-r (*Aggressiveness-Revised, d* = 0.60) and *PSYC-r* (*Psychoticism-Revised, d* = 0.58) demonstrated differences of 5.5 and 6.4 *T* points, respectively.

A comparison of the distribution of elevated and non-elevated scores among the male group revealed no differences that met our criteria. Among women, African Americans were more than twice as likely to obtain elevated T scores on *AGGR-R (Aggressiveness-Revised)* and *PSYC-r (Psychoticism-Revised)* as White women. African American women, however, were approximately four times less likely than White women to obtain elevated scores on *INTR-R (Introversion/Low Positive Emotionality-Revised),* as approximately 9% of White women produced elevated scores in comparison to only around 2% of African American women.

Discussion

There is a long history of examining the appropriateness of the MMPI and MMPI-2 for use among diverse cultural groups in the United States, particularly with African Americans; however, there is a dearth of information specific to differences between racial groups on the complete MMPI-2-RF. The current study represents an early effort to help build that literature base. Previous research on racial/ethnic differences on earlier forms of the MMPI has produced inconsistent findings across studies, although meta-analyses such as those by Greene (1987) and Hall et al. (1999) provide additional clarity.

The current study yielded an array of differences in scores on the MMPI-2-RF between both African American and White students overall, as well as among these groups when also separated by gender. For the most part, clinically and statistically significant differences represented a tendency of African American students to obtain higher T scores than their White counterparts on those scales reflecting externalizing behaviors, interpersonal suspiciousness, unusual thoughts and perceptual experiences, and a feeling of alienation from others. White students, on the other hand, tended to produce more elevated scores on scales measuring issues such as self-doubt and interpersonal passivity. These findings appear to at least in part support the idea that ethno-cultural and social experiences may be driving the differences observed between Whites and African Americans on the measure. African Americans obtained higher scores on scales reflecting greater suspiciousness, social difficulties, and estrangement, which is not unexpected given this group's present and past experiences with racism and oppression.

These behaviors can also be conceptualized as manifestations of cultural mistrust (Whaley, 2001), as paranoid thinking and behaviors can be understood in the context of these individuals' social and life experiences in a world where they are not afforded equal opportunities and may be subject to multiple forms of discrimination. Perceived discrimination, in particular, has been associated with heightened paranoia and has been found to predict higher levels of cultural mistrust and nonclinical paranoia in African Americans (Combs et al., 2006). African Americans, in particular, may be at a heightened sense of self-consciousness due to having a visible dimension to their diversity (i.e., skin color and other visible features) and this may contribute to feelings of hyper-vigilance and suspiciousness as they navigate hostile environments. Perceived discrimination and racism has also been tied to a number of psychological symptoms including higher stress levels, anger, anxiety, depression, and substance abuse (McLaughlin, Hatzenbuehler, & Keyes, 2010; Pascoe & Richman, 2009), as well as been associated with negative physical outcomes such as hypertension and cardiovascular problems, although results of these studies have often been mixed (Brondolo, Rieppi, Kelly, & Gerin, 2003; Williams, Neighbors, & Jackson, 2003). Given the link between negative health outcomes and discrimination, it is important to continue to study what may be driving the differences observed between African Americans and

White individuals in the present study. There remains the possibility that the results of the current study reflect differences in lived experiences as proposed by the idea of cultural mistrust.

Moreover, the MMPI-2-RF scales on which African Americans, as a group, tended to score higher corresponded to conceptually related scales from MMPI and MMPI-2 that were similarly elevated by African American subsamples, although one should be mindful that such differences have not consistently been observed (c.f., Greene, 1987; Hall et al., 1999). This finding is not surprising, given that all of the MMPI-2-RF items were derived from either the MMPI or MMPI-2.

One of the most interesting findings from the current study is that racial differences on the MMPI-2-RF appear to be more prevalent among college women than among men. Although one may be tempted to view this finding as an artifact of sample size, it should be noted that our reliance on effect size and absolute T score differences in addition to statistical significance largely mitigates the effect of sample size. This finding of more differences among college-aged females in a study of race and the MMPI is relatively unique and requires further study to ascertain its origin.

Among the strengths of the current study is our reliance on multiple criteria to establish whether an observed difference is meaningful. We believe that requiring multiple indicators of importance – each with a strength that accommodates the weakness of another – allows us to have more confidence in our results.

Too often, studies rely solely on measures of statistical significance, which is necessarily affected by sample size. In studies with larger samples, such as ours, a relatively small difference may appear significant, even with the use of a more stringent alpha level, such as .01 in the current study. On the other hand, in a study that incorporates a relatively small sample, a difference of large magnitude may be statistically insignificant. Thus, statistical significance, alone, is not an adequate measure of importance.

For this reason, many argue that effect size is the appropriate indicator of importance. Certainly, Cohen's *d* is less affected by sample size, as it is a proportion of standard deviation rather than standard error (although one could reasonably argue that there will be less variance in a larger sample to begin with). However, Cohen's *d* does not reflect the absolute *magnitude* of the difference. For example, given two samples with pooled standard deviation of 4 T points, a difference of only 2 T points would equal a Cohen's *d* of 0.5, or a medium effect. With an adequate sample size, it would also be statistically significant, although we would hardly call it clinically meaningful. Thus, effect size, even when combined with statistical significance, is not adequate to assess importance.

Others, therefore, may argue for absolute differences between the scores, or these measures in conjunction with statistical significance and effect size, as these may relate more to effective clinical significance in score differences. However, it is worth noting that the importance of differences of magnitude (as well as statistically significant mean differences and effect size) often depend on *where* in the distribution those differences occur. For example, most clinicians would care very little about a difference of even 7 T points on the MMPI-2-RF if that difference occurred between, say, 50 and 60. A difference of 7 points that occurs between 65 and 75, however, may be viewed as being considerably more important.

Thus, we chose to incorporate measures of statistical significance, effect size, and absolute magnitude of the difference as indicators of important differences in mean scores. Some might argue that our requirement of an absolute difference of at least 4 T points was too low and suggest that a score of 5, or even higher, should be employed. However, we believe that the use of our

other criteria in conjunction with a 4-point difference more than compensates for any inflation of clinical relevance gained by using a cut score of 4 rather than 5. We note that our reason for choosing 4 T points was that it should equal a Cohen's *d* of 0.4 (or a medium effect size) with an *SD* of 10.

An alternative track to assessing whether there are important racial differences in MMPI-2-RF scale scores is to simply compare the distributions of those obtaining elevated and non-elevated scores by race; in effect, this is a very pragmatic marker, as it reflects what is often the first step of profile interpretation and answers the question, "Is group X more likely to elevate scores on the MMPI-2-RF?" Use of a significance test, such as a chi square test, however, suffers from the same shortcomings as a significance test of mean differences. Thus, an effect size might serve as an appropriate balance. Although one might choose a phi coefficient, we chose to incorporate odds ratio estimates due to their intuitive interpretability.

There are weaknesses in our study, as well. For example, due to differences in sample sizes, we had over 99% power to find significant differences in both the combined gender and women-only samples with alpha set at .01 and predicted effect size set at 0.4, but had only around 64% power to do so in our men-only sample. Thus, some significant effects might have been missed. It should be noted, however, that there were no comparisons which met the criteria for effect size and absolute difference but failed to meet statistical significance.

Another concern relates to the origins of our participants. Although the university where these students are enrolled is located in an area considered urban by the US Census Bureau, it is surrounded by largely rural areas and many students are drawn from those areas. The university also draws from larger urban areas, such as the greater Chicago area. It is possible that there is a relative imbalance of urban vs. rural origin among our African American and White participants. The degree, if any, to which this may be associated with score differences is currently unknown, but deserves examination. Other personal history, such as primary caregiver and parental relationship status, may also be associated with these differences.

Finally, it should be noted that the observed differences on the MMPI-2-RF reflect self-report and are not necessarily associated with behaviors. For example, several of the items on *JCP (Juvenile Conduct Problems)* refer to an outcome (e.g., being sent to the principal's office), rather than clear behavior (e.g., stealing). It is possible that African American individuals are at greater risk for punishment or negative judgment than their White counterparts and therefore elevate such scales. An item-level analysis on those scales that demonstrate clear racial differences in mean scores and likelihood of obtaining an elevated score should be pursued.

As noted above, the present results should not be considered a definitive indicator of racial differences on the MMPI-2-RF, but only as being among the first studies to perform such a study on the full MMPI-2-RF. More studies that incorporate samples that represent a broader slice of the population are needed to help us determine the precise nature of racial differences on the MMPI-2-RF. Based on the results of previous studies of the MMPI-2-RF's predecessors, we may never have a definitive answer as to that nature and its causes.

More research is needed to examine possible racial differences in MMPI-2-RF scores across various populations. Replication – or refutation – of the present results is necessary within college samples and research incorporating various populations (e.g., inpatients, outpatients) would only enhance our knowledge of which scales may, indeed, show racial differences. Future studies should also venture to explore the possible extra-test and ethno-cultural factors that may be affecting differences between these groups on the MMPI-2-RF, if these differences are found.

These differences could provide valuable insight to the field of personality assessment with diverse racial and/or ethnic groups.

Finally, we note that Helms (2006, p. 846) has argued that any evidence of racial differences on test scores can reasonably be considered as "prima facie evidence of construct-irrelevant variance." This thought might be extrapolated into a belief that any measure that demonstrates racial differences is inherently biased. However, we would strongly disagree with such a suggestion, and by no means are we suggesting that the present results offer evidence that the MMPI-2-RF is inherently biased.

We would argue that prior to drawing any conclusions regarding the causes of observed differences in mean scores and the tendency to produce elevated scores between groups, it is important to examine the possible demographic and extra-test factors that potentially influence these differences. Differences in test scores may reflect ethno-cultural factors related to lived experiences and divergent worldviews, as well as differences in symptom presentation. Previously, others have suggested that racial differences on the MMPI/MMPI-2 reflect differences in values and perceptions, rather than differences in psychological adjustment, and that the principal factor distinguishing between African Americans and White Americans on the MMPI is often estrangement and mistrust of society (Gynther, 1972). This may also apply to the MMPI-2-RF. After all, personality traits exhibited by African Americans related to mistrust, suspicion, and skepticism are unlikely to be shared by the majority group as these traits may have evolved as a response to a history of oppression, discrimination, and maltreatment in the US (Widiger & Samuel, 2005). Thus, African Americans might endorse items on the MMPI-2-RF related to these factors, resulting in higher mean differences compared to other groups. As Dahlstrom et al. (1986, p. 202) concluded, "the MMPI may be useful in the task of characterizing the various coping and defense mechanisms to which minority individuals may resort in their efforts to deal with the special circumstances that they all too often encounter in America today." This statement is as relevant today as it was 30 years ago. To suggest that the MMPI-2-RF was biased solely on the basis or racial score differences would be to essentially disregard the degree to which racism and the effects of other forms of inequality may impact scores.

Until we have a better idea of what is driving elevated MMPI-2-RF scores among African American college students, however, clinicians should use caution in interpreting relatively minor clinical elevations of MMPI-2-RF scales in African Americans. Before we assume, for example, that an African American individual is paranoid on the basis of their MMPI-2-RF scores, we should recognize that the *average* score for an African American college student is but one item-response away from being considered clinically elevated. As always, a clinician cannot rely only upon test scores when attempting to understand an individual, but must also attempt to understand their origins and their personal context.

About the Authors

Yelena Gonzalez, Psy.D. is with the Bruce W. Carter VA Medical Center, in Miami, Florida.

Elizabeth A. Smith, Psy.D. is with VA San Diego Health System in San Diego ,California.

Jennifer E. Keane, M.S. is with the Department of Psychology at Indiana State University in Terre Haute, Indiana.

Audra L. Biermann, M.S. is with the Department of Psychology at Indiana State University in Terre Haute, Indiana.

Kaitlin M. Keister, M.S. is with the Department of Psychology at Indiana State University in Terre Haute, Indiana.

Courtney N. Wiesepape, M.S. is with the Department of Psychology at Indiana State University in Terre Haute, Indiana.

P. Kevin Bolinskey, Ph.D. is with the Department of Psychology at Indiana State University in Terre Haute, Indiana. Correspondence concerning this article should be addressed to: P. Kevin Bolinskey; Department of Psychology; B-214 Root Hall; Indiana State University; Terre Haute, IN 47809; **Phone:** 812.237.2463; Correspondence concerning this article should be sent via email to *Kevin.Bolinskey(at)indstate.edu*

References

Anestis, J., Gottfried, E., & Joiner, T. (2015). The utility of MMPI-2-RF substantive scales in prediction of negative treatment outcomes in a community mental health center. *Assessment, 22*(1), 23-35. doi:10.1177/1073191114536771

Arbisi, P. A., Ben-Porath, Y. S., & McNulty, J. (2002). A comparison of MMPI-2 validity in African American and Caucasian psychiatric inpatients. *Psychological Assessment, 14*(1), 3-15. doi:10.1037/1040-3590.14.1.3

Baker, C. A. (2015). *An assessment of test bias on the MMPI-2-RF* (Unpublished doctoral dissertation). Regent University, Ann Arbor, Virginia.

Ben-Porath, Y. S., Shondrick, D., & Stafford, K. (1995). MMPI-2 and race in a forensic diagnostic sample. *Criminal Justice and Behavior, 22*(1), 19-32. doi:10.1177/0093854895022001002

Ben-Porath, Y. S., & Tellegen, A. (2008/2011). *MMPI-2 Restructured Form: Manual for administration, scoring, and interpretation.* Minneapolis, MN: University of Minnesota Press.

Brondolo, E., Rieppi, R., Kelly, K., & Gerin, W. (2003). Perceived racism and blood pressure: A review of the literature and conceptual and methodological critique. *Annals of Behavioral Medicine, 25,* 55-65.

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

Combs, D. R., Penn, D. L., Cassisi, J., Michael, C., Wood, T., Wanner, J., & Adams, S. (2006). Perceived racism as a predictor of paranoia among African Americans. *Journal of Black Psychology, 32*(1), 87-104. doi:10.1177/0095798405283175

Dahlstrom, W. G., Lachar, D., & Dahlstrom, L. E. (1986). *MMPI patterns of American minorities.* Minneapolis, MN: University of Minnesota Press.

Friedman, A. F., Bolinskey, P. K., Levak, R., & Nichols, D. S. (2015). *Psychological assessment with the MMPI-2/MMPI-2-RF* (3rd ed.). New York, NY: Routledge.

Frueh, B. C., Gold, P. B., de Arellano, M. A., & Brady, K. L. (1997). A racial comparison of combat veterans evaluated for PTSD. *Journal of Personality Assessment,* 68(3), 692-702. doi:10.1207/s15327752jpa6803_14

Frueh, B. C., Hamner, M. B., Bernat, J. A., Turner, S. M., Keane, T. M., & Arana, G. W. (2002). Racial differences in psychotic symptoms among combat veterans with PTSD. *Depression and Anxiety, 16*(4), 157-161. doi:10.1002/da.10068

Frueh, B. C., Smith, D. W., & Libet, J. M. (1996). Racial differences on psychological measures in combat veterans seeking treatment for PTSD. *Journal of Personality Assessment, 66*(1), 41-53. doi:10.1207/s15327752jpa6601_3

Gonzalez, Y., Arnold, K. A., Smith, E. A., Guidi, J. P., Biermann, A. L., Keane, J. E., & Bolinskey, P. K. (2017, March). *Reliability of the MMPI-2-RF Within a College Sample*. Paper presented at the meeting of the Society for Personality Assessment, San Francisco, CA.

Grant-Thompson, S. K., & Atkinson, D. R. (1997). Cross-cultural mentor effectiveness and African American male students. *Journal of Black Psychology, 23,* 120-134.

Greene, R. L. (1987). Ethnicity and MMPI performance: A review. *Journal of Consulting and Clinical Psychology, 55*(4), 497-512. doi:10.1037/0022-006X.55.4.497

Gynther, M. D. (1972). White norms and black MMPIs: A prescription for discrimination? *Psychological Bulletin, 78*(5), 386-402. doi:10.1037/h0033555.

Hall, G. N., Bansal, A., & Lopez, I. R. (1999). Ethnicity and psychopathology: A meta-analytic review of 31 years of comparative MMPI/MMPI-2 research. *Psychological Assessment, 11*(2), 186-197. doi:10.1037/1040-3590.11.2.186

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

Helms, J. E. (2006). Fairness is not validity or cultural bias in racial-group assessment: A quantitative perspective. *American Psychologist, 61*(8), 845-859. doi:10.1037/0003-066X.61.8.845

McLaughlin, K. A., Hatzenbuehler, M. L., & Keyes, K. M. (2010). Responses to discrimination and psychiatric disorders among Black, Hispanic, female, and lesbian, gay, and bisexual individuals. *American Journal of Public Health, 100*(8), 1477-1484. doi:10.2105/AJPH.2009.181586

Marek, R., Ben-Porath, Y. S., Sellbom, M., McNulty, J. L., & Heinberg, L. J. (2015). Validity of Minnesota Multiphasic Personality Inventory-2-Restructured Form (MMPI-2-RF) scores as a function of gender, ethnicity, and age of bariatric surgery candidates. *Surgery for Obesity and Related Diseases, 11*(3), 627-634. doi:10.1016/j.soard.2014.10.005

Mattson, C., Powers, B., Halfaker, D., Akeson, S., & Ben-Porath, Y. S. (2012). Predicting drug court treatment completion using the MMPI-2-RF. *Psychological Assessment, 24*(4), 937-943. doi:10.1037/a0028267

McAnulty, R. D., McAnulty, D. P., Sipp, J. E., Demakis, G. J., & Heggestad, E. D. (2014). Predictive validity of the MMPI–2 among female offenders in a residential treatment program. *Journal of Personality Assessment, 96*(6), 604-609. doi:10.1080/00223891.2014.880061

McNulty, J. L., Graham, J. R., Ben-Porath, Y. S., & Stein, L. R. (1997). Comparative validity of MMPI–2 scores of African American and Caucasian mental health center clients. *Psychological Assessment, 9*(4), 464-470. doi:10.1037/1040-3590.9.4.464

Monnier, J., Elhai, J. D., Frueh, B. C., Sauvageot, J. A., & Magruder, K. M. (2002). Replication and expansion of findings related to racial differences in veterans with combat-related PTSD. *Depression and Anxiety, 16*(2), 64-70. doi:10.1002/da.10060

Monnot, M. J., Quirk, S. W., Hoerger, M., & Brewer, L. (2009). Racial bias in personality assessment: Using the MMPI-2 to predict psychiatric diagnoses of African American and Caucasian chemical dependency inpatients. *Psychological Assessment, 21*(2), 137-151. doi:10.1037/a0015316

Munley, P., Morris, J., Murray, D., & Baines, T. (2001). A comparison of African American and White American veteran MMPI-2 profiles. *Assessment, 8*(1), 1-10.

Pascoe, E. A., & Richman, L. S. (2009). Perceived discrimination and health: A meta-analytic review. *Psychological Bulletin, 135*(4), 531-554. doi: 10.1037/a0016059

Tellegen, A., & Ben-Porath, Y. S. (2011). *Minnesota Multiphasic Personality Inventory – 2 Restructured Form: Technical manual.* Minneapolis, MN: University of Minnesota Press.

Tarescavage, A. M., Luna-Jones, L., & Ben-Porath, Y. S. (2014). Minnesota Multiphasic Personality Inventory-2–Restructured Form (MMPI-2-RF) predictors of violating probation after felonious crimes. *Psychological Assessment, 26*(4), 1375-1380. doi:10.1037/pas0000022

Terrell, F., & Terrell, S. L. (1983). The relationship between race of examiner, cultural mistrust, and the intelligence test performance of Black children. *Psychology in the Schools, 20*, 367-369.

Terrell, F., & Terrell, S. L. (1984). Race of counselor, client sex, cultural mistrust level, and premature termination from counseling among Black clients. *Journal of Counseling Psychology, 31*, 371-375.

Timbrook, R. E., & Graham, J. R. (1994). Ethnic differences on the MMPI-2? *Psychological Assessment, 6*(3), 212-217. doi:10.1037//1040-3590.6.3.212

U.S. Census Bureau. (2016). *Quick Facts.* Retrieved from U.S. Census Bureau website: https://www.census.gov/quickfacts/fact/table/US/PST045216

van der Heijden, P. T., Egger, J. I. M., & Derksen, J. J. L. (2010). Comparability of scores on the MMPI-2-RF scales generated with the MMPI-2 and MMPI-2-RF booklets. *Journal of Personality Assessment, 92(3)*, 254-259.

Whaley, A. L. (2001). Cultural mistrust: An important psychological construct for diagnosis and treatment of African Americans. *Professional Psychology: Research and Practice, 32*(6), 555-562. doi:10.1037/0735-7028.32.6.555

Widiger, T. A., Samuel, D. B. (2005). Evidence-based assessment of personality disorders. *Psychological Assessment, 17*(3), 278-287.

Williams, D. R., Neighbors, H. W., & Jackson, J. S. (2003). Racial/Ethnic discrimination and health: Findings from community studies. *American Journal of Public Health, 93*(2), 200-208. doi:10.2105/AJPH.93.2.200

PTSD. *Journal of Personality Assessment, 66*(1), 41-53. doi:10.1207/s15327752jpa6601_3

Gonzalez, Y., Arnold, K. A., Smith, E. A., Guidi, J. P., Biermann, A. L., Keane, J. E., & Bolinskey, P. K. (2017, March). *Reliability of the MMPI-2-RF Within a College Sample*. Paper presented at the meeting of the Society for Personality Assessment, San Francisco, CA.

Grant-Thompson, S. K., & Atkinson, D. R. (1997). Cross-cultural mentor effectiveness and African American male students. *Journal of Black Psychology, 23*, 120-134.

Greene, R. L. (1987). Ethnicity and MMPI performance: A review. *Journal of Consulting and Clinical Psychology, 55*(4), 497-512. doi:10.1037/0022-006X.55.4.497

Gynther, M. D. (1972). White norms and black MMPIs: A prescription for discrimination? *Psychological Bulletin, 78*(5), 386-402. doi:10.1037/h0033555.

Hall, G. N., Bansal, A., & Lopez, I. R. (1999). Ethnicity and psychopathology: A meta-analytic review of 31 years of comparative MMPI/MMPI-2 research. *Psychological Assessment, 11*(2), 186-197. doi:10.1037/1040-3590.11.2.186

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

Helms, J. E. (2006). Fairness is not validity or cultural bias in racial-group assessment: A quantitative perspective. *American Psychologist, 61*(8), 845-859. doi:10.1037/0003-066X.61.8.845

McLaughlin, K. A., Hatzenbuehler, M. L., & Keyes, K. M. (2010). Responses to discrimination and psychiatric disorders among Black, Hispanic, female, and lesbian, gay, and bisexual individuals. *American Journal of Public Health, 100*(8), 1477-1484. doi:10.2105/AJPH.2009.181586

Marek, R., Ben-Porath, Y. S., Sellbom, M., McNulty, J. L., & Heinberg, L. J. (2015). Validity of Minnesota Multiphasic Personality Inventory-2-Restructured Form (MMPI-2-RF) scores as a function of gender, ethnicity, and age of bariatric surgery candidates. *Surgery for Obesity and Related Diseases, 11*(3), 627-634. doi:10.1016/j.soard.2014.10.005

Mattson, C., Powers, B., Halfaker, D., Akeson, S., & Ben-Porath, Y. S. (2012). Predicting drug court treatment completion using the MMPI-2-RF. *Psychological Assessment, 24*(4), 937-943. doi:10.1037/a0028267

McAnulty, R. D., McAnulty, D. P., Sipp, J. E., Demakis, G. J., & Heggestad, E. D. (2014). Predictive validity of the MMPI–2 among female offenders in a residential treatment program. *Journal of Personality Assessment, 96*(6), 604-609. doi:10.1080/00223891.2014.880061

McNulty, J. L., Graham, J. R., Ben-Porath, Y. S., & Stein, L. R. (1997). Comparative validity of MMPI–2 scores of African American and Caucasian mental health center clients. *Psychological Assessment, 9*(4), 464-470. doi:10.1037/1040-3590.9.4.464

Monnier, J., Elhai, J. D., Frueh, B. C., Sauvageot, J. A., & Magruder, K. M. (2002). Replication and expansion of findings related to racial differences in veterans with combat-related PTSD. *Depression and Anxiety, 16*(2), 64-70. doi:10.1002/da.10060

Monnot, M. J., Quirk, S. W., Hoerger, M., & Brewer, L. (2009). Racial bias in personality assessment: Using the MMPI-2 to predict psychiatric diagnoses of African American and Caucasian chemical dependency inpatients. *Psychological Assessment, 21*(2), 137-151. doi:10.1037/a0015316

Munley, P., Morris, J., Murray, D., & Baines, T. (2001). A comparison of African American and White American veteran MMPI-2 profiles. *Assessment, 8*(1), 1-10.

Pascoe, E. A., & Richman, L. S. (2009). Perceived discrimination and health: A meta-analytic review. *Psychological Bulletin, 135*(4), 531-554. doi: 10.1037/a0016059

Tellegen, A., & Ben-Porath, Y. S. (2011). *Minnesota Multiphasic Personality Inventory – 2 Restructured Form: Technical manual.* Minneapolis, MN: University of Minnesota Press.

Tarescavage, A. M., Luna-Jones, L., & Ben-Porath, Y. S. (2014). Minnesota Multiphasic Personality Inventory-2–Restructured Form (MMPI-2-RF) predictors of violating probation after felonious crimes. *Psychological Assessment, 26*(4), 1375-1380. doi:10.1037/pas0000022

Terrell, F., & Terrell, S. L. (1983). The relationship between race of examiner, cultural mistrust, and the intelligence test performance of Black children. *Psychology in the Schools, 20*, 367-369.

Terrell, F., & Terrell, S. L. (1984). Race of counselor, client sex, cultural mistrust level, and premature termination from counseling among Black clients. *Journal of Counseling Psychology, 31*, 371-375.

Timbrook, R. E., & Graham, J. R. (1994). Ethnic differences on the MMPI-2? *Psychological Assessment, 6*(3), 212-217. doi:10.1037//1040-3590.6.3.212

U.S. Census Bureau. (2016). *Quick Facts.* Retrieved from U.S. Census Bureau website: https://www.census.gov/quickfacts/fact/table/US/PST045216

van der Heijden, P. T., Egger, J. I. M., & Derksen, J. J. L. (2010). Comparability of scores on the MMPI-2-RF scales generated with the MMPI-2 and MMPI-2-RF booklets. *Journal of Personality Assessment, 92(3)*, 254-259.

Whaley, A. L. (2001). Cultural mistrust: An important psychological construct for diagnosis and treatment of African Americans. *Professional Psychology: Research and Practice*, *32*(6), 555-562. doi:10.1037/0735-7028.32.6.555

Widiger, T. A., Samuel, D. B. (2005). Evidence-based assessment of personality disorders. *Psychological Assessment*, *17*(3), 278-287.

Williams, D. R., Neighbors, H. W., & Jackson, J. S. (2003). Racial/Ethnic discrimination and health: Findings from community studies. *American Journal of Public Health, 93*(2), 200-208. doi:10.2105/AJPH.93.2.200