

25 Historical Highlights in Using the MMPI/MMPI-2 in Assessing Patients with Disability¹

3/31/20

James N. Butcher
Professor Emeritus
University of Minnesota

The MMPI and MMPI-2 have been widely used in the assessment of persons with disability or traumatic injury. McKinley & Hathaway (1940) published the Hypochondriasis or Hs Scale as a means of understanding physical symptoms that are reported by the patient. They also developed the Hysteria or Hy scale (McKinley & Hathaway, 1944) to measure the expression of physical complaints in the context of hysteroid personality characteristics (e.g. denial). The Depression scale has also been determined to contribute substantially in assessing patients with disability (Hathaway & McKinley, 1942). Numerous articles have been published on the use of the MMPI and MMPI-2 scales in assessing various medical conditions. 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 health care of patients with disability. Several major research studies are highlighted and their findings and implications are noted here. Studies include various disabilities such as blindness, brain trauma, epilepsy, and include some cross-national applications.

HIGHLIGHTS

1945 Cross developed a Braille version of the MMPI for administration of the test to blind people. He conducted an evaluation to determine whether or not the MMPI could be used with a population of blind people. The inventory, transcribed into braille, was administered to 50 blind people, 25 of each sex. The item analyses

¹ Citation: Butcher, J. N. (2020). Historical highlights on use of the MMPI/MMPI-2 in assessing patients with disability. Retrieved from <http://www.umn.edu/mmpi>

- and profile comparison with the norms indicated that valid results can be obtained. The validating scales do not differ to a noticeable degree from the norms. Item analyses revealed that the blind differ significantly from the comparable norm group on only twenty items and on only five of these do both sexes answer in the maladjusted direction a significant number of times.
- 1945 Ruesch & Bowman conducted a comprehensive and systematic study of the recovery process for accident victims with neurological injury. They evaluated the extent to which personality factors were involved in the recovery process using the MMPI. They found that common features of the post-traumatic syndromes following brain injury included abnormally high^[1]_{SEP} scores on the neurotic scales of the MMPI and a large number of diffuse complaints. The personality factors were an important component in delayed or postponed recovery.
- 1950 Andersen and Hanvik studied the psychometric localization of brain lesions by examining the differential effect of frontal and parietal lesions on MMPI profiles. They reported that patients with frontal lobe lesions showed both psychometric and clinical indications of Hy characteristics and those with parietal lesions more closely resembled anxiety disorders on Pt.
- 1952 Wiener provided an evaluation of the effects of personality characteristics on disability. He evaluated veterans with various reported disabling problems such as arthritis, asthma, gunshot wounds, malaria, heart disease, and duodenal and stomach ulcers. The study showed elevations on Hy and Hs that characterized some disability groups such as the arthritis and heart disease groups indicating possible psychosomatic factors or the tendency to develop physical conditions as a result of emotional distress.
- 1964 Fordyce studied the psychological factors in patients with spinal cord injury. The study involved extensive ratings of injured patients in terms of “prudent” vs “imprudent” behavior in dealing with health care issues. He found that those patients who were characterized as “imprudent” based upon behavioral ratings had more substantial elevations on the Pd scale. He concluded that there are important behavioral differences between patients who were judged to be prudent versus imprudent in their rehabilitation process and that these factors needed to be considered in order to obtain the most effective results.
- 1965 Boursstom and Howard conducted an evaluation of patients with rheumatoid arthritis, multiple sclerosis and spinal cord injury to determine if there were different personality factors in these conditions. They found that there were differences on Hs, Hy and D for the medical groups. Moreover, they reported that there were gender differences in the MMPI responses across all three comparison groups.
- 1966 Mathews, Shaw and Klove studied patients who were neurologically impaired compared with patients with likely pseudo-neurological or psychologically based

- symptoms. The patient groups were compared on 29 psychological tests including psychometric measures, tests from Halstead's battery, the Trail Making Test, and the MMPI. Group 1 was composed of patients with 'pseudo-neurologic' symptomatology and group 2 consisted of patients with unequivocal brain damage. 14 of 29 comparison variables discriminated at $p < .01$ and 4 additional variables at $p < .05$." Since all patients were initially suspected of neurologic disease, the results underscore the potential contribution of these measures (particularly the MMPI Hy scale) to the more difficult differential diagnostic problem posed by patients presenting "pseudo-neurologic" as opposed to neurologic symptomatology.
- 1971 Davis, Osborne, Siemens and Brown conducted an evaluation to provide information on the adjustment of multiple sclerosis patients at Mayo Clinic. They found that a patient diagnosed with Multiple sclerosis who scored higher on scale *Hy* than *Pt* tend to be seen as more disabled as described by their physician than a patient who scores higher on *Pt*. They pointed out that it is unlikely that the results obtained were unique to patients with multiple sclerosis but more than likely descriptive of general features in any chronic debilitating disease.
- 1972 The mental health status of patients seeking disability claims was evaluated in an extensive study by Shaffer, Nussbaum and Little. They evaluated MMPI profiles from a random sample of 1,064 physical (nonpsychiatric) disability insurance claimants were compared with those of 14,306 general medical patients, matched for age and sex, seen who had been evaluated at the Mayo Clinic. In contrast with the latter, the disability insurance claimants produced mean profiles in the clinically significant range. These results confirm earlier clinical findings that between 35 and 44 percent of the physical disability sample suffered from moderate to severe psychoneuroses or personality disorders.
- 1977 Campbell, Clarkson & Sinsabaugh used the MMPI to evaluate adjustment factors among dropouts from a rehabilitation program for disabled veterans. They used a 6-month follow-up from a rehabilitation program or employment placement. They found the best predictors of failure in rehab were the MMPI Pd and Ma scales.
- 1977 In Israel, Rosenbaum & Hez studied the Denial and the Depression scales of the MMPI and Rotter's Locus of Control scale to evaluate men with locomotor disabilities compared to nondisabled men. Among the disabled, brain-damaged scored higher in the Denial scale than the non-brain-damaged disabled, but not higher than the nondisabled. A high correlation was found between Denial and Locus of Control. The more the person believed that he is externally controlled, the less denial he employed. The disabled groups scored significantly higher on the Depression scale than the nondisabled group. The latter finding was discussed in terms of two behavioral formulations of depression.

- 1982 Brandwin and Kewman evaluated the usefulness of the MMPI for predicting treatment response to electrical spinal epidural stimulation in patients with chronic pain and with movement disorders. The movement-disordered group had generally lower MMPI scores than the group with chronic pain and higher subjective ratings of improvement. However, physicians' ratings for the groups as a whole showed that scores on Hs and Hy, while elevated, tended to be relatively lower for patients who were treatment resistant than for those rated as successes. Higher elevations on D were associated with treatment failure. The psychological implications of these findings are discussed. The results suggest that the MMPI has predictive value but the need for refinement of outcome measures and further clarification of psychological variables is needed.
- 1984 Woodward, Bisbee and Bennett studied the MMPI correlates of relatively localized brain damage. They examined the MMPI correlates of localized brain damage patients classified along dimensions of laterality and caudality. Forty patients with lateralized lesions that involved anterior or posterior cerebral areas were studied. Based on a multivariate analysis of variance, results revealed significant differences in MMPI profiles between left hemisphere and right hemisphere lesion groups. The MMPI profile for the left hemisphere lesion group was well within the normal range; the right hemisphere lesion group is beyond normal limits, primarily on the D and Sc scales. Several issues are discussed in an effort to integrate these findings with previous studies.
- 1984 Graca, Hutzell, Gaffney and Whiddon assessed the effectiveness of 22 MMPI procedures to differentiate organic brain syndrome (OBS) from schizophrenic (SC) patients. They found several MMPI indices; such as the Hs-Pt Index show effectiveness in making this differentiation. Overall accuracy rates of those procedures were found to be statistically significant and ranged from 61.5 to 70.0%.
- 1985 Turner and Leiding conducted a study to determine whether the MMPI aided in selection of appropriate lumbosacral fusion candidates, compared with those selected without an MMPI. Postoperative end-result ratings were done, categorizing patients into two groups: one group of patients with a preoperative MMPI and a second group of patients with no preoperative MMPI. The MMPI was useful in determining outcome. They reported that "warning" physical signs aided selection of appropriate surgical candidates in the patients who did not have an MMPI.
- 1989 Post-acute traumatic brain-injured patients have been extensively studied with the MMPI. Burke, Smith and Imhoff conducted a study to evaluate the response styles of brain-injured patients. Patient's profiles were examined on

- indices of consistency, random responding, and attempts to look good or bad. The results showed that about 20% of the profiles were markedly inconsistent, including two profiles, which met the criteria for random responding. Depending on the cut-off score used, between 0 and 9% were identified as showing bias to look bad, while between 18 and 30% were identified as biased to look good. A mean profile on the primary clinical and research scales was developed and a frequency count of the high two-point codes was conducted. This profile approached clinically significant levels on the PD, Sc, D, and Ma scales, reflecting character problems. They recommended that clinicians needed to carefully evaluate indices of consistency, random responding and tendency to look good when interpreting self-report measures such as the MMPI with the TBI population.
- 1992 Gass and Brown concluded that measures of psychopathology and personality characteristics, included in the MMPI-2, can assist the neuropsychologist in planning feedback by providing clues regarding a patient's openness, receptivity, insight, and other behavior. Providing feedback serves as a vehicle for assisting patients with objective guidance in decision-making. It can also assist in rehabilitation and treatment planning and provide informational support for families who struggle with issues of management and adaptation.
- 1993 Brauer studied the linguistic equivalency of a sign language translation of a psychological test for use with deaf individuals. The MMPI was translated into American Sign Language (ASL) and verified using back-translation and recorded on videotape. The bilingual retest technique was conducted whereby both forms of the instrument were administered to ASL-English bilingual deaf subjects. The *T* scores were calculated from the MMPI data and compared with the MMPI-2 norms. The results of this study demonstrated adequate linguistic equivalencies of the ASL MMPI items and underscore the potential utility and practicality of future ASL translations of psychological tests for use with deaf individuals.
- 1995 The use of the MMPI-2 item pool has been shown to be valuable in assessing clients with confirmed head injury. Hamilton, Finlayson & Alfano found that the MMPI-2 items measuring cognitive, somatic and behavioral aspects of neurobehavioral dysfunctioning were valuable in assessing clients with confirmed brain damage.
- 2000 The MMPI-2 has been shown to make a valuable contribution to assessing protocol validity in persons who have unconfirmed head injuries. Holtzer, Burright, Lynn and Donovan determined that there were important differences between persons whose self-reports of traumatic brain injuries were confirmed versus non-confirmed. Their research indicated that these samples differed in terms of the extent to which their symptom report was valid. Symptom exaggeration, as reflected in the MMPI-2 F scale, was common in individuals without confirmed brain injury. A sizeable percentage (i.e. 61.5%) of the

- participants in the non-confirmed TBI group over-reported their psychiatric symptoms (as indicated by the MMPI-2 F-K validity index). In contrast, none of the participants in the control or confirmed TBI groups met the established criterion ($F \pm K > 10$) for invalidity of self-report.
- 2001 In Norway, Kvale, Ellertsen & Skouen evaluated relationships between physical findings, as measured with the Global Physiotherapeutic Examination and psychological characteristics, as measured with the MMPI-2, in three groups of patients with long-lasting musculoskeletal pain. Significant correlations were obtained between the physical pain symptoms and the MMPI-2 with regard to somatization, somatic concern, and depression. Patients with localized pain had few correlations between bodily findings and psychological problems compared with many inpatients with generalized pain. Women showed correlations between the domains of Posture, Movement, and Muscle and psychological problems, whereas men showed correlations with Movement, Skin and Respiration. A psychosomatic MMPI-2 profile of scales 1-3 was found in two groups. Women showed significantly higher scores than men. Patients with generalized pain had significantly more physical and psychological aberrations than patients with more localized pain.
- 2010 Kidner, Gatchel and Mayer examined the relationship between level of opioid use and MMPI findings among patients with chronic disabling occupational musculoskeletal disorders in a functional restoration program. A total of 768 consecutive patients with valid MMPI were divided into 2 groups: 398 patients who reported no opioid use upon admission (No); and 370 patients who reported opioid use upon admission (Yes). Average daily opioid doses (in morphine equivalents) could be determined for 287 of 370 patients, who were further divided into 4 opioid subgroups: Low (>0 to 30 mg, $n=148$); Medium (>30 to 60 mg, $n=57$); High (>60 to 120 mg, $n=47$); and Very High (>120 mg, $n=35$). They found that 75% of the patients who produced valid MMPI profiles could be classified into 1 of the 4 MMPI profiles. Of those patients who could be classified, approximately 7% showed a Normal profile, 15% showed a Conversion V, 9% showed a Neurotic Triad, and 69% showed the Disability Profile. Although the Disability Profile accounted for the majority of patients in all opioid subgroups, the proportions did increase with pretreatment opioid dose, as expected, indicating a relationship between degree of psychopathology and level of pretreatment opioid use. Patients who did not take pretreatment opioids showed the highest proportions of Conversion V and Normal profiles, which indicate a lesser degree or absence of psychopathology, respectively. Patients who took pretreatment opioids were more than one-and-a-half times as likely as patients who did not take pretreatment opioids to produce the Disability Profile, whereas patients taking very high doses of pretreatment opioids were nearly 3 times as likely to produce this profile as patients who took no pretreatment opioids. The results of this study support the hypothesis that increasing levels of pretreatment opioid use is associated with less desirable MMPI profiles, specifically the Disability Profile and, thus, greater levels of pretreatment psychopathology.

- 2018 Yutsis, Rosen and Deutsch, (2018) provide a discussion of Neurocognitive disorders (NCDs) that are a unique group of disorders in the *Diagnostic and Statistical Manual of Mental Disorders* because the term encompasses only disorders involving acquired cognitive deficits whose etiology is neurobiological. Whereas cognitive dysfunction can co-occur with many mental health conditions, only disorders whose primary and core features are cognitive decline are included under the NCD conditions. The major focus of this chapter is to review a select subset of the most common NCD diagnoses as they are defined by the *DSM*: delirium, mild and major NCD due to Alzheimer's disease (AD), mild and major vascular NCD, mild and major NCD with Lewy bodies, and mild and major NCD due to traumatic brain injury (TBI). The authors provide a clear discussion of these diverse disorders
- 2018 This chapter by Jackson and Milberg, (2018) provides contemporary evidence on cognitive and mental processes underlying psychopathology particularly the relationship of brain damage to cognitive behavior and psychopathological processes. Pertinent information on the development or management of organically-based psychopathology is addressed. Research evidence and practical applications underlying relevant cognitive processes and psychopathology would be highlighted. Past and contemporary advancements in neuropsychology would be addressed and possible future directions in the field considered.

References

- Andersen, A. L., & Hanvik, L. J. (1950). The psychometric localization of brain lesions: The differential effect of frontal and parietal lesions on MMPI profiles. *Journal of Clinical Psychology*, 6, 177-180.
- Bouresstom, N. C. & Howard, M. T. (1965). Personality characteristics of three disability groups. *Archives of Physical Medicine*, 46, 626-632.
- Brandwin, M.A., & Kewman, D.G. (1982). MMPI indicators of treatment response to spinal epidural stimulation in patients with chronic pain and patients with movement disorders. *Psychological Reports*, 51, 1059-1064.
- Brauer, B. A. (1993). Adequacy of a translation of the MMPI into American Sign Language for use with deaf individuals: Linguistic equivalency issues. *Rehabilitation Psychology*, 38, 247-260.
- Burke, J.M., Smith, S.A., & Imhoff, Y.L. (1989). The response styles of post-acute traumatic brain-injured patients on the MMPI. *Brain Injury*, 3, 35-40.
- Campbell, H. G., Clarkson, Q. D., & Sinsabaugh, L. L. (1977). MMPI identification of nonrehabilitants among disabled veterans. *Journal of Personality Assessment*, Vol

- 41, 266-269.
- Cross, O. H. (1945). Braille edition of the MMPI for use with the blind. *Journal of Applied Psychology*, 31, 189-198.
- Davis, L. J., Osborne, D., Siemens, P. J., & Brown, J. R. (1971). MMPI correlates with disability in multiple sclerosis. *Psychological Reports*, 28, 700-702.
- Fordyce, W. E. (1964). Personality characteristics in men with spinal cord injury as related to manner of onset of disability. *Archives of Physical Medicine*, 45, 321-325.
- Gass, C. S. & Brown, M. C. (1992). Neuropsychological test feedback to patients with brain dysfunction. *Psychological Assessment*, 4(3), 272-277.
- Graca, J., Hutzell, R. R., Gaffney, J. M. and Whiddon, M. (1984). A comparison of the effectiveness of MMPI indices in the discrimination of brain-damaged and schizophrenic patients. *Journal of Clinical Psychology*, 40, 427-431.
- Hamilton, J. M. & Finlayson, M., Alfano, D.P. (1995). Dimensions of neurobehavioural dysfunction: Cross-validation using a head-injured sample. *Brain Injury*, 9, 479-485.
- Hathaway, S. R. & McKinley, J. C. (1942). A multiphasic personality schedule (Minnesota): III. The measurement of symptomatic depression. *Journal of Psychology*, 14, 73-84.
- Holtzer, R., Burright, R. G. Lynn, S. J. & Donovanick, P. J. (2000). Behavioural differences between psychiatric patients with confirmed versus non-confirmed traumatic brain injuries. *Brain Injury*, 14, 959-97.
- Jackson, C. E. and Milberg, W. P. (2018) Examination of Neurological and Neuropsychological Features in Psychopathology. In J.N. Butcher (Editor-in-Chief), & J.M. Hooley (Ed.). *APA Handbook of Psychopathology: Vol 1. Understanding, assessing, and treating adult mental disorders*. (pp.65-91). Washington, DC: American Psychological Association.
- Kidner, C., Gatchel, R.J., & Mayer, T.G. (2010). MMPI disability profile is associated with degree of opioid use in chronic work-related musculoskeletal disorders. *Clinical Journal of Pain*, 26, 9-15.
- Kvale, A., Ellertsen, B., & Skouen, J.S. (2001). Relationships between physical findings (GPE- 78) and psychological profiles (MMPI-2) in patients with long-lasting musculoskeletal pain. *Nordic Journal of Psychiatry*, 55, 177-184.
- Mathews, C. G., Shaw, D. J. & Klove, H. (1966). Psychological Test Performances In

- Neurologic And "Pseudo-Neurologic" Subjects. *Cortex: A Journal Devoted to the Study of the Nervous System and Behavior*, 2(2), 244-253.
- McKinley, J. C. Hathaway, S. R. (1940). A multiphasic personality schedule (Minnesota): II. A differential study of hypochondriasis. *Journal of Psychology*, 10: 255-268.
- McKinley, J. C. & Hathaway, S. R. (1944). The MMPI:V. Hysteria, hypomania, and psychopathic deviate. *Journal of Applied Psychology*, 28, 153-174.
- Rosenbaum, M. & Raz, D. (1977). Denial, locus of control and depression among physically disabled and nondisabled men. *Journal of Clinical Psychology*, Vol 33, 672-676.
- Ruesch, J. C., & Bowman, K. M. (1945). Prolonged post-traumatic syndromes following head injury. *American Journal of Psychiatry* 102,145-163.
- Shaffer, J.W., Nussbaum, K., & Little, J.M. (1972). MMPI profiles of disability insurance claimants. *American Journal of Psychiatry*, 129, 403-407.
- Turner, R.S., & Leiding, W.C. (1985). Correlation of the MMPI with lumbosacral spine fusion results: Prospective study. *Spine*, 10, 932-936.
- Wiener, D. N. (1952). Personality characteristics of selected disability groups. *Genetic Psychology Monographs*, 45, 175-255.
- Woodward, J. A., Bisbee, C. T. and Bennett, J. E. (1984). MMPI correlates of relatively localized brain damage. *Journal of Clinical Psychology*, 40, 961-969.
- Yutsis, M., Rosen, A.C. and Deutsch, G. K. (2018). Neurocognitive Disorders. In J.N. Butcher (Editor-in-Chief), & J.M. Hooley (Ed.). *APA Handbook of Psychopathology: Vol 1. Understanding, assessing, and treating adult mental disorders*. (pp. 321-342). Washington, DC: American Psychological Association.

