

MMPI: Black and White Differences in the United States

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Abstract

Findings across different versions of the Minnesota Multiphasic Personality Inventory (MMPI) have found that Black individuals score higher than White people, most commonly on the Schizophrenia (Sc/8), Infrequency (F), and Lie (L) scales. Studies have found evidence for test bias (Arbisi et al., 2002; Castro et al., 2008; McNulty et al., 1997; Timbrook & Graham, 1994), whereas others have not found meaningful differences between the two groups (Munley et al., 2001; McNulty et al., 1997; Ben-Porath et al., 1995; Johnson & Brems, 1990; Penk et al., 1982; Smith & Graham, 1981; Harrison & Kass, 1967). This literature review sought to identify if, why, and in what areas, Black individuals tend to score differently than White individuals. Findings indicate the complexities of these research designs and a lack of constant similarities in scale escalations, suggesting that further understanding the MMPI and race, and especially the individual, can change future treatment for those who identify as Black, as well as any other minority, in the U.S.

Black in America

Race and culture critically shape how people think, develop, and navigate (Roberts, 2020). According to the American Psychological Association (APA), race is a socially defined concept used to portion or subdivide the human population by common physical characteristics, ancestry, or language between and within groups (APA, 2020). The Black population is diverse, and members have commonalities but also varied histories and differential experiences. Many are descendants of enslaved people, while others more recently arrived as immigrants. Currently, 46.8 million people in the U.S. identify as Black (Pew, 2021). The projected rate for the growth of the Black population is 34 percent. Along with the development of other minorities, data indicate that by 2045, the U.S. will become minority White (Brookings, 2018).

Social, historical, and environmental factors impact the Black community in ways different from that of the majority culture (Butcher et al., 1964). For instance, safety is still threatened: Black males are two-and-one-half times more likely to be killed by police than White males; economic disadvantages still leave one in three Black families with zero or negative wealth (Brookings, 2018); and health outcomes still fall far short—being Black and pregnant increases the risk for death in pregnancy by two-and-one-half times (AHA, 2021). Racism, classism, and gender oppression perpetuate disparities and cause divisions, spreading even wider during the COVID-19 pandemic (CDC, 2021).

Throughout history, psychology has continued to apply labels and, some may say, even worsened these constructs' role in society. For instance, results in various studies find Black folks to have a more pathological make-up (e.g., “Black individuals are more maladjusted, more

disturbed, deviant;” Gynther, 1972). Previous research has found Black individuals are more likely to be diagnosed with behavioral disorders than mental health disorders seen in White people (Cohen et al., 1990). Currently, there are more attempts to understand the racial and predictive biases better, and historical and cultural considerations, involved in the differential presentations of mental health disorders (Ashburn-Nardo et al., 2007).

Cultural Differences

Cultural mistrust describes adaptive paranoid-like behavior that Black individuals may engage in due to past and present experiences of dealing with overt and covert forms of racism and oppression (Whaley, 2005). Research has shown that high cultural mistrust among Black individuals can hurt assessment and treatment outcomes, such that Black individuals obtained lower scores on I.Q. measures (Terrell & Terrell, 1983), reported more negative views of their White counselor (Grant-Thompson & Atkinson, 1997), and were more likely to prematurely terminate therapy (Terrell & Terrell, 1984), compared to White counterparts.

Experiences of cultural paranoia, which may serve as an adaptive function in daily life, can similarly impact assessment and treatment outcomes, such that individual differences are instead reflected in specific scale elevations (e.g., scale 6) on the MMPI and MMPI-II (Biermann et al., 2019). Perceived discrimination is an individual’s perception of being negatively viewed, judged, or treated due to specific characteristics (Banks et al., 2006), such as race. This is further associated with elevated reports of paranoia and mistrust (Combs et al., 2006) and a heightened sense of self-consciousness and could explain the presence of hypervigilance and suspiciousness among Black individuals (Biermann et al., 2019). It is essential to discuss how ethnocultural and socioeconomic factors may explain observed differences in MMPI and MMPI-2 scores between Black and White individuals (Whaley, 2001; Widiger & Samuel, 2005).

Psychology’s Response to Race

Psychologists have a role in race. Starting in 1954, Kenneth and Clark’s doll studies shed light on the internalization of racism and its effect on children of color, specifically concerning the Brown v. Board of Education Supreme Court decision. Social psychology has driven the work in grasping the roots, remedies, prejudice, and intergroup conflict (Allport, 1954). Tajfel and Turner (1986) developed social identity theory, which states that people naturally distinguish people as *we* and *they*. Social categorization/group cognition would then argue that these meaningful categories reinforce stereotypes, prejudice, and view of targeting others (Brewer, 1988; Fiske, 1998). As this theory propels the notion of differences, in 1997, the APA responded to these findings by creating The National Conversation on Psychology and Racism. There, the concept of bias and reinforcing group differences became of interest (Brewer, 1999). In addition, social dominance theory highlighted the nature of hierarchical group formation, perpetuating people tending to stay in the group (Sidanius & Pratto, 2012).

Despite these discussions taking place, innocent Black lives continue to be taken, and the discipline’s theoretical models developed by white scholars for white populations (Buchanan & Wiklund, 2021; Guthrie, 2004; Markus, 2008; Settles et al., 2020; Syed et al., 2018; Zuberi & Bonilla-Silva, 2008) need updating to meet the overall multi-systemic level of changes required (Buchanan et al., 2020). Psychologists must be asking, who or what is being studied? Who is being served? What is psychology’s responsibility in responding to race? Who is in the pipeline to become a psychologist? Are psychologists self-examining? Whose research is getting funded, published, and cited? Are research norms being challenged?

Race and the MMPI

It is important to note that an academic conversation between Gynther (1982; 1978; 1980) and Pritchard and Rosen (1990) supplemented this review of the MMPI. Beginning in 1972, Gynther conducted a literature review on the differences between MMPIs for Black and White individuals. His results suggest that differences stem from cultural background (i.e., more maladjusted and disturbed; different values, interests, and expectations; differences in responding via social desirability; language, and word choice). He determined that language, in particular, may have different connotations to Black and White individuals, and these differences most frequently appear on the Sc/8 and Hypomania (Ma/9) scales. His configurational analysis found that these disparities influence education, residence, and cultural separation.

In 1980, Pritchard and Rosenblatt conducted a methodological review of racial bias in the MMPI. They concluded that there is no evidence that the MMPI makes more predictive or interpretive errors for Black than White individuals, that the effort to construct new Black norms for the MMPI appeared premature, and that new models could establish biases that did not exist before. However, they also acknowledged that specific populations of Black and White people might differ. Gynther and Green's (1980) *A Response to Pritchard & Rosenblatt* stated the belief that enough evidence of bias exists, considering that Black individuals scored higher in 36 studies on scales F, Sc/8, and Ma/9, suggesting that more Black people are likely to be falsely identified as deviant within the reference group of psychiatric patients, incarcerated individuals, and people abusing drugs. Pritchard and Rosenblatt's (1980) *Reply to Gynther & Green* conveyed the incongruence of samples across studies, and the troubles that come with sole dependence on mean score differences, thus, suggesting that accurate findings cannot be made.

Method

Google Scholar and the PsychINFO database were searched for the terms MMPI, MMPI-2, MMPI-A, MMPI-2-RF, MMPI-A-RF, MMPI-3, Black, White, Race, and Racial Differences. Reference lists of all articles obtained were searched for relevant additional articles meeting the following criteria: (a) empirical and peer-reviewed, (b) published in English, (c) comparison of a group of participants based on Black and White racial differences taking any version of the MMPI. Unpublished dissertations and convention papers were excluded from the review. Thirty-four articles met the inclusion criteria and were used for this review.

Results

Although it remains unclear, most studies in this literature review found differences in MMPI scores between Black and White participants. Previous studies have collected data from students, veterans, psychiatric patients, or prison inmates and have found Black participants to score higher than White people on the L, F, Sc/8, and Ma/9 scales. This review remains consistent with previous findings and includes new takeaways.

MMPI

The MMPI is the most common psychometric test to assess personality traits and psychopathology (Floyd & Gupta, 2021). In some settings, the MMPI is considered the gold standard of personality assessment (Ben-Porath & Archer, 2008). The MMPI was developed in the 1930s and published at the University of Minnesota in 1942. It is designed to assess personality traits and psychopathology. Four content and ten clinical scales consist of a total of 567 true-false

items. The MMPI has had more studies on ethnic differences than any other measure (Hall et al., 1999). However, the original MMPI did not include ethnic minorities in its standardization sample, suggesting that the test was not developed with specific attention to the multiple cultural groups in the U.S. The appropriateness of the MMPI for non-White racial and ethnic backgrounds has been controversial. Numerous findings have evolved. The most common idea is that Black individuals obtain higher MMPI scores than White participants (Hall et al., 1999), especially on L, F, and Sc/8, but also on many other scales. It is essential to acknowledge the time and history of these studies. Black people were segregated and viewed negatively. Cultural considerations and bias must be recognized when evaluating these published works.

In Support of Differences. Some of the earliest work on the MMPI (Hokanson & Calden, 1960) found Black tuberculosis patients from a Veteran Affairs setting scored higher on the Psychopathic Deviate (Pd/4), Masculinity/Femininity (Mf/5), Sc/8, Ma/9, and F scales. Differences at the time were driven by socioeconomic status (SES) rather than test bias. However, lacking generalizability due to the sample being a niche sector of Black men, future diverse studies elaborated on this early finding. Ball (1960) looked at high school students while controlling for age, I.Q., broken homes, SES, academic achievement, and educational retardation upon personality differences. SES continues to be controlled in many studies as it has been seen to relate reliably to psychopathology (Bruce & Phelan, 2006) and prevents poor mental health accessibility. This was the only study to find Depression (D/2) and Hypochondriasis (Hs/1) in males and Black females to score high on Hysteria (Hy), Sc/8, Social Introversion (Si), and F. This study was limited by the threat to validity due to the history of segregation occurring, and the importance of knowing the demographics of the investigators themselves. Shortly after, McDonald and Gynther (1963) found Black high school seniors in segregated Charleston, S.C., scored significantly higher on L, F, D/2, Mf/5, Sc/8, and Ma/9. Additionally, this study was appraised as the first reasonably adequate test with a representative sample and cultural considerations for the MMPI.

It was presumed that differences could be due to educational disparities during this time. Davis et al. (1973) found race-related differences in the F scales of Black and white patients with schizophrenia. However, when age and education were controlled as independent variables, the differences on the MMPI scales seemed to be a function of educational differences. Thus, it was thought that all disadvantaged populations would receive different scores. Given the need to further understand and evaluate psychiatric diagnoses more closely to the clinical diagnostic process, Cowan et al. (1975) investigated the power of the MMPI to make individual discriminations between psychiatric diagnostic groups (schizophrenia versus non-schizophrenia) of Black and White people when education and diagnosis were covariates. MMPIs were gathered from eight groups of psychiatric patients who were Black or White, with or without schizophrenia, and highly educated or poorly educated.

It is important to note that these diagnoses were made before the MMPI administration; however, how they were made is unknown. Mental health professionals in the hospital likely made them. After blind classification ($Sc > 70$; $Sc > Pt$), all but poorly educated Black persons were classified correctly. Almost half of the poorly educated Black participants without schizophrenia were misclassified as schizophrenic. These findings demonstrate the reduced diagnostic discriminative power of the MMPI for Black people with fewer than 12 years of education, therefore portraying minorities as more maladjusted and differences as existing due to unique aspects of black culture. Results found that ethnic culture and experience are significant factors. In this case, some may propose that the MMPI presents Black people on a spectrum of

suspiciousness and alienation from the dominant White society, thus manifesting more pathological MMPI profiles. This assimilation is mirrored in the MMPI protocols (Davis & Jones, 1974).

In another psychiatric population, Butcher et al. (1983) compared MMPI profiles of Black and White people after controlling for potential confounding factors (sex, occupational status, social class). ANOVA was used to analyze the group differences to find that Black people scored higher on the F and Ma scale, even after controlling for social class. Although observed differences were not attributed to social class, it was noted that cultural factors within groups, such as social conditions and problem behaviors at base rate, might predispose individuals to endorse different psychological problems (e.g., paranoia).

Neutral Findings. Bertelson et al. (1982) investigated the MMPI to see if differences between Black and White psychiatric patients could be discovered if significant demographic variables were controlled. After conducting a four-way mixed-model repeated-measures analysis of variance (ANOVA), Black people scored more pathologically on scales F, Mf, and Ma. Only 1.3% of the conflict in the preliminary study was due to race, compared with the other demographic variables that accounted for a more significant variance. Suggesting a minimum difference and likelihood of chance to highlight these differences, Timbrook and Graham (1994) included two levels in their study. The first explored mean scale differences between Black and White samples matched for age, years of education, and total family income. For men, the means for scale 8 were statistically different. Black men scored higher, but the mean differences were less than the 5 T-score points required to represent a meaningful difference. However, scales 4, 5, and 9 for Black females were statistically different and higher than White females' mean scores, with a small-to-medium effect size. Whereas the second found no discernible differences related to other test characteristics of Black and White subjects, the overall findings are not attributed to test bias.

No Significant Differences Found. Despite numerous studies indicating that clinical interviews tend to result in over-diagnosis of severe psychopathology or more restrictive treatment for minorities (McBride, 2013), few articles over the years have found Black and White people to score the same on the MMPI, with no exaggerated psychopathology (Butcher, 2010). Harrison and Kass (1967) tested the hypothesis that there are racial differences in personality and aimed to meet objections raised in connection with previous work, such as if observable differences are independent of SES class differences if different racial groups have different ways of obtaining equal scale scores. If Pettigrew's hypothesis is correct, differences should be maximum in a lower-SES group like this. Pettigrew's hypothesis suggests that middle-class Black folks attempt to minimize differences with White middle-class individuals. Results are like McDonald and Gynther (1960), yet now relevant to Black females. Harrison and Kass (1967) found that Black pregnant women in a lower-SES Boston hospital had differences in T-scores on the scales Cannot Say (CNS), F, Hs/1, Sc/8, and Ma/9. After factor analyzing 150 of the 213 discriminating items, scales were found not sensitive to race differences. Additionally, no significant differences were found on the Defensiveness (K/1) scale, and there was no evidence for Pettigrew's hypothesis. In sum, findings by Harrison and Kass (1967) suggest a high degree of differentiation in scores between Black and White women on the MMPI.

Similar to Cowan et al. (1975), Davis (1975) sought to examine the role education had on the tendency for Black people to score higher on the MMPI clinical scales; specifically, Black psychiatric patients received more schizophrenia diagnoses (Costello et al., 1972). In Davis, in

patients with 12 or more years of education, the sample with schizophrenia scored higher on the F and Sc scales, and those without schizophrenia scored higher on Pd. However, no race-related differences were found on any of the 11 scales being measured. Moore and Handal (1980) also found no racial differences in adolescents' MMPI L, F, and Cynicism scales. Findings from Davis and Moore suggest that researchers and clinicians may benefit more by focusing on other subject variables such as culture, SES, education, and sex differences when interpreting the MMPI, rather than just focusing on race alone as a differentiating factor.

Unlike Butcher et al. (1983), Johnson and Brem (1990) used a one-way MANOVA. They found no significant differences on three validity scales and 10 clinical scales after matching participants on sex, age, and psychiatric diagnoses. Continuing to examine the psychiatric population, Smith and Graham (1981) aimed to determine if elevated scores on the alternate F scale would have the same psychopathological implications for Black psychiatric patients as those on the standard F scale. The alternate F scale was proposed as a validity indicator by Hathaway and McKinley (1951). High scores on the scale have been submitted to indicate that the profile is invalid due to carelessness, lack of comprehension, those who wished to put themselves in a bad light (i.e., schizoid profile), crying for help, random responding, bilingualism, visual impairment, or acute disorganization (Gynther et al., 1978). Previous research has shown that Black individuals score higher than White individuals on the standard F scale. Therefore, the alternate scale utilized in Smith and Graham's (1981) study is thought to be more representative of middle-class Black subjects and no longer demonstrates drastic endorsements between the groups.

In addition to administering the MMPI, the Nurses Observation Scale for Inpatient Evaluation (NOSIE-30) and the Brief Psychiatric Rating Scale (BPRS: 16 scales involving somatic concern, anxiety, emotional withdrawal, grandiosity, depressive mood, etc.) were implemented. No reliable relationships between any of the behavioral ratings and alternate F scale scores (Black participants, $M = 5.31$, $SD = 4.58$; White participants, $M = 5.21$, $SD = 5.02$) for Black patients were deduced. Although the alternate F scale found no differences in psychopathology for Black participants, the alternate F scale should not be interpreted for Black patients like the standard F scale for White patients. Supplemental investigations are needed to distinguish both scales that appear to be similar. Additionally, test attitude should be considered next time since self-perception can significantly influence the standard F scale scores.

Peteroy and Pinarello (1982) compared MMPI profiles of 14 White males, 16 White females, 11 Black females, and 9 Black female psychiatric inpatients from a mental health center and found no significant racial differences on the F, Sc, and Ma scales. Johnson and Brems (1990) further evaluated the cultural fairness of the MMPI while controlling for the potential moderating effects of age and psychiatric diagnosis in inpatients at a Midwestern psychiatric hospital. Twenty-two Black patients were matched with 22 White patients on age, gender, and diagnosis on Axis I and Axis II diagnostic clusters. Results indicated no statistically or clinically significant differences, $F(13,30) = 0.75$, $p = .69$, between Black and White patients on MMPI profiles. However, while cautiously generalizing these scales accurately identified group membership, $F(3,40) = 2.12$, $p = .11$, it is thought that moderator variables rather than race perpetuate these differences. Findings from this study support, like other findings in this section, the importance of considering other individual variables (e.g., education, intelligence, age, socioeconomic status, gender) that may impact MMPI scores, possibly more so than race.

MMPI-2

The MMPI-2, re-standardized from the MMPI in 1989 (Hathaway et al., 1989), is a psychological assessment containing 567 true-false questions with revisions towards a more representative U.S. sample and removing outdated or offensive items. However, no cultural norms are available. Today, the assessment is widely used to measure personality across groups, psychologies, and contexts (Butcher et al., 2001).

In Support of Differences. Two studies found Black individuals scored higher on the MMPI-2. Frueh et al. (1996) discovered Black veterans showed more significant elevations on the Dissociative Experiences scale (DES), F-K index (the honesty of test responses), and Pa/6 and Sc/8 scales. In sum, Black veterans reported higher levels of maladjustment than White veterans. Frueh acknowledged that they are not confident that these differences necessarily indicate severe psychopathology in Black veterans, and the study is limited because it simply depends on self-reported assessments. It is also possible that different test-taking attitudes and approaches impacted these results.

To evaluate predictive bias, in this case, overprediction and underprediction of pathology, Aribisi et al. (2002) used a Record Review Form based on a psychiatric intake report, mental status exam, and discharge summary; to incorporate external criterion variables. They found both Black males and females to score higher on Fears (FRS), Bizarre Mentation (BIZ), Cynicism (CYN), Antisocial Practices (ASP), Family Problems (FAM), Pa/6, and Ma/9. Black men differed in scoring higher on F, DEP, Health Concerns (HEA), and Sc/8. Findings suggest that although MMPI-2-based predictions do not appear to be significantly different clinically among a sample of individuals with severe psychopathology, there is evidence that MMPI-2 may slightly underpredict psychopathology in Black individuals.

Neutral Findings. Timbrook and Graham (1994) included two levels in their study, the first to explore mean scale differences between Black and White samples matched for age, years of education, and total family income. A strength of this study that most studies neglect entailed matching the samples on sociodemographic variables. Although only examining five scales, results found that the MMPI-2 scales were not differentially accurate in predicting relevant extra-test characteristics of Black and White individuals. Minor differences were found, however, that were not clinically significant due to small 5 T-score means. Both Black females and males scored higher on Pd/4 and Mf/5. Black females scored higher on Ma/9, and Black males had elevated Sc/8 scores. The second level found no significant differences in the accuracy of extra test predictions from some MMPI-2 scales for both groups. Like Aribisi et al. (2002), the current study demonstrated that MMPI-2 scales may underpredict ratings of symptoms and problems for Black participants. This contrasts with other research (e.g., Gynther, 1972) that has suggested the MMPI may over-pathologize Black individuals.

No Significant Differences Found. Next, Castro et al. (2008) also used external criterion variables to assess predictive bias via an ancillary brief application and interview. They examined the possibility of differential predictive accuracy of selected MMPI-2 clinical and Restructured Clinical (R.C.) scales in a group of Black and White mental health clients from an outpatient psychotherapy clinic. This was a larger White sample ($n = 533$) with more court orders and education than the Black participants ($n = 63$). Gender, age, household income, employment, seeking services, etc., were considered before clients completed the application and MMPI-2.

Variables included F, Hs/1, Pd/4, Sc/8, Demoralization (RCd), Somatic Complaints (RC1), and Aberrant Experiences (RC8), and showed a small differential pattern of elevations between Black and White clients. The study failed to find support for the idea that the MMPI-2 differentially predicts self-report of conceptually relevant symptomatology by race. Consistent with earlier studies, the hierarchical regression analysis found no indication of predictive bias in the MMPI-2 using a community, outpatient, and inpatient psychiatric sample. However, as these findings progress, the genuine question targets whether the instrument differentially predicts personality characteristics and symptomatology for Black and White individuals. In sum, results from Castro indicate that although Black mental health clients scored significantly higher than White mental health clients on the MMPI-2 scales 1, RC1, RC3, RC6, and RC8, there is no evidence that differences in scores are a result of bias in the predictive ability of these scales.

Considering Loring and Powell's finding (1988) that White and Non-White psychiatrists are more accurate in diagnosing a case of their gender and race rather than different, Knaster et al. (2013) aimed to determine whether a client's ethnicity influences clinicians' interpretations of MMPI-2 clinical scale profiles. This quantitative quasi-experimental design required participants to be involved in clinical psychology as practicing or retired clinicians, current graduate students, or course instructors. Additionally, participants must have completed an assessment course or continuing education workshop that concluded training in interpreting the MMPI-2 or must be teaching the MMPI-2 in a graduate program. In total, 142 raters evaluated the three fabricated MMPI-2 profiles (depressive 23-year-old client, psychotic 21-year-old, and antisocial 25-year-old profile).

After evaluating the profiles, raters were asked to indicate the severity of six symptoms (anxiety, psychotic features, suicidality, depressed mood, substance abuse, & antisocial behavior) on a 6-point Likert-type scale by interpreting the MMPI-2 profile regarding the demographic info provided. Findings designated that ethnicity assigned to a client did not affect how experienced clinicians consistently interpreted the MMPI-2 profiles with the empirical literature (Greene, 1987; Gynther, 1972; Timbrook & Graham, 1994), all of which found only slight differences between Black and White validity scales. Although the sample size permitted a large effect size to be attributed to ethnicity, a small effect size could not extend the idea of significant clinical differences. This study's findings support using objective assessment measures such as the MMPI-2 to potentially counteract clinicians' racial biases that could affect clinical judgment and assessment and result in misinterpreting client symptoms.

MMPI-Adolescent (A)

Based on the MMPI-2, the MMPI-A (1992) is a structured personality inventory designed to be administered to adolescents ages 14 to 18. Before the development of the MMPI-A, the MMPI was frequently utilized to assess adolescent psychopathology (Archer, 2016). This approach, however, came with serious concerns. For one, the adolescent norms of the MMPI were based on data collected in the 1940s through the 1960s from a sample of White adolescents (Marks & Briggs, 1972, as cited in Archer, 2016). Moreover, there were concerns regarding the item content, lack of scales developed for adolescents, and extreme responding (e.g., elevated F scale) (Butcher et al., 1992). The MMPI-A was created to address these issues, utilizing a normative sample of youth from diverse ethnic backgrounds, geographical regions, and rural-urban residences (Butcher et al., 1992). The normative sample was 1,620 students, ages 14-18, randomly selected from schools across the United States. There were 805 boys (76.5% White) and 815 girls (75.9% White).

The MMPI-A consists of 478 true/false items. Scoring of the MMPI-A can be done by the administrator, by hand, or by using a computer program. As seen in previous versions, the MMPI-A has several validity scales and the same clinical scales as the original MMPI and MMPI-2. Despite the vast literature on the MMPI-A (Forbey & Ben-Porath, 2003), minimal studies have focused on racial differences among the sample. Since most of these comparisons have been conducted using the MMPI, this section includes the few available studies focusing on racial disparities among adolescents.

In Support of Differences. Cashel et al. (1998) drew from a sample of 99 male juveniles between the ages of 13 and 18 who were housed at a North Texas correctional facility for delinquent youth. The MMPI-A and other psychological measures were administered individually and within small groups by psychology doctoral students under supervision by a clinician. Reading levels were established before administering the MMPI-A. Those with reading levels between third and seventh grade received an audiotaped version of instructions. Those with reading levels above seventh grade completed the MMPI-A under standard administration procedures. Cashel et al. (1998) found that White adolescents scored significantly higher than Black adolescents on scales 4 (i.e., psychopathic deviate), 7 (i.e., psychasthenia), and 9 (i.e., hypomania). Moreover, significant differences were also found after adjusting for variance contributed by Global Assessment of Functioning ratings (Cashel et al., 1998), which is a scale utilized to assess an individual's overall level of psychological, social, and occupational functioning at the time of the assessment (APA, n.d.). These results contradict Ball's (1960) and McDonald & Gynther's (1962) findings that Black adolescents scored significantly higher than White adolescents on scales F, 1, 2, 8, 9, and 0.

Newsom et al. (2003) examined changes in adolescent self-presentation on the MMPI and MMPI-A over 40 years. The samples utilized for comparison included 1235 adolescents between the ages of 14 and 16 taken from the MMPI-A normative sample (Butcher et al., 1992) and the 10,514 adolescents between the ages of 14 and 16 taken from the Hathaway and Monachesi (1963) student of adolescent personality and behavior (Newsom et al., 2003). Most of the MMPI-A normative sample were White (76.5%), 12.4% were Black, and 11.1% were identified as other. Hathaway did not report the ethnic composition of their sample but noted the sample comprised few Black and Native American participants, implying that much of the selection was White. Newsom et al. (2003) found a significant effect of ethnic membership on MMPI-A basic scale raw scores and T scores, and the results were retained after controlling for the influence of socioeconomic status. Non-White respondents attained a higher mean T-score on all MMPI-A basic scales except K (i.e., correction), 3 (i.e., hysteria), 5 (i.e., masculinity/femininity), and 7 (i.e., psychasthenia). Although these findings contrast with Cashel et al. (1998), they are generally consistent with prior results on the effects of demographic variables in this area.

Neutral Findings. Schinka et al. (1998) study sample consisted of 348 randomly selected cases from the MMPI-A standardized adolescent sample (Butcher et al., 1992) and 348 adolescents receiving psychiatric services. The combined sample was 65.7% boys and the majority White (72.1%). 27.9% of participants were classified as Non-white. They found that ethnic identification (i.e., White and non-White) explained 7% to 8% of the variance in MMPI validity and scales among adolescents in the sample. Moreover, ethnic identification explained 6.10% of scores on the BIZ scale. It is essential to note that although the findings were significant, the effect was small and possibly not clinically meaningful (Schinka et al., 1998). In sum, demographic characteristics

(e.g., ethnic identification) did not increase the variance in MMPI- A scale scores beyond that attributed to psychopathology (Schinka et al., 1998).

No Significant Differences Found. The Archer et al. (2003) study sample consisted of 196 male adolescents (49.0% Black; 49.5% White; 1.0% Hispanic; 0.5% Asian) who were being evaluated in a South Carolina detention center, 200 male adolescents (14.5% Black; 75.5% White; 1.5% Hispanic; 2.0% Native American; 5.5% Other; 1.0% Unknown) who were receiving treatment from an inpatient psychiatric facility, and 151 male adolescents (13.9% Black; 50.3% White; 34.4% Hispanic; 1.3% Other) dually diagnosed with mental health and substance use disorders. They found ethnicity not to be an influential variable in MMPI-A scores and the classification of male adolescents.

MMPI-2 Restructured Form (R.F.)

To improve efficiency and psychometric accuracy, the MMPI-2-Restructured Form (MMPI-2-RF) was constructed from the MMPI-2 (Ben-Porath & Tellegen, 2008). The MMPI-2-RF consists of a subset of 338 items from the MMPI-2. No new items were added; therefore, the MMPI-2-RF interpretations can be made from MMPI-2 tests, and the same normative data can be used (Ben-Porath & Tellegen, 2008). As the MMPI-2RF gets developed, history begins to be considered. Divergent worldviews exist between races, stemming from cultural, religious, and oppressive factors that make up possible ethnocultural variable differences. For instance, it is now being asked a step further as to why self-consciousness is elevated. Self-consciousness may be heightened due to their identity of being Black and perceived by others via discrimination and racism.

In Support of Differences. Biermann et al. (2019) sought to compare mean scale scores between Black and White American college students by gender and self-reported race on the MMPI-2RF. Although using a midwestern college sample compared to an urban setting can create an imbalanced sample comparison, results indicated that Black students obtained higher T-scores than White students. Reflecting externalizing behaviors, interpersonal suspiciousness, unusual thoughts and perceptual experiences, and feelings of alienation from others.

No Significant Differences Found. However, unique to this study, African American patients were seen to score higher on the BIZ content scale (Munley et al., 2001). This finding may be unique to this inpatient population or the cultural and religious factors for Black individuals, but further exploration is required to replicate and make an accurate deduction. Even no prediction bias on the MMPI-2RF seems to be present, with effect sizes appearing minimal and not clinically significant, thus implying that the MMPI-2RF effectively captures the personality and psychopathological traits of both the Black and White population.

Marek et al. (2014) more recently discovered that bariatric surgery candidates (n = 3,209) produced approximate MMPI-2RF scores in all subsamples suggesting that the test norms are generalizable across demographic groups. Additionally, validity findings were comparable to having the same interpretive implications in demographically diverse subgroups (White, Black, Hispanic, and another ethnicity) for a primarily female sample of the bariatric surgery candidates.

MMPI-A-RF

The MMPI-A-RF (Archer et al., 2016) is the most recent personality assessment used for adolescents ages 14 to 18. The test is similar to the MMPI-2-RF; however, several adolescent-specific problem (S.P.) scales were developed as a meaningful alternative to the MMPI-A (i.e., Stress/Worry [STW]; Anger Proneness [ANP]; Negative School Attitudes [NSA]). Only 241 true/false items, the test takes about 25 to 45 minutes, depending on the mode of administration. The norms are non-gendered and drawn from the MMPI-A normative sample of 1,610 adolescents (805 boys and 805 girls) in the United States, representing regions and ethnicity congruently. Given the sparsity of research on MMPI-A and racial differences in scores, the chances of finding research that further examined racial differences on the MMPI-A-RF were slim. A comprehensive search of articles on the MMPI-A-RF found no studies that examined or mentioned differences in scores between White and Black participants.

MMPI-3

The MMPI-3 is the latest version of the instrument and was released in 2020. The test takes 25 to 50 minutes and is available in English, Spanish, and French. Due to its infancy, few studies have been conducted; therefore, they have not been included in this review. This review aims to identify if, what, and why Black individuals tend to score differently than White folks on the MMPI assessments. Differences in all versions of the MMPI will be considered, and inspection for interpreting the MMPI scores of non-White racial and ethnic backgrounds will be highlighted. The usefulness and application can be discerned with a better understanding of the MMPI and race. Outcomes may help determine if special considerations are to be made for the norms of society, such as race in America, specifically, Black folks in relation to personality and cognition (University of Minnesota Press, 2021).

Neutral Findings. More recently, the latest finding on the MMPI-3 (Anestis et al., 2022) examined the ability of the scales to predict reflexive reactions (feelings of rejection, low positive and high negative affect) elicited by the Cyberball task. Previous findings on ostracism found Black adults need to be threatened when ostracized compared to White adults. However, these results found minimal differential effect among reactions of White and Person of Color (POC). Possibly, a diminished impact of psychological processes can be buffering against ostracism reactions for POC, and the Cyberball task is not generalizable since the game excludes all participants equally.

New Scales and Norms

Throughout racial bias research on the MMPI, several investigators have attempted to design scales to measure racial differences. Costello (1977) constructed a 32-item Black-White scale for the MMPI to decipher non-pathology-related racial variance in scale elevation. Gynther et al. (1978; cf. Smith and Graham, 1981) made another attempt by creating an alternate F scale using Black people as the normative group.

Discussion

Purpose

This review aimed to identify whether Black and White individuals score differently on the MMPI, what scales were elevated, and whether the test suits both races. As demonstrated, early

research explored racial bias; however, results merely capturing mean scale differences have been seen as insufficient in confirming test bias, hence, why additional studies have attempted to seek differences between groups or settings to infer clinical conclusions or behavioral predictions. Either trying to test differences by examining social determinants, comorbidities, or bias, manipulations in each study presented different takeaways with distinct yet similar findings. Most notably, differences were consistent with previous literature on Black participants. These studies offer a broader view into personality assessments such as the MMPI and the implications of applying it as one size fits all rather than recognizing that diverse individuals will have varying results.

Interpretive Issues

These findings were difficult to interpret due to the inconsistent methodological measurements considered in each study. From the experimental design to the setting and sample, replication studies seem far and few. Additionally, understanding the context of when these studies were conducted and by whom makes it difficult to detect bias. It is important to note that the MMPI-A-RF is not included in this analysis due to difficulties in identifying studies that compare race within this assessment.

Age

MMPI. Most MMPI studies included a sample from a high school or medical setting such as a hospital. Therefore, the age ranges varied from 16 to 58 years old. The average age for the majority of the studies was mid-thirties.

MMPI-2. Whereas the MMPI-2 had a wider scope of ages ranging from 24 to 89. Although the sample came from a variety of settings (e.g., college to online APA memberships), the results may be too general to understand best the role of the MMPI-2 and the developmental considerations per each individual especially when understanding the additional factors that come with aging (e.g., changes in cognition, age-related diseases, and increased risk for suicide, etc.).

MMPI-A. Unlike the other versions of the MMPI, the MMPI-A focuses on adolescents, and the studies included participants starting at ages 11 to 18 years old. Some studies examined adolescents receiving psychological support, while others examined delinquent samples or correctional facilities. Developmental and environmental considerations can greatly impact performance on an assessment such as the MMPI. For instance, a child who has endured adverse childhood experiences since he can remember and did not have a familial unit could be making decisions that result in being in this harsh setting versus the same case but first enduring these experiences at age 17.

MMPI-2-RF. The MMPI-2-RF age group entails 18 and older individuals from a hospital setting, two of which are Veterans Affairs Medical Centers. However, an entire study ranged from 18 to 24, and the three other studies primarily had an average range of 40.

MMPI-3. Anestis et al. (2022) had a sample where the average age was 44.45 years.

Overall. Given that the studies range in age, focusing on replicating these findings per age group would be beneficial. Understanding how the findings relate to each person by age and race can serve to digest best the patterns and nuances required per individualized treatment.

Gender

MMPI. Most studies included both males and females. However, some were not identified and only included females or males. Some studies intended to match both the number of males and females.

MMPI-2. All but one study using the MMPI-2 had a male and female sample. Focusing primarily on men permits us to understand better the expression of symptomatology solely in males who are either black or white.

MMPI-A. Half of the MMPI-A were only male samples, and the remaining two were both male and female studies. Although men may be perceived or known as more masculine or aggressive, it is important to look at females to grasp best the similarities and differences in adolescents experiencing puberty and psychological evaluation. For example, does the exaggeration of symptoms differ for females depending on where they are on their menstrual cycle?

MMPI-2-RF. This version had males and females within the studies except for one study, and females were more represented than males.

MMPI-3. Similarly, the one article for the MMPI-3 primarily had more females than males in their study.

Overall. All studies primarily had a female and male representative sample. However, each version did include studies that only examined one gender. Although males and females have been incorporated into the studies over time, there is a lack of representation for fluid presentations or transgender populations.

Ethnicity

Overall. Most studies focused on this comparison because the research questions target Black and White individuals. Only four studies included other ethnicities, such as Asian, Hispanic, Native American, and others. Suggesting that the studies also prioritized evaluating these two ethnicities primarily. Unless it was mainly a Black sample, most often White individuals, especially males, were the majority of participants.

Economics

MMPI. Some studies incorporated a sample of a lower working-class population. One particular study with a high school sample primarily queried about their parents' classes. Other studies did not identify the financial status or were unemployed.

MMPI-2. The MMPI-2 evaluated if they were employed or unemployed and the income for each race.

MMPI-A. Interestingly, the MMPI-A studies did not aim to understand finances. Only one study stated participants were from a wide range of socioeconomic backgrounds. Given that these samples were adolescents, the value of their income did not matter compared to the other variables involving their MMPI scores.

MMPI-2-RF. Similarly, none of the studies in our review on the MMPI-2-RF included details on the economics of their sample.

MMPI-3. Anestis et al., 2022 did not provide details on the socioeconomic status of the sample. However, the study noted it was unavailable and estimated low, with about \$25,000 total income.

Overall. Economics has been measured in various ways (e.g., parental income, class, employment, total income, etc.), and some studies did not even account for this variable. Over

time it appears that most of the studies did not include the exact income when considering their demographic questions.

Education

MMPI. Given the period when the MMPI was developed and administered, years of education and intelligence were often not measured, and if this variable was considered, it was not measured consistently. For instance, Ball (1960) measured education by examining the participant's percentage of retardation. The years of education ranged from 9.95 years to 14% of the Gynther et al. (1978) sample having some postgraduate schooling. It was common to see more years of education for the White rather than the Black participants.

MMPI-2. Studies at this time continued not to identify education; however, Castro et al. (2008) had a handful of participants with a bachelor's degree from college. Knaster et al. (2013) required mental health professionals ranging from licensed doctoral psychologists to unlicensed master's level facilitators.

MMPI-A. This specialized adolescent assessment did not typically note years of education. As previously mentioned, Schinka et al. (1998) had a sample that met the seventh grade reading level.

MMPI-2-RF. The two studies examining the MMPI-2-RF had a similar range of years of education, including 12.6 and 13.9. It would be interesting to compare those samples and see how the slight increase in education could influence the MMPI responses.

MMPI-3. Anestis et al. (2022) noted no significant difference between Black and White education levels.

Overall. This view has shifted despite prior research supporting the importance of measuring education and the indicators that can derive from this single variable. Not all of the MMPI studies included education. Although those that did tend to report education reported the majority having high school educations, it is worth grasping the academic differences and resources between the races.

Sample Size

MMPI. The sample sizes ranged from 44 participants to 2800 participants. Participants were recruited from various settings: high schools, psychiatric settings (i.e., inpatient and outpatient), hospital settings, veterans' health care facilities, and community settings. The location of the settings was primarily in midwestern and southeastern states.

MMPI-2. The sample sizes for the MMPI-2 mostly ranged from 100 to 498 participants either from a V.A. hospital, community mental health center, or via an online membership through the APA and Society of Personality Assessment (SPA). The community sample included the largest sample of 498 participants.

MMPI-A. Constituting primarily correctional facilities or juvenile justice centers, the sample size of these studies has ranged from 99 to 5370 adolescents. These wide-scale studies can assist in generalizing findings to this population. However, it limits the ability to see the nuances among the sample.

MMPI-2-RF. The sample came from two hospital settings and a midwestern college. The established public hospital setting had the largest sample of 3209 patients, 360 males from a VA and 1,458 students from the university.

MMPI-3. The sample came from the Charleston VAMC PTSD outpatient clinic and obtained 206 patients to complete the study.

Overall. In sum, participant samples were recruited from a variety of settings. Given the limited variety in the MMPI-A and MMPI-3 participant pools, future research should expand on administering these tests to other populations.

Comprehensive Battery

MMPI. Nine studies only administered the MMPI and included no other batteries in their measures. Two studies administered additional interpersonal and personality measures. Two studies included ratings by outside observers (i.e., mental health professionals and nurses).

MMPI-2. Two studies only administered the MMPI-2 and included no other batteries in their measures. Two studies included symptom severity measures or surveys. Of those two studies, one study also included a PTSD, and dissociative symptoms measure.

MMPI-A. Two studies only administered the MMPI-A and included no other batteries in their measures. One study included an intelligence measure, a personality measure, and a PTSD measure in addition to the MMPI-A.

MMPI-2-RF. Each study only administered the MMPI-2-RF and included no other batteries in their measures.

MMPI-3. In addition to the MMPI-3, the study also included a personality measure, PTSD measure, and dissociative symptom measure.

Overall. Most studies focused on only administering the MMPI or its versions due to the purpose or focus of the research question. When additional measures were included, they focused on assessing for PTSD, dissociative symptoms, or symptom severity. Only one study included an intelligence measure in its battery.

Statistics

MMPI. Five studies utilized chi-square tests in their analyses, and one utilized t-tests. Six studies analyzed variance (ANOVA) to assess differences between groups, and two ran a multivariate analysis of variance (MANOVA). One study utilized stepwise discriminant analysis.

MMPI-2. One study ran an ANOVA, and two studies ran a MANOVA. One study ran a multivariate analysis of covariance (MANCOVA). Two studies utilized hierarchical regressions in their analyses.

MMPI-A. Two studies ran an ANOVA, three ran a MANOVA, and one analyzed covariance (ANCOVA). Two studies ran a discriminant function analysis to predict group membership or DSM-IV diagnosis. One study ran a hierarchical regression.

MMPI-2-RF. One study conducted ANOVAs and MANOVAs. One study utilized hierarchical regression and ordinary least square regression models.

MMPI-3. The study ran ANOVAs and MANOVAs to examine racial differences in scores for the MMPI and other measures.

Overall. Across all versions of the MMPI, ANOVA, and MANOVA were most frequently utilized to examine differences in scores.

Conclusion

Review of Findings

Considering all the literature for this review, no consensus has been made to routinely support differences in the MMPI scores for Black and White individuals due to inconsistent measurements and comparisons. For instance, all studies have incorporated different reference

groups and controls when comparing. Studies have found evidence for test bias (Arbisi et al., 2002; Castro et al., 2008; McNulty et al., 1997; Timbrook & Graham, 1994), whereas others have not even found meaningful differences between the two groups (Munley et al. 2001; McNulty et al. 1997; Ben-Porath et al. 1995; Johnson and Brems 1990; Penk et al. 1982; Smith and Graham 1981; Harrison and Kass 1967). However, emerging evidence of other pathological personality measures has found inequivalent applications among White and Black Americans (Bagby et al., 2021).

Although some bias may have been found in certain studies, and Black participants scored higher on several scales or vice versa, it does not necessarily support the conception that the MMPI is an inadequate tool for minorities. Countless methodological concerns (i.e., effect size neglect, scant sample sizes, group membership, etc; Green, 1987) are stifling consistent findings contributing to the overall results as inconclusive (Graham, 1990; Gynther, 1972, 1987; Green, 1987, 1991; Pritchard & Rosenblatt, 1980; Hall et al., 1999). Further research and criterion validation on Black, Asian, Hispanic, and other minorities are to be considered to comprehend further and generalize the application of all versions of the MMPI.

Specifically, the development of the original MMPI concerned the role of test bias and predictive validity greatly influencing the outcomes. Predictive validity was found in several studies with the MMPI-2; however, personality began to be questioned rather than race. The MMPI-2 focuses less on diversity issues and more on the impacts of discrimination (e.g., feelings of alienation). As subsequent versions continue to be produced, the MMPI-2-RF has been used less than the MMPI-3. It appears that throughout the versions, the norms remained consistent. Although, like the MMPI-2-RF, the MMPI-3, the most recent version, does not have enough information for review. Overall, the versions of the MMPI have appeared to account for the variability of socioeconomic status, education, gender, and ethnicity across several studies. However, future studies should continue to explore the impact of demographic characteristics on MMPI and whether these differences result from bias or actual cultural differences in non-community samples.

Limitations and Future Directions

This literature review has limitations. Due to only conducting the computerized search using Google Scholar and PsycINFO, not all publications discussing this limited content have likely been retrieved. Future studies should examine the validated scales needed, such as external measures, to aid in concluding clinical and personality domains for each diagnostic group. To improve uniformity in studies measuring MMPI and race, the MMPI should be administered and then factor analyzed to decipher the different scales in-depth. It is also essential to consider where this sample is located. Furthermore, research on individualism and nuances of the client's life context can confront individual needs rather than prolong unjust norms.

As the MMPI continues to be revised, more efficient, and reproducible to test-takers in a broader society, the scales in older clinical syndromes are now being applied for symptoms relevant to appropriate conditions or disorders. The MMPI's efforts to effectively distinguish disorders from medical conditions (e.g., malingering) will be examined in future work to recognize these adjusted norms. The continuous versions of the MMPI have provoked novel ideas and have entered new domains, such as criminal cases or screenings for employment. Given the potential significance these test results can indicate, ensuring everyone in all settings has the proper knowledge and training to administer this measure is necessary. Therefore, future studies should aim to understand these implications and compare the subjects administering the MMPI.

Whether to incorporate norms into life via assessment, therapy, or treatment remains unknown. Alternative studies using the MMPI-3 can contribute to awareness of how these differences can be addressed. For instance, making accommodations for each ethnicity is a much-debated idea that polarizes views and facilitates the overarching dilemma. According to *The Oxford Handbook of Personality Assessment* (2009), the influence of race and ethnicity on psychopathology entails two priorities; aiming to negate or affirm the presence of bias in assessing psychopathology while developing modifications that eliminate presumed bias (McBride, 2013). According to Castro et al. (2008) and Gynther (1972), it may, in fact, even be unnecessary to consider separate interpretive guidelines for the assessments of Black and White individuals. Yet, before this question advances, future studies on MMPI and race can even accelerate the grand idea and the movement of accessibility. Mental health resources still need to be readily available to all, and this inequality cannot be solved alone.

Although the MMPI has endured revisions over the decades, the assessment has remained related to the original version in several capacities. As the population is projected to be more mixed and minority white by 2045 (United States Census Bureau, 2018), the MMPI-3 and upcoming versions must continue adapting to this growing rate of change where the test reflects the changes within the world. Norms can be updated, and gender can be excluded, but the alterations on how to develop these measures continue exactly accurately to be evaluated and debated.

Implications

In conclusion, the findings from this review contribute to the gap in the literature on MMPI and race. Although results are mixed, the need for further research is crucial. As our population is soon to become a minority White, mental health assessments and services need to represent, therefore, assist, our current and future needs as a diverse population. Understanding the implications and endorsements of these scales within the MMPI can transform the perception and practice within the entire ecological system.

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References

Allport, G. W., Clark, K., & Pettigrew, T. (1954). The nature of prejudice. *APA dictionary of psychology*. <https://dictionary.apa.org/global-assessment-of-functioning-scale>

- American Psychological Association. (n.d.). Psychology and racism: Description of ERCA's national conversation of psychology and racism. American Psychological Association. <https://www.apa.org/pi/oema/programs/racism>
- Anestis, J. C., Preston, O. C., Rodriguez, T. R., & Harrop, T. M. (2022). MMPI-3 scale predictors of reactions to ostracism in a sample of racially diverse college students. *Psychological Assessment, 34*(6), 503-516. <https://doi.org/10.1037/pas0001113>
- Archer, R. P. (2016). Assessing adolescent psychopathology: MMPI-A/MMPI-A-RF. Routledge. <https://doi.org/10.4324/9781315737010>
- Archer, R. P., Griffin, R., & Aiduk, R. (1995). MMPI-2 clinical correlates for ten common codes. *Journal of Personality Assessment, 65*(3), 391-407. https://doi.org/10.1207/s15327752jpa6503_1
- Archer, R. P., Handel, R. W., Ben-Porath, Y. S., & Tellegen, A. (2016). *Minnesota Multiphasic Personality Inventory-Adolescent-Restructured Form (MMPI-A-RF): Administration, scoring, interpretation, and technical manual*. University of Minnesota Press.
- 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. <https://doi.org/10.1037/1040-3590.14.1.3>
- Ashburn-Nardo, L., Monteith, M. J., Arthur, S. A., & Bain, A. (2007). Race and the psychological health of African Americans. *Group Processes & Intergroup Relations, 10*(4), 471-491. <https://doi.org/10.1177/1368430207081536>
- Bagby, R. M., Keeley, J. W., Williams, C. C., Mortezaei, A., Ryder, A. G., & Sellbom, M. (2021). Evaluating the measurement invariance of the Personality Inventory for DSM-5 (PID-5) in Black Americans and White Americans. *Psychological Assessment. https://doi.org/10.1037/pas0001085*
- Ball, J. C. (1960). Comparison of MMPI profile differences among Negro-White adolescents. *Journal of Clinical Psychology*.
- Banks, K. H., Kohn-Wood, L. P., & Spencer, M. (2006). An examination of the African American experience of everyday discrimination and symptoms of psychological distress. *Community Mental Health Journal, 42*(6), 555-570. <https://doi.org/10.1007/s10597-006-9052-9>
- Ben-Porath, Y.S. & Archer, R. P. (2008). The MMPI-2 and MMPI-A. In: Archer RP, Smith SR (eds) *Personality assessment*. Routledge/Taylor & Francis Group, pp 81–131.
- Ben-Porath, Y. S., Shondrick, D. D., & Stafford, K. P. (1995). MMPI-2 and race in a forensic diagnostic sample. *Criminal Justice and Behavior, 22*(1), 19-32. <https://doi.org/10.1177/0093854895022001002>

- Ben-Porath, Y. S., & Tellegen, A. (2008). *MMPI-2-RF: Manual for administration, scoring, and interpretation*. University of Minnesota Press.
- Bertelson, A. D., Marks, P. A., & May, G. D. (1982). MMPI and race: A controlled study. *Journal of Consulting and Clinical Psychology, 50*(2), 316.
- Biermann, A. L., Keister, K. M., Wiesepepe, C. N., & Bolinskey, P. K. (2019). A comparison of MMPI-2-RF scores between White and African American college students. *Archives of Assessment Psychology, 9*(1), 87-112.
<http://isu.indstate.edu/~pbolinskey/pubs/ComparisonOfMMPI-2-RFScores.pdf>
- Brewer, M. B. (1988). A dual process model of person perception. *Advances in Social Cognition, 1*, 177-183.
- Brewer, M. B. (1999). The psychology of prejudice: *Ingroup love and outgroup hate?* *Journal of Social Issues, 55*(3), 429-444.
- Brookings (2018). The U.S. will become 'minority white' in 2045, Census projects. Youthful minorities are the engine of future growth. <https://www.brookings.edu/blog/the-avenue/2018/03/14/the-us-will-become-minority-white-in-2045-census-projects/>
- Bruce, B. G., & Phelan, J. C. (2006). Fundamental social causes: The ascendancy of social factors as determinants of distributions of mental illnesses in populations. In W. W. Eaton (Ed.), *Medical and psychiatric comorbidity over the course of life* (pp. 77-94). American Psychiatric Publishing.
- Buchanan, N. T., Perez, M., Prinstein, M., & Thurston, I. (2020). Upending Racism in Psychological Science: Strategies to Change How Our Science is Conducted. *Reported, Reviewed & Disseminated, 10*.
- Buchanan, N. T., & Wiklund, L. O. (2021). Intersectionality research in psychological science: Resisting the tendency to disconnect, dilute, and depoliticize. *Research on Child and Adolescent Psychopathology, 49*(1), 25-31. <https://doi.org/10.1007/s10802-020-00748-y>
- Butcher, J. N. (2010). Minnesota Multiphasic Personality Inventory. *The Corsini encyclopedia of psychology, 1-3*.
- Butcher, J. N. (2009). *Oxford handbook of personality assessment*. Oxford University Press.
- Butcher, J., Ball, B., & Ray, E. (1964). Effects of socioeconomic level on MMPI differences in Negro-white college students. *Journal of Counseling Psychology, 11*(1), 83.
- Butcher, J. N., Braswell, L., & Raney, D. (1983). A cross-cultural comparison of American Indian, Black, and White inpatients on the MMPI and presenting symptoms. *Journal of Consulting and Clinical Psychology, 51*(4), 587.

- Butcher, J. N., Graham, J. R., Ben-Porath, Y. S., Tellegen, A., Dahlstrom, W. G., & Kaemmer, B. (2001). *Minnesota Multiphasic Personality Inventory–2: Manual for administration and scoring* (2nd ed.). University of Minnesota Press.
- Butcher, J.N., Williams, C.L., Graham, J.R., Archer, R.P., Tellegen, A., Ben-Porath, Y.S., & Kaemmer, B. (1992). *Minnesota Multiphasic Personality Inventory-Adolescent (MMPI-A): Manual for administration, scoring, and interpretation*. University of Minnesota Press.
- Cashel, M. L., Rogers, R., Sewell, K. W., & Holliman, N. B. (1998). Preliminary validation of the MMPI--A for a male delinquent sample: An investigation of clinical correlates and discriminant validity. *Journal of Personality Assessment*, 71(1), 49-69. https://doi.org/10.1207/s15327752jpa7101_4
- Castro, Y., Gordon, K. H., Brown, J. S., Anestis, J. C., & Joiner Jr, T. E. (2008). Examination of racial differences on the MMPI-2 clinical and restructured clinical scales in an outpatient sample. *Assessment*, 15(3), 277-286. <https://doi.org/10.1177/1073191107312735>
- Centers for Disease Control and Prevention (CDC; 2021). *Healthy equity considerations & racial & ethnic minority groups*. <https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/race-ethnicity.html>
- Cohen, R., Parmelee, D. X., Irwin, L., Weisz, J. R., Howard, P., Purcell, P., & Best, A. M. (1990). Characteristics of children and adolescents in a psychiatric hospital and a corrections facility. *Journal of American Academy of Child and Adolescent Psychiatry*, 29, 909-913. doi:10.1097/00004583-199011000-00012
- 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
- Cowan, M. A., Watkins, B. A., & Davis, W. E. (1975). Level of education, diagnosis and race-related differences in MMPI performance. *Journal of Clinical Psychology*.
- Costello, R. M. (1977). Construction and validation of an MMPI Black-White scale. *Journal of Personality Assessment*, 41, 514-519.
- Costello, R. M., Tiffany, D. W., & Gier, R. H. (1972). Methodological issues and racial (black-white) comparisons on the MMPI. *Journal of Consulting and Clinical Psychology*, 38(2), 161.
- Dahlstrom, W. G., Lachar, D., & Dahlstrom, L. E. (1986). *MMPI patterns of American minorities*. University of Minnesota Press.
- Davis, W. E. (1975). Race and the differential "power" of the MMPI. *Journal of Personality Assessment*, 39(2), 138-140.
- Davis, W. E., Beck, S. J., & Ryan, T. A. (1973). Race-related and educationally-related MMPI profile differences among hospitalized schizophrenics. *Journal of Clinical Psychology*.

- Davis, W. E., & Jones, M. H. (1974). Negro vs. Caucasian psychological test performance revisited. *Journal of Consulting and Clinical Psychology, 42*(5), 675.
- Fernandez M.E., (2021). *Why Black women are less likely to survive pregnancy, and what's being done about it.* American Heart Association. <https://www.heart.org/en/news/2021/02/10/why-black-women-are-less-likely-to-survive-pregnancy-and-whats-being-done-about-it>
- Fiske, S. T. (1998). *Stereotyping, prejudice, and discrimination.*
- Floyd, A. E., & Gupta, V. (2021). Minnesota Multiphasic Personality Inventory. *StatPearls [Internet]*.
- Forbes, J.D., & Ben-Porath, Y.S. (2003) Incremental validity of the MMPI-A content scales in a residential treatment facility. *Assessment, 10* (2), 191-202., <https://doi.org/10.1177/107319110301000201>
- 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.
- 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*, 497-512., doi:10.1037/0022-006X.55.4.49
- Guthrie, R. V. (2004). *Even the rat was white: A historical view of psychology.* Pearson Education.
- Gynther, M. D. (1972). White Norms and Black MMPIs: A prescription for discrimination. *Psychological Bulletin, 78*, 396-402. doi:10.1037/h0033555
- Gynther, M. D., & Green, S. B. (1980). Accuracy may make a difference, but does a difference make for accuracy? A response to Pritchard and Rosenblatt.
- Gynther, M. D., Lachar, D., & Dahlstrom, W. G. (1978). Are special norms for minorities needed? Development of an MMPI F scale for Blacks. *Journal of Consulting and Clinical Psychology, 46*(6), 1403.
- Hall, G. C. 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.
- Harrison, R. H., & Kass, E. H. (1967). Differences between Negro and White pregnant women on the MMPI. *Journal of Consulting Psychology, 31*(5), 454.
- Hathaway, S. R., & McKinley, J. C. (1951). *Minnesota Multiphasic Personality Inventory; manual, revised.*

- Hathaway, S. R., McKinley, J. C., & MMPI Restandardization Committee. (1989). *MMPI-2: Minnesota Multiphasic Personality Inventory-2: Manual for administration and scoring*. University of Minnesota Press.
- Hathaway, S. R., & Monachesi, E. D. (1963). *Adolescent personality and behavior*. University of Minnesota Press.
- Hokanson, J. E., & Calden, G. (1960). Negro-white differences on the MMPI. *Journal of Clinical Psychology*.
- Johnson, M. E., & Brems, C. (1990). Psychiatric inpatient MMPI profiles: An exploration for potential racial bias. *Journal of Counseling Psychology*, 37(2), 213.
- Knaster, C. A., & Micucci, J. A. (2013). The effect of client ethnicity on clinical interpretation of the MMPI-2. *Assessment*, 20(1), 43-47. <https://doi.org/10.1177/1073191112465333>
- Loring, M., & Powell, B. (1988). Gender, race, and DSM-III: A study of the objectivity of psychiatric diagnostic behavior. *Journal of Health and Social Behavior*, 29, 1-22.
- Marek, R. J., 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. <https://doi.org/10.1016/j.soard.2014.10.005>
- Markus, H. R. (2008). Pride, prejudice, and ambivalence: toward a unified theory of race and ethnicity. *American Psychologist*, 63(8), 651. <https://doi.org/DOI:10.1037/0003066X.63.8.651>
- McBride III, W. F. (2013). *Examination of racial bias on the MMPI-2 Restructured Form among African Americans and Caucasians* (Doctoral dissertation, Eastern Kentucky University).
- McDonald, R. L., & Gynther, M. D. (1963). MMPI differences associated with sex, race, and class in two adolescent samples. *Journal of Consulting Psychology*, 27(2), 112-116. <https://doi.org/10.1037/h0048549>
- McNulty, J. L., Graham, J. R., Ben-Porath, Y. S., & Stein, L. A. 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
- 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. <https://doi.org/10.1037/a0015316>
- Moore, C. D., & Handal, P. J. (1980). Adolescents' MMPI performance, cynicism, estrangement, and personal adjustment as a function of race and sex. *Journal of Clinical Psychology*,

- 36(4), 932-936. [https://doi.org/10.1002/1097-4679\(198010\)36:4<932::aid-jclp2270360417>3.0.co;2-a](https://doi.org/10.1002/1097-4679(198010)36:4<932::aid-jclp2270360417>3.0.co;2-a)
- Munley, P. H., Morris, J. R., Murray, D. A., & Baines, T. C. (2001). A comparison of African American and white American veteran MMPI-2 profiles. *Assessment*, 8(1), 1-10. <https://doi.org/10.1177/107319110100800101>
- Newsom, C. R., Archer, R. P., Trumbetta, S., & Gottesman, I. I. (2003). Changes in adolescent response patterns on the MMPI/MMPI-A across four decades. *Journal of Personality Assessment*, 81(1), 74-84. https://doi.org/10.1207/s15327752jpa8101_07
- Penk, W. E., Woodward, W. A., Robinowitz, R., & Hess, J. L. (1978). Differences in MMPI scores of black and white compulsive heroin users. *Journal of Abnormal Psychology*, 87(5), 505-513. <https://doi.org/10.1037/0021-843x.87.5.505>
- Peteroy, E. T., & Pirrello, P. E. (1982). Comparison of MMPI scales for black and white hospitalized samples. *Psychological Reports*, 50(2), 662-662. <https://doi.org/10.2466/pr0.1982.50.2.662>
- Pew Research Center (2021). *The Growing Diversity of Black America*. <https://www.pewresearch.org/social-trends/2021/03/25/the-growing-diversity-of-black-america/>
- Prichard, D. A., & Rosenblatt, A. (1980). Racial bias in the MMPI: A methodological review. *Journal of Consulting and Clinical Psychology*, 48(2), 263.
- Pritchard, D. A., & Rosenblatt, A. (1980). *Reply to Gynther and Green*.
- Roberts, S. O., Bareket-Shavit, C., Dollins, F. A., Goldie, P. D., & Mortenson, E. (2020). Racial inequality in psychological research: Trends of the past and recommendations for the future. *Perspectives on Psychological Science*, 15(6), 1295-1309. <https://doi.org/10.1177/1745691620927709>
- Schinka, J. A., Elkins, D. E., & Archer, R. P. (1998). Effects of psychopathology and demographic characteristics on MMPI-A scale scores. *Journal of Personality Assessment*, 71(3), 295-305. https://doi.org/10.1207/s15327752jpa7103_1
- Settles, I. H., Warner, L. R., Buchanan, N. T., & Jones, M. K. (2020). Understanding psychology's resistance to intersectionality theory using a framework of epistemic exclusion and invisibility. *Journal of Social Issues*, 76(4), 796-813. <https://doi.org/10.1111/josi.12403>
- Sidanius, J., Cotterill, S., Sheehy-Skeffington, J., Kteily, N., & Carvacho, H. (2016). Social dominance theory: Explorations in the psychology of oppression. *The Cambridge Handbook of the Psychology of Prejudice*, 149-187. <https://doi.org/10.1017/9781316161579.008>

- Smith, C. P., & Graham, J. R. (1981). Behavioral correlates for the MMPI standard F scale and for a modified F scale for black and white psychiatric patients. *Journal of Consulting and Clinical Psychology, 49*(3), 455-459. <https://doi.org/10.1037/0022-006x.49.3.455>
- Syed, M., Santos, C., Yoo, H. C., & Juang, L. P. (2018). The invisibility of racial/ethnic minorities in developmental science: Implications for research and institutional practices. *American Psychologist, 73*(6), 812. <http://dx.doi.org/10.1037/amp0000294>
- Tajfel, H., & Turner, J. (1986). The social identity theory of inter-group behavior. In *Psychology of Intergroup Relations*, Stephen Worchel and William Austin (eds.), Chicago: Nelson-Hall.
- 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*(3), 367-369. [https://doi.org/10.1002/1520-6807\(198307\)20:3<367::aid-pits2310200318>3.0.co;2-y](https://doi.org/10.1002/1520-6807(198307)20:3<367::aid-pits2310200318>3.0.co;2-y)
- Terrell, F., & Terrell, S. (1984). Race of counselor, client sex, cultural mistrust level, and premature termination from counseling among Black clients. *Journal of Counseling Psychology, 31*(3), 371-375. <https://doi.org/10.1037/0022-0167.31.3.371>
- Timbrook, R. E., & Graham, J. R. (1994). Ethnic differences on the MMPI-2? *Psychological Assessment, 6*, 212-217. <https://doi.org/10.1037/1040-3590.6.3.212>
- United States Census Bureau (2018). *Older people projected to outnumber children for first time in U.S. history*. <https://www.census.gov/newsroom/press-releases/2018/cb18-41-population-projections.html>
- University of Minnesota Press (2021). *MMPI History: A Brief History of the MMPI Instruments*. <https://www.upress.umn.edu/test-division/bibliography/mmpi-history>
- 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. <https://doi.org/10.1037/1040-3590.17.3.278>
- Zuberi, T., & Bonilla-Silva, E. (2008). *White logic, white methods: Racism and methodology*. Rowman & Littlefield Publishers