

SIGNIFICANT CONTRIBUTIONS FOR USE OF THE MMPI/MMPI-2 IN TREATMENT

FIFTY HISTORICAL HIGHLIGHTS

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Extensive research has been conducted on the use of the MMPI and MMPI-2 scales in evaluating clients for psychological treatment and there have been hundreds of publications on the MMPI and MMPI-2 in the treatment evaluation area. The following highlights describe special contributions that were made to assure that the scales on the test were appropriate, reliable, and valid in predicting symptoms and behavior relevant to psychological treatment. Major research studies of the MMPI/MMPI-2 in various treatment settings are highlighted and their findings/implications are summarized.

- 1943 Hathaway & McKinley introduced the Minnesota Multiphasic Personality Inventory as an empirically based self-report instrument that could assess clinical symptoms by differentiating people with mental health problems from normal individuals.
- 1946 Drake developed the Social Introversion/Extraversion Scale that was incorporated into the MMPI measures. This scale is one of the most valuable tools for understanding a client's social functioning—a critical personality variable for treatment planning.
- 1950 Kaufmann conducted a study in which the MMPI was administered before and after psychological treatment. All of the patients were rated as improved by their therapists. Most of the MMPI scores were lower in the post treatment test administration though not equal to the mean scores of the control group on the respective scale. However, the mean scores were substantially lower in the post treatment administration.
- 1950 Carp conducted a study of psychological test performance and insulin shock treatment with the MMPI. The test was administered before and after insulin

- shock therapy to a group of hospitalized schizophrenic patients. They found that for several of the MMPI scales the mean post-treatment scores were significantly lower than the mean pre-treatment score. These differences are particularly marked for the F, Pd, Pa, Pt and Sc scales. Improvement is accompanied by post-treatment increase in the L, K, and the Hs scale and decrease in Ma.
- 1951 Pearson demonstrated the value of the MMPI in predicting the response of schizophrenic patients to electronarcosis therapy.
- 1953 Barron developed an MMPI scale (Ego Strength or *Es*) to predict responses to psychotherapy. Analyses of its content and its correlations with other measures suggested that the scale was a measure of "ego-strength." Subsequently the scale has been widely validated as a predictor that estimates personal adaptability and resourcefulness.
- 1953 Schofield conducted research on the use of the MMPI in assessing clients in psychotherapy. He found that the MMPI profiles of successfully treated psychiatric patients reflect the success of therapy in significantly reduced scale scores. The findings from his studies strengthen the conclusion as to the value of the MMPI as an objective technique for the evaluation of psychotherapeutic endeavors.
- 1953 Gallagher evaluated the utility of the MMPI in detecting symptom change following therapy. He found that there were significant differences in reported problems (particularly discomfort scales such as D, Pt and Hs) between the pre-treatment MMPI scores and post-treatment scores. Symptom scales tended to be lower on retest. The only scales that showed a tendency to be higher on retest were the Hy, Pd and Ma scales that were considered to reflect persistent character problems.
- 1954 Drake conducted a large-scale study in which the MMPI profiles of clients in counseling were evaluated. He found that those counseling cases found to be difficult to deal with because they were aggressive or opinionated were characterized by having MMPI profiles with scales Pd and Ma elevated. The group of shy clients were best characterized as having high scores on the Pt or Si scales.
- 1960 Kleinmuntz, in an effort to explore an effective means of predicting adjustment problems in college counseling cases, developed a 43 item MMPI scale (College Maladjustment Scale, or MT) that identified and described maladjusted college students. The scale discriminated between the maladjusted and adjusted students and was replicated in a second counseling sample. High scoring students express feelings of pessimism about the future, a lack of self-confidence, and they seem to have doubts about their ability to make proper decisions. Maladjusted students also disclose a lack of interest in life and an inability to get started in doing things.(See Kleinmuntz, 1961 for psychometric details of MT)

- 1965 Lewinsohn published an empirical study of the MMPI in evaluating clients in psychotherapy. He identified the dimensions of individual difference in change on the MMPI among patients undergoing treatment in a psychiatric hospital. The MMPI was given to patients on admission and discharge. All the MMPI scales, with the exception of the Low Back Pain, Factor R, Re, and L, showed a significant change from admission to discharge in the improvement direction.
- 1969 Bergin and Jasper inquired into the question of "What produces variation in therapist empathy? Is it therapist personal characteristics, therapist training and experience, or client characteristics?" Evidence to date indicates that all three factors are related to level of therapist empathy. Their study showed a rather clear replication of the importance of personality characteristics in therapists. The *D* and *Pt* scales correlate negatively and significantly with empathy. The most important finding was that therapists' Depression (*D*) and Anxiety (*Pt*) correlated negatively with their empathy in the live therapeutic process. This is clearly in keeping with the common viewpoint that therapist personal disturbances interfere with therapeutic effectiveness.
- 1969 Jacobson and Wirt conducted an extensive study of MMPI profiles that were associated with outcomes in group psychotherapy with prisoners. They found that *Pd* and *Ma* were more consistently associated with recidivism while the more neurotic profiles (with *D*, *Hy* and *Pt*) made better progress in treatment.
- 1970 Horton and Kriauciunas conducted an empirical evaluation of terminators versus continuers in treatment. Terminators and continuers in personal counseling were compared on three measures: MMPI scale scores; L'Abate's Maladjustment Index and Leary's Interpersonal System Levels I and III. Analysis of data revealed that only male terminators obtained significantly higher scores on the Maladjustment Index. However, all terminators obtained significantly lower scores on Leary's Love variable, and significantly higher scores on MMPI *F*, *Pa*, *Sc*, and *Ma* scales. Analysis of the MMPI results shows that people who terminate therapy early obtained significantly higher scores than continuers on scales *F*, *Pa*, *Sc*, and *Ma*.
- 1975 Strupp & Bloxom found that MMPI scales *D*, *Pt* and *Si* were valid indicators of emotional problems that are not subject to spontaneous remission and are valuable and useful for identifying and specifying initial patient states and for measuring outcomes in psychotherapeutic interventions.
- 1978 Heaton, Chelune and Lehman conducted a study of patient's ability to function in everyday life (such as in employment) as an aspect of treatment. Unemployed groups showed significantly more personality psychopathology on the MMPI than patients who were employed.

- 1979 Panton conducted an evaluation of the personality changes, based on the MMPI, that was administered in pre- and posttreatment stages of an intensive psychotherapeutic program for first time offenders. Residents were compared on pre- and posttest MMPI-2 results in contrast to a control group of similarly selected young prisoners, who also appeared to have a potential for adequate institutional adjustment. Controls demonstrated no pre–post significant mean scale changes on their MMPI results, whereas experimental Ss presented significant mean scale improvement on 10 of the 15 clinical and additional MMPI scales employed in the study. Experimental Ss showed significant improvement on measures of anxiety, depression, over-concern with physical functioning, social alienation, antisocial life style, social prejudice, sense of responsibility, personal adaptability, attitude toward law and order.
- 1979 Pickens and colleagues conducted an evaluation of acute psychiatric patients in a behavioral treatment program in which points were earned for adaptive behavior (e.g., self-care, attending ward activities) and lost for maladaptive behavior (e.g., assaults, verbal abuse). Points earned could be spent for a variety of goods and services (e.g., passes, extra staff time). Significant correlations were found between MMPI scale scores and point-earning behavior.
- 1981 Dorr published a review article describing an important way to use traditional psychological tests in marital therapy. A standard, full battery of personality tests is administered by a technician, after which the couple, technician, and psychologist participate in a 3-6 hour interpretive feedback session. The partners are presented with actual test results and aided by the psychologist in making their own interpretation; hence, they act as codiagnosticians-cotherapists. Following the interpretive session, the psychologist prepares a lengthy letter for the couple, summarizing the results of the testing and interpretive session. This approach provides a new and constructive way to use well-established clinical instruments like the MMPI. The process of sharing the results of psychological tests within a nonjudgmental framework appears to offer an exciting way to assist couples in dealing with the terrible pain of marital discord.
- 1981 Rehm and colleagues studied 5 conditions with female outpatients to disassemble a behavioral self-control program previously shown to be effective in the treatment of moderate depression. Conditions were (1) self-monitoring only; (2) self-monitoring plus self-evaluation; (3) self-monitoring plus self-reinforcement; (4) the full self-control package including self-monitoring, self-evaluation, and self-reinforcement; and (5) a waiting list control. Clients were screened on the MMPI and Research Diagnostic Criteria for Affective Disorders for moderate, nonpsychotic, nonbipolar depression. Therapy was conducted in 7 highly structured weekly 1½ hr group sessions. Results indicate that all treatment conditions did better than the waiting list controls on self-report and interviewer rating measures of depression.

- 1982 Pettinati, Sugerma, and Maurer conducted a four-year follow-up of patients who were hospitalized and treated for substance abuse. They found that those who remained abstinent for the period had high scores on the D scale which decreased to the normal range after treatment. Patients who continued to drink periodically had high scores on Pd or Ma which were still elevated at follow-up. An intermediate group who had occasional relapses tended to have high scores on D and Pd.
- 1984 Manos and Vasilopoulou examined the outcome of psychoanalytically oriented psychotherapy administered to patients in Greece who presented with a variety of syndromes, including personality disorders, anxiety/somatoform disorders, psychotic disorders, psychosexual disorders, and bulimia. Patients and nontreatment controls were evaluated 4 months post intake. MMPI scores, target symptoms, global evaluation, and other clinical evaluations were used as outcome measures. Findings show that Ss who underwent therapy improved significantly more than controls on subjective and objective parameters on the MMPI.
- 1987 Faravelli & Albanesi investigated the clinical course of panic disorder over 1 yr of therapy by studying the outcome, relapses, symptom pattern, social adaptation, and predictors to long-term prognosis of patients. Improvement from panic was rapid, whereas there was a delay in recovery from agoraphobia and interepisodic anxiety. After 1 yr, all symptoms showed a consistent and comparable degree of improvement. Five of the 13 cases who attained full recovery and 7 of the 16 cases who satisfied the criteria for improvement relapsed into a new episode. The variables that gave the greatest contribution to the variance of the outcome were initial agoraphobia, scales Pd and Hy from the MMPI, and Extraversion from the Maudsley Personality Inventory, and educational level.
- 1987 Elliott, Anderson and Adams studied differences on four MMPI scales among college students who had been seen in a university counseling center and who were classified into 1 of 3 durations of therapy. Multivariate analyses showed scores on the Depression and Social Introversion scales to be significantly higher for those remaining in therapy 13 sessions or more, and these scales predicted duration. Results suggested that a number of college students with elevations on these dimensions persist in therapy despite real-life impediments to therapeutic progress and quality.
- 1988 DuBrin and Zastowny conducted an empirical evaluation of early dropouts from psychotherapy in a large outpatient private practice mental health setting. Clients were primarily self-referred or referred from local health centers, universities, churches, and other community organizations. They found that the MMPI scales were associated with early drop out from treatment. Dropouts were characterized by higher scores on the Hy scale and higher scores on a combined scale Hs and Hy. Overall, the clinical variables achieved quite a satisfactory prediction, 81.2% for continuers and 77.1% for dropouts. Only 14 of the dropouts were misclassified. The findings showed that character structure and personality

- characteristics (e.g., defensiveness, psychological-mindedness, and motivation) are related to early termination from psychological treatment.
- 1988 Ellertsen conducted an evaluation of personality factors influencing treatment of patients with migraine and tension headache among Norwegian patients. He reported that MMPI personality profiles discriminated migraine and tension headache patients from a reference group of mild myalgic pain patients. In addition, lowered elevations of MMPI profiles were found among successful patients following biofeedback treatment.
- 1988 Edwin studied outcome prediction among chronic anorexic inpatients and bulimic inpatients. Patients were followed from 8–60 months after discharge at normal weight. The bulimic patients had more elevated MMPI profiles in both depression and impulsivity than those with anorexia nervosa. Outcome criteria (i.e., follow-up weight, bulimic behavior, social functioning) revealed that 39% of all Ss maintained treatment gains and 61% relapsed. 49% of anorexic patients maintained improvement compared with 22% of bulimic patients. MMPI profiles predicted outcome within each subtype.
- 1989 Butcher, Dahlstrom et al. published the revised version of the MMPI (MMPI-2) that contained new items that addressed treatment planning content and new norms to provide a more contemporary comparison group for psychological assessments. A new set of content-based scales (such as Negative Treatment Indicators, Low Self-Esteem, Family Problems, and Work Interference) were included. These measures are particularly valuable in treatment evaluation since they are symptom summary variables of the patient's acknowledged problem areas.
- 1990 Butcher provided a descriptive overview of the use of the MMPI-2 in treatment planning and a perspective on the empirical correlates of the scales in assessing clients in treatment evaluations. A strategy for using personality-based information from the MMPI-2 to provide feedback to clients in treatment was made available (see also revised version in Butcher & Perry, 2008).
- 1992 Finn and Tonsager conducted an evaluation of the benefits of sharing MMPI-2 test results verbally with clients. Patients were randomly selected from a college counseling center's waiting list: 32 received test feedback according to a collaborative model and 29 received only examiner attention. Groups did not differ on age, sex, days between examiner contact, and initial levels of distress and self-esteem. Compared with the controls, clients who completed the MMPI-2 and heard their test results reported a significant decline in symptomatic distress and a significant increase in self-esteem, and felt more hopeful about their problems, both immediately following the feedback session and at a 2-week follow-up.

- 1992 Hjemboe and colleagues developed the MMPI-2 scale Marital Distress (MDS) to assess marital problems—circumstances that are likely to impact treatment of psychological problems. This measure is particularly valuable in marital therapy.
- 1992 An important area for assessment in a mental health treatment context is the client's substance use and their openness to discuss such problems with the therapist. Weed and colleagues developed two substance abuse measures, the Addiction Admission Scale (AAS) and Addiction Potential Scale (APS) that enable the practitioner to assess a client's substance abuse problems and openness to sharing the problems with others.
- 1993 Fals-Stewart and Schafer examined the relationship between compliance with a behavior therapy program and personality characteristics of outpatients diagnosed with obsessive-compulsive disorder (OCD) as measured by the MMPI. Compliance was defined as the number of scheduled behavior therapy sessions canceled or missed by Ss. Results showed that higher scores on scales 8 (Schizophrenia), 2 (Depression), and 0 (Social Introversion) contributed significantly to the prediction of compliance among patients.
- 1996 Clark conducted an evaluation of the MMPI-2 Treatment Resistance Scale (TRT) and its subscales (TRT1 and TRT2). He found that the TRT and TRT1 were significant predictors of change in male chronic pain patients. The pattern of intercorrelations between MMPI-2 scales and TRT obtained with this clinical sample was consistent with that reported by the scale developers for normative sample men. In both samples, the closest associations were with scales indicating general psychological distress, anxiety or tension, limited coping skills, social withdrawal, depression, and poor self-esteem. Correlations between TRT and external test measures were concordant with behavioral correlates reported by the scale developers of the TRT measures.
- 1998 Butcher, Rouse and Perry conducted an empirical evaluation of patient-related factors in treatment resistance. MMPI-2 variables that can affect a client's willingness to implement behavioral changes were described.
- 1999 Fan, Gu, and Zhou studied the effectiveness of the MMPI in assessing behavioral change among Chinese involved in a treatment intervention for migraine. The results revealed that patients in the pretreatment group with migraine had significantly higher scores on subtests of neuroticism and schizophrenia. After treatment, the scores on subtests of hysteria, psychasthenia, and schizophrenia were lower; the MMPI profile of the posttreatment group was within the reference range, but the scores of the neurotic scales were still higher than those of the healthy control group. These results suggest that after treatment, disturbances in thinking, sentiment, and behavior were remarkably reduced, but some "migraine personality" characteristics remained and could influence the long-term results of treatment.

- 1999 Rouse and colleagues conducted an evaluation of MMPI-2 substance abuse (the MacAndrew Alcoholism Scale—Revised (MAC–R), the Addiction Potential Scale (APS), and the Addiction Acknowledgement Scale (AAS) that were developed to identify alcohol and drug abusing individuals. They evaluated the effectiveness of these scales at detecting substance abuse problems in a community-based mental health a sample of substance abusing and nonabusing psychotherapy clients as rated by therapists. The results indicated that mean scores on all 3 scales were higher for the substance abusers than for nonabusers. 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.
- 2000 Chisolm and colleagues provided empirical validation for a number of MMPI-2 clinical and content scales in predicting outcomes in psychotherapy.
- 2000 Butcher, Rouse and Perry provided empirically derived correlates of MMPI-2 clinical and content scales that describe or predict behavior in patients undergoing psychological treatment.
- 2001 Gordon evaluated MMPI/MMPI-2 changes in long-term psychoanalytic psychotherapy. He tested the MMPI/MMPI-2 with long-term psychoanalytic psychotherapy with 55 polysymptomatic outpatients. After a mean of 38.8 months of treatment, scales F, Hs, D, Hy, Pd, Pt, Sc, Ma, and A, all significantly decreased to the normal range. Scales K and Es which measure ego strength, increased significantly. A subsample of 18 patients with 3 testings, showed little change at mean 60.4 mo. On the average, it took patients about 2 years to begin to make significant changes to their personalities, and they continued to improve for years. These results, using the MMPI/MMPI-2, support the validity of long-term psychotherapy and the utility of he MMPI-2 in assessing change.
- 2002 Forbes and colleagues examined the impact of personality factors on symptom change following treatment for Vietnam veterans with chronic combat-related posttraumatic stress disorder (PTSD) using the MMPI-2. Findings of this study have implications for the potential tailoring of treatment to patients depending on their personality profile as assessed on the MMPI–2. A series of partial correlation and linear multivariate regression analyses identified social alienation, associated with anger and substance use, as the most potent negative predictors of symptom change.
- 2002 Drexler et al conducted a study to investigate the efficacy of EMG-biofeedback in female fibromyalgia patients with and without abnormality in the MMPI. All patients underwent EMG-biofeedback therapy (12 sessions, twice weekly), after a waiting period of six weeks. Clinical symptoms (pressure point sensitivity, secondary symptoms), subjective pain dimensions as well as quality of life were assessed before and after the waiting period, immediately after the biofeedback training and at a three-month follow up. The results of the study suggested that it

- is important to consider the psychological problems in FM-patients. Primarily depressive and somatoform (hypochondriacal-hysterical based on the MMPI categories) symptoms were found in our sample. Therefore a global assessment of FM-patients should not only consist of commonly used ACR diagnostic criteria but should also include psychodiagnostic and standardized psychiatric criteria (e.g. according to the DSM IV), as these may co-determine treatment outcome and prognosis.
- 2009 Michael and colleagues conducted a study in which the potential MMPI-2 predictors of psychotherapy outcome were examined in a community clinical sample of patients seeking treatment at a university training clinic. Results indicated that particular MMPI-2 scales (L, F, Pd, Pa, Sc, TRT) were the most predictive of initial levels of patient distress, whereas three other clinical scales (Hs, D, Hy) were significantly associated with actual symptom reduction over time. The clinical implications of these data include the use of the MMPI-2 in clinical practice as a means for framing the provision of direct feedback to patients regarding the likelihood of treatment response, which in turn, might actually have therapeutic benefits.
- 2010 Keddy and Erdberg illustrated the value of using the MMPI-2 in assessing change in mental health treatment. They used before-and-after testing with the Rorschach Inkblot Test and the MMPI-2 to assist a psychotherapy client—a survivor of child abuse suffering from depression accompanied by hallucinations—in evaluating a course of electroconvulsive therapy that she underwent. The results of both tests indicated positive changes. On the MMPI-2, the patient's scores declined by 1 to 1.5 *SDs* on the F scale and four of the Clinical scales: Scales 1, 2, 3, and 7.
- 2010 Gori et al. conducted an evaluation of predicting treatment outcome by combining different assessment tools (including the MMPI-2). They found that by combining computing techniques with data generated by the MMPI-2 can perform effectively in predicting psychotherapy outcomes.
- 2010 Rosik and Borisov administered the Outcome Questionnaire-45 to a final sample of Christian missionaries on three occasions: pre-treatment, post-treatment, and three month follow up. The sample also completed the MMPI-2 at the pre-treatment assessment. Multiple regression analyses controlling for pre-treatment adjustment and response style (F scale) indicated that only the Depression (DEP) content scale explained significant variance among symptom improvement at post-treatment. In addition, post hoc analyses revealed the Negative Treatment Indicators (TRT) content scale and Paranoia (Pa) clinical scale added significantly to the explanation of treatment outcome at follow up after accounting for pre-treatment adjustment. Missionaries who achieved reliable change at post-treatment had pre-treatment scores that were higher for the Depression (D), Psychasthenia (Pt), Social Inhibition (Si) clinical scales, higher for the DEP, ANX, and TRT content scales, and lower for the Correction (K) validity scale and Ego Strength (Es) supplementary scale. At follow up, reliable change was sustained only by missionaries higher in pre-treatment ANX and Trt. These results suggest that the

MMPI-2 may provide some clues in predicting treatment outcomes for missionaries, however, it should be used with other instruments in predicting treatment responses.

- 2011 Finn provided further insight into the value of the MMPI-2 in assessing clients in psychotherapy and using the results for providing feedback to patients. He described the repeated use of the MMPI-2 in incorporating feedback in treatment with chronic personality disordered clients.
- 2011 Garcia and colleagues conducted an empirical evaluation of premature dropout from cognitive behavioral therapy by Iraq and Afghanistan War veterans being treated for PTSD. They found that the most effective MMPI-2 measure was the Negative Treatment Indicators content scale (TRT) of MMPI-2 at predicting dropout from treatment.
- 2011 Lewak, Siegel, Nichols & Stolberg published an informative textbook on the importance of providing test feedback in conducting psychotherapy.
- 2011 Harwood, Beutler and Groth-Marnat published a thorough and pragmatic guide to clinical assessment for treatment planning that included the MMPI-2 as a key element in the process. This authoritative book addresses major issues and procedures in assessment in treatment planning. They describe how to construct a "moving picture" of each patient by integrating data from a variety of sources. Psychologists are shown how to conduct integrated assessments that take the complexities of the individual personality into account, serve as the basis for developing an effective treatment plan, and facilitate meaningful reporting and client feedback.

References

- Barron, F. (1953). An ego - strength scale which predicts response to psychotherapy. *Journal of Consulting Psychology, 17*(5), 327-333.
- Bergin, A. E. & Jasper, L. G. (1969). Correlates of empathy in psychotherapy: A replication. *Journal of Abnormal Psychology, 74*, 477-481.
- Butcher, J. N. (1990). *The MMPI-2 in psychological treatment*. New York: Oxford University Press.
- Butcher, J. N., Dahlstrom, W.G., Graham, J. R., Tellegen, A., & Kaemmer, B. (1989). *Manual for the restandardized Minnesota Multiphasic Personality Inventory: MMPI-2. An administrative and interpretive guide*. Minneapolis, MN: University of Minnesota Press.

- Butcher, J. N. & Perry, J. L. (2008). *Personality assessment in treatment planning*. New York: Oxford University Press.
- Butcher, J. N., Rouse, S. V., & Perry, J. (1998). Assessing resistance to psychological treatment. *Measurement and Evaluation in Counseling and Development*, 31, 95-108.
- Butcher, J. N., Rouse, S. V., & Perry, J. N. (2000). Empirical description of psychopathology in therapy clients: Correlates of MMPI-2 scales. (pp 487-500). Chapter in J. N. Butcher (Ed) (2000). *Basic sources on the MMPI-2*. Minneapolis, MN: University of Minnesota Press.
- Carp, A. (1950). MMPI performance and insulin shock therapy. *Journal of Abnormal & Social Psychology*, 45, 721-726.
- Chisolm, S. M., Crowther, J. N., & Ben-Porath, Y. S. (2000). Selected MMPI-2 scales' ability to predict premature termination and outcome in psychotherapy. (pp. 418-433). In J. N. Butcher (Ed). *Basic sources on the MMPI-2*. Minneapolis, MN: University of Minnesota Press.
- Clark, M. E. (1996). MMPI-2 Negative Treatment Indicators Content and Content Component Scales: Clinical correlates and outcome prediction for men with chronic pain. *Psychological Assessment*, 8, 32-47.
- Dorr, D. (1981). Conjoint psychological testing in marriage therapy: New wine in old skins. *Professional Psychology*, 12(5), 549-555.
- Drake, L. E. (1946). A social I.E. scale for the Minnesota Multiphasic Personality Inventory. *Journal of Applied Psychology*, 30, 51-54.
- Drake, L. E. (1954). MMPI profiles and interview behavior. *Journal of Counseling Psychology*, 1(2), 92-95.
- Drexler, A.R., Mur, E.J., & Gunther, V.C. (2002). Efficacy of an EMG-biofeedback therapy in fibromyalgia patients. A comparative study of patients with and without abnormality in (MMPI) psychological scales. *Clinical and Experimental Rheumatology*, 20, 677-682.
- DuBrin, J. R. & Zastowny, T. R. (1988). Predicting early attrition from psychotherapy: An analysis of a large private-practice cohort. *Psychotherapy*, 25, 393-408.
- Edwin, D., Andersen, A. & Rosell, F. (1988). Outcome prediction of MMPI in subtypes of anorexia nervosa. *Psychosomatics: Journal of Consultation Liaison Psychiatry*, 29(3), 273-282.

- Ellertsen, B. (1988). Migraine and tension headache: Psychophysiology, personality, and therapy. [Norwegian]. *Tidsskrift for Norsk Psykologforening*, 25, 664-668.
- Elliott, T. R., Anderson, W. P., & Adams, N. A. (1987). MMPI indicators of long-term therapy in a college counseling center. *Psychological Reports*, 60, 79-84.
- Fan, A. Y., Gu, R. J., & Zhou, A. n. (1999). MMPI changes associated with therapeutic intervention: A migraine control study. *Headache*, 39, 581-585.
- Fals-Stewart, W. & Schafer, J. (1993). MMPI correlates of psychotherapy compliance among obsessive - compulsives. *Psychopathology*, 26(1), 1-5.
- Faravelli, C. & Albanesi, G. (1987). Agoraphobia with panic attacks: 1 - year prospective follow - up. *Comprehensive Psychiatry*, 28(6), 481-487.
- Finn, S. E. (2011). Journeys through the valley of death: Multimethod psychological assessment and personality transformation in long-term psychotherapy. *Journal of Personality Assessment*, 93(2), 123-141.
- Finn, S. E., & Tonsager, M. (1992). Therapeutic effects of providing MMPI-2 test feedback to college students awaiting therapy. *Psychological Assessment*, 4, 278-287.
- Forbes, D., Creamer, M., Allen, N., Elliott, P., McHugh, T., Debenham, P., & Hopwood, M. (2002). The MMPI-2 as a predictor of symptom change following treatment for posttraumatic stress disorder. *Journal of Personality Assessment*. Vol 79(2),331-336.
- Gallagher, J. J. (1953). MMPI changes concomitant with client-centered therapy. *Journal of Consulting Psychology*, 17, 334-338.
- Garcia, H. A., Kelley, L. P., Rentz, T. O., & Lee, S. (2011). Pretreatment predictors of dropout from cognitive behavioral therapy for PTSD in Iraq and Afghanistan war veterans. *Psychological Services*, 8(1), 1-11.
- Gordon, R. M. (2001). MMPI/MMPI-2 changes in long-term psychoanalytic psychotherapy. *Issues in Psychoanalytic Psychology*. Vol 23(1-2) , 59-79.
- Gori, A., LauroGrotto, R., Giannini, M., & Schuldberg, D. (2010). Predicting treatment outcome by combining different assessment tools: Toward an integrative model of decision support in psychotherapy. *Journal of Psychotherapy Integration*, 20(2), 251-269.
- Harwood, T. M. , Beutler, L. E. & Groth-Marnat, G. (2011). Integrative Assessment of Adult Personality, Third Edition. New York: Guilford Press.

- Hathaway, S. R. & McKinley, J. C. (1943). *Manual for the Minnesota Multiphasic Personality Inventory*. New York: Psychological Corp.
- Heaton, R. K., Chelune, G. J., & Lehman, R. A. (1978). Using neuropsychological and personality tests to assess the likelihood of patient employment. *Journal of Nervous & Mental Disease*, 166, 408-416.
- Hjemboe, S., Almagor, M., & Butcher, J. N. (1992). Empirical assessment of marital distress: The Marital Distress Scale (MDS) for the MMPI-2. In C.D. (pp 141-152). Spielberger, & J. N. Butcher (Eds.), *Advances in personality assessment* (Vol. 9). New Jersey: Lawrence Erlbaum Press.
- Horton, M. & Kriauciunas, R. (1970). Minnesota Multiphasic Personality Inventory differences between terminators and continuers in youth counseling. *Journal of Counseling Psychology*, 17(2), 98-101.
- Jacobson, J. L. and Wirt, R. D. (1969). MMPI profiles associated with outcomes in group psychotherapy with prisoners. In Butcher, J. N. (Ed.), (1969). *MMPI: Research developments and clinical applications* (p. 191-206). New York: McGraw-Hill.
- Kaufmann, P. (1950). Changes in the Minnesota Multiphasic Personality Inventory as a function of psychiatric therapy. *Journal of Consulting Psychology*, 14(6), 458-464.
- Keddy, P., & Erdberg, P. (2010). Changes in the Rorschach and MMPI-2 after electroconvulsive therapy (ECT): A collaborative assessment case study. *Journal of Personality Assessment*, 92(4), 279-295.
- Kleinmuntz, B. (1960). Identification of Maladjusted College Students. *Journal of Counseling Psychology*. 7, 209-211.
- Kleinmuntz, B. (1961). The College Maladjustment Scale (MT): norms and predictive validity, *Educational and Psychological Measurement*, 21, 1029-1033.
- Lewak, R., Siegel, L, Nichols, D. S. & Stolberg, R.(2011). *Therapeutic Feedback with the MMPI-2*. New York, Routledge
- Lewinsohn, P. M. (1965). Dimensions of MMPI change. *Journal of Clinical Psychology*, 21(1), 37-43.
- Manos, N. & Vasilopoulou, E. (1984). Evaluation of psychoanalytic psychotherapy outcome. *Acta Psychiatrica Scandinavica*, 70(1), 28-35.
- Michael, K. D., Furr, R. M., Masters, K. S., Collett, B. R., Spielmans, G. I., Ritter, K., Veeder, M. A., Treiber, K. & Cullum, J. L. (2009). Using the MMPI - 2 to predict symptom reduction during psychotherapy in a sample of community outpatients.

- Journal of Contemporary Psychotherapy*, (3), 157-163.
- Panton, J. H. (1979). MMPI profiles associated with outcomes of intensive psychotherapeutic counseling with youthful first offender prison inmates. *Research Communications in Psychology, Psychiatry & Behavior*, 4(4), 383-395.
- Pearson, J. S. Prediction of the response of schizophrenic patients to electroconvulsive therapy. *Journal of Clinical Psychology*, 1951, 7, 288-293.
- Pettinati, H. M., Sugeran, A. A., & Maurer, H. S. (1982). Four year MMPI changes in abstinent and drinking alcoholics. *Alcoholism: Clinical & Experimental Research*, 6, 487-494.
- Pickens, R, Errickson, E., Thompson, T. , Heston,L, & Eckert, E.D. (1979). MMPI correlates of performance on a behavior therapy ward. *Behaviour Research and Therapy*, 17(1), 17-24.
- Rehm, L. P., Kornblith, S. J., O'Hara, M. W., Lamparski, D. M., Romano, J. M. & Volkin, J. I. (1981). An evaluation of major components in a self - control therapy program for depression. *Behavior Modification*, 5(4), 459-489.
- Rosik, C. H. & Borisov, N. I. (2010). Can specific MMPI - 2 scales predict treatment response among missionaries? *Journal of Psychology and Theology*, Vol 38(3), Fal 2010, 195-204.
- Rouse, S. V., Butcher, J. N., & Miller, K. B. (1999). Assessment of substance abuse in psychotherapy clients: The effectiveness of the MMPI-2 substance abuse scales. *Psychological Assessment*. Vol 11(1) , 101-107.
- Schofield, W. (1953). A further study of the effects of therapies on MMPI responses. *The Journal of Abnormal and Social Psychology*, 48(1), 67-77.
- Strupp, H. H. & Bloxom, A. L. (1975). An approach to defining a patient population in psychotherapy research. *Journal of Counseling Psychology*, 22, 231-237.
- Weed, N. C., Butcher, J. N., McKenna, T., & Ben-Porath, Y. S. (1992). New measures for assessing alcohol and drug abuse with the MMPI-2: The APS and AAS. *Journal of Personality Assessment*, 58(2), 389-404.