

25 Historical Highlights in Using the MMPI/MMPI-2 With Clients with Substance Abuse Problems¹

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The MMPI and MMPI-2 have been widely used in the assessment of persons with substance abuse problems. This highlight file notes some of the special contributions that were made showing that the MMPI scales are appropriate, reliable, and valid in predicting behavior pertinent to alcohol and drug abuse problems. The major research studies, both from historic and contemporary perspectives, are highlighted and their findings and implications are noted here.

HIGHLIGHTS

- 1949 Early research on the MMPI explored the utility of the new test with substance abuse problems. Manson conducted a study on male alcoholics compared with non alcoholics on the Psychopathic Deviate Scale of the MMPI. He found that the alcoholics produced significantly higher scores than did the non alcoholics indicating that the Pd scale effectively discriminated problem drinking.
- 1951 Hampton demonstrated that significant differences in responses to items from a Personal History Questionnaire and the Minnesota Multiphasic Personality Inventory differentiate alcoholics from non alcoholics of similar backgrounds. This study supported the hypothesis that alcoholics can be adequately differentiated from non alcoholics on the basis of differences in responses to certain items on the Personal History Questionnaire and the MMPI.

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- 1956 Button studied hospitalized alcoholics on the basic MMPI profile and found a primary peak on Pd, a secondary peak on D, with a general elevation of "neurotic" over "psychotic" scores. Cluster analysis suggested the presence of two kinds of alcoholics, one of which is characterized by candid self-perception, with presumably better therapeutic possibilities.
- 1965 In order to focus more specifically on alcohol abuse problems a number of specific scales have been developed using MMPI items. The most widely used and most effective of the early substance abuse scales was developed by MacAndrew. The MAC scale (also adapted in MMPI-2) significantly differentiated alcoholic males from non alcoholic males.
- 1973 An important longitudinal study on personality factors in substance abuse was published by Loper, Kammeier and Hoffman. They conducted an evaluation of the MMPI scores of 32 college freshman males, administered at college admission, who were later hospitalized as alcoholics. Their MMPI scores were compared with those of male classmates with no problems. The pre alcoholics were significantly higher on Scales *F*, 4 (Psychopathic Deviate), and 9 (Hypomania). They concluded that the college pre alcoholic is more likely to be impulsive, nonconforming, and gregarious but is otherwise not grossly maladjusted compared to his peers.
- 1975 Black & Heald studied alcoholics and male illicit drug abusers in a military drug and alcohol rehabilitation program. Drug abuse Ss were generally multiple users who reported the use of (a) amphetamines and other stimulants, (b) heroin and other morphine derivatives, (c) hashish, (d) marijuana, and (e) barbiturates and other depressants. Profiles showed that the 2 groups were similar, with a relatively higher elevation on the D scale in the alcoholic group and relatively higher elevations on the *Mf*, *Pa*, *Pt*, *Sc*, and *Ma* scales in the drug abuse group. Mean scores and the results of comparisons for the MMPI scales showed significant differences in elevation on the L validity scale, and the *Mf* and *Sc* clinical scales. Findings are consistent with previous reports of a high incidence of MMPI protocols suggestive of psychopathic deviancy in alcohol and drug abusers.
- 1976 Hodo and Fowler studied MMPI 2 codetypes of a large sample of Caucasian male inpatient alcoholics and found that the mean profile was 4-2 (Pd and D). However, analyses showed that 79% of the profiles were classified differently from the mean profiles indicating that alcoholics are a heterogeneous group with respect to the MMPI.
- 1977 Goldstein and Sappington conducted a study to evaluate the possibility of a preexisting personality configuration in students who became heavy drug users. They compared MMPI profiles of Carnegie Institute of Technology students who became heavy users of marijuana and hallucinogenic drugs contrasted with peer control students. All students had been given the MMPI as entering freshmen in

- the years 1962–1965. The “preuser” sample constituted an *avant-garde* of a drug-oriented counterculture in this setting. The “Preusers” appeared to be socially skillful, adventurous, impulsive, and resistant to authority, while control subjects seemed less socially skilled, reserved, compulsive, and compliant. Significant MMPI scale differences were found on *Hy*, *Pd*, and *Ma*, all being higher for preusers, and *Es* which was higher for the control sample.
- 1979 Conley and Kammeier examined the item pool to determine the alcoholism-related content in the MMPI using an alcoholic population, a psychiatric population and two normal populations. A derivation study and a cross-validation resulted in the identification of three item pools: 1) that discriminate alcoholics from both normals and psychiatric patients, 2) items that discriminate alcoholics from normals only, 3) items that discriminate alcoholics from psychiatric patients only. Only seven items discriminate both male and female alcoholics from both normals and psychiatric patients. These items were found to have substantial face validity. As the core of alcoholism-related content in the MMPI, they can serve as a stem for the development of scales with more specialized purposes.
- 1980 Sutker, Brantley, and Allain studied alcohol use in men who had been arrested for driving under the influence (DUI) of intoxicants. DUI offenders with comparatively higher levels of self-reported drinking showed prominent MMPI patterns. Most pronounced was the relationship between higher levels of estimated average alcohol consumption and patterns in which indices of depression and social deviance were elevated, or the 2-4 two point code type pattern. Moreover, the 2-4 code type pattern was consistently found in samples of DUI offenders and alcoholics, and a single profile pattern indicative of moderate social deviance and impulsivity was common to each sample.
- 1980 The MMPI has been widely used to study personality factors in drug abuse. For example, Patalano studied MMPI two point code-types of drug abusers in a psychiatric, residential, drug-free therapeutic community. This study identified the most frequent two-point codes of drug abusers and determined if a large proportion of the protocols could be classified into a small number of two-point codes. Responses indicated that the 48/84 and 49/94 codes were most frequent two point codes, and 80.6% of the MMPI protocols could be classified into only seven two-point codes, 48/84, 49/94, 24/42, 89/98, 46/64, 78/87, and 28/82.
- 1980 Eshbaugh, Tosi and Hoyt conducted a study of alcoholic women and found that both depression (scale D) and underlying behavior disorder as reflected in *Pd* scale elevations were common. This pattern of MMPI scores were similar to those found among male alcoholics.
- 1991 Allen, Faden, Miller and Rawlings evaluated the relationship between high or low standing on the MacAndrew scale (MAC) of the MMPI and personality traits from the Jackson's Personality Research Form. They studied clients being treated in a specialized substance abuse program. Patients scoring 24 or above on the

- MAC scored significantly higher than did low MAC patients on four traits: affiliation, change, exhibition, and play. Among individuals with diagnosed substance abuse problems, high MAC scores thus seem reflective of greater extraversion and sensation-seeking. The MAC-personality trait relationship was not influenced by age, gender, or diagnosis.
- 1992 Weed, Butcher, McKenna & Ben-Porath introduced two new scales for assessing substance abuse problems with the MMPI-2: the Addiction Potential Scale (APS), a 39-item empirically derived scale, developed by contrasting the responses of a large residential substance abuse sample with responses from both normative and psychiatric control groups; and the Addiction Acknowledgement Scale (AAS), a 13-item face-valid scale, constructed rationally and with attention to internal consistency. Both AAS and APS were shown to discriminate well between groups and substantially better than other selected substance abuse scales. Covariation between the scales and joint effectiveness were reported.
- 1997 Research has shown that the two MMPI subtypes (psychopathic and severe psychiatric) found in inpatient male cocaine abusers in an outpatient sample of men and women were affirmed. Ball, Carroll, Robinson and O'Malley conducted a study to extend the cluster analytic findings from prior research by examining personality subtypes of cocaine-abusing men and women in outpatient treatment. They used structured assessments of addiction severity and psychiatric disorders to provide external validation of the derived clusters. They found that cluster analysis yielded differentiated MMPI subtypes of male and female cocaine abusers analogous to the three clusters found in demographically similar samples of predominantly outpatient male cocaine abusers. They reported that the more severe "psychiatric" profile subtypes were expected to be replicated and related to more severe addiction, legal, employment, social, and psychiatric impairment, compared with a "normal" MMPI subtype of cocaine abuser.
- 1998 Success in treatment for substance abuse problems has been widely studied with the MMPI. Jin, Rourke, Patterson, Taylor and Grant studied the relapse rate during an average 11 years of follow-up in alcoholics who had achieved long-term abstinence, and sought to determine predictors of later relapse. 77 male alcoholics with at least 18 months of stable abstinence at time of entry were followed for 2–17 yrs. Potential predictors of relapse collected at enrollment included past drinking history, severity of alcohol-related life problems, degree of neurocognitive impairment based on neuropsychological (NP) tests, psychological distress (MMPI), and past medical health. 31% of long-term abstainers relapsed during the follow-up period. The average annual hazard rate of relapse was 3.8% in the first 5 years of follow-up and 2.6% over the next 6–11 yrs. The only significant variables to predict relapse were MMPI Scale 4 (Psychopathic Deviate) and prior history of alcohol-related life difficulty (i.e., citation for driving while intoxicated). The authors concluded that, whereas mood disturbance predicts short-term outcome, more enduring personality traits predict long-term success in remaining abstinent.

- 1999 Rouse, Butcher and Miller evaluated the MMPI-2 substance abuse measures (MAC—R, APS, and AAS) for use in evaluating substance abusing versus nonabusing clients in psychotherapy. They found that mean scores on all 3 scales were higher for the substance abusers than for nonabusers. Furthermore, discriminant analysis found all 3 scales to be effective screening tools. The AAS was the best single predictor, and a combination of the AAS and MAC—R provided the best overall discrimination. The implications of early substance abuse detection on treatment effectiveness was discussed.
- 2001 Gilmore, Lash, Foster and Blosser examined the ability of the MMPI-2 Addiction Acknowledgment scale and Negative Treatment Indicators scale to predict adherence to and outcomes from substance abuse treatment. Results revealed a significant positive relation between scores on the TRT scale and readmission to the hospital. Further analyses identified an optimal score for use in similar clinical populations and settings, and characteristics of high and low scorers. Compared to low scorers, high TRT scorers were more likely to not return for treatment after an initial screening interview. If they did return for treatment, high TRT scorers were more likely to experience fewer treatment days and to be rated as having lower motivation, poorer participation, and poorer comprehension of program materials.
- 2001 Munley, Morris, Murray and Baines compared a matched sample of African American and White American veterans who completed the MMPI-2 as a part of their evaluation while receiving inpatient psychiatric treatment. Findings indicated no significant multivariate or univariate effects associated with race on the basic validity and clinical scales, a significant multivariate effect but no significant univariate effects associated with race across the supplementary scales. Overall the 2 groups had very similar mean profiles across the basic validity, clinical, and supplementary scales. Comparison of the 2 groups on the content scales yielded a significant multivariate and significant univariate effects with African Americans scoring higher on the FRS, BIZ, CYN, and ASP scales. Because the 2 groups differed in terms of frequency and type of drug abuse, follow-up 2×2 univariate analyses of variance were conducted for the FRS, BIZ, CYN, and ASP content scales comparing participants classified in terms of presence or absence of a primary or secondary drug abuse diagnosis by race. A significant main effect associated with drug abuse was obtained for the ASP content scale.
- 2002 The cross-cultural application of the MMPI-2 in assessing clients with substance abuse shows similar results as in the US. In China, Guan, Tang, Xue, and Zhou studied the personality of patients with alcohol dependence (AD) compared with male normals (national norm) were tested with the revised Chinese Minnesota Multiphasic Personality Inventory (1989). The results show that the scores of the MMPI had many differences between AD patient Ss' and normative Ss' similar to patterns reported in the United States; that there were differences on the scores of hypochondriasis (Hs), depression (D), hysteria (Hy), psychopathic-deviate (Pd). They concluded that patients with alcohol dependence suffer personality deviance that differs in psychiatric symptoms patterns and the onset of age.

- 2003 Persons convicted of driving-while-intoxicated (DWI) have been studied with the MMPI-2 in a number of studies. Cavaola, Strohmetz, Wolf and Lavender evaluated two groups of offenders with either one DWI offense or with repeat offenses compared with a group of non offenders using the MMPI-2 and the Michigan Alcoholism Screening Test (MAST). They employed demographic information to obtain their prior legal history, family history, and blood alcohol level at the time of the DWI arrest. They found that both DWI groups scored significantly higher than the comparison group on the K, Psychopathic Deviate (Pd) Scale, Over-Controlled Hostility (O-H) Scale, and MacAndrews Alcoholism Scale—Revised (MAC-R).
- 2005 Craig conducted an extensive review 71 United States-based MacAndrew Alcoholism Scale (MAC), as revised (MAC-R) studies totaling almost 32,000 Ss, with adolescent and adult substance abusers, from studies published since the last MAC reviews (1989) through 2001. Results indicated that the MAC, and to some extent, the MAC-R, significantly correlates with measures of alcohol and substance abuse in both male and female adolescents and adults, across a diverse spectrum of the use-abuse continuum. Nonclinical groups (100%) scored below the clinical ranges on the MAC/MAC-R, while 79% of adolescent substance abusing groups scored > R 23, indicative of problems with substance abuse. Persons who abused alcohol, drugs, and poly drugs had mean MAC/MAC-R scores > 23, which ranged from 77% to 100% of the cases. The MAC/MAC-R does well in discriminating persons who abuse substances. A score of greater than 25 seems to improve diagnostic accuracy with this population.
- 2007 The MMPI-2 has been shown to provide valuable assessment information on substance abusing clients in Europe. Egger, Gringhuis, Breteler, De Mey, Wingbermühle, Derksen and Hilberink studied a sample alcohol dependent inpatients and a control group of normal subjects using the MMPI-2 and Cloninger's temperament-character inventory (TCI). The discriminant analyses showed several MMPI-2 scales that could clearly distinguish between alcohol-dependent patients and the normal controls. Cluster analysis resulted in semantically different MMPI-2 profiles implying qualitatively different groups of patients. When related to TCI scales, these differences revealed harm avoidance, self-directedness, and persistence, amongst others, as important elements in the description of the clusters. The authors concluded that evidence for the validity of MMPI-2 constructs (particularly Pd and D) as well as those of the TCI in the assessment of alcohol-dependent patients was provided.
- 2010 Polimeni, May Moore and Gruenert conducted an evaluation of 921 clients assessed after five weeks admission to a Therapeutic Community (TC). The authors provided MMPI-2 profile information on clients showing prominent peaks reflecting character disorder (high Pd) and disturbed thinking and affect (high Sc). The validity scales suggested that the sample was admitting to personal and emotional difficulties and requesting assistance with these problems.

2010 The possibility of heritability factors in substance abuse continues to be a prominent research area. Recently, Gizer, Seaton-Smith, Ehlers, Vieten, and Wilhelmsen evaluated the heritability of personality traits and psychopathology symptoms assessed by the MMPI-2 in a family-based sample selected for alcohol dependence. Participants included probands and first-degree relatives. Heritability estimates for MMPI-2 scales ranged from .25 to .49. When alcohol dependence was used as a covariate, heritability estimates remained significant but generally declined. However, when the MMPI-2 scales were used as covariates to estimate the heritability of alcohol dependence, the scales measuring antisocial behavior, depressive symptoms, and addictive behavior led to moderate increases in the heritability of alcohol dependence. The scales may explain some of the non-genetic variance in the alcohol dependence diagnosis in this population when used as covariates, and thus may serve to produce a more homogeneous and heritable alcohol-dependence phenotype.

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