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Criterion Validity of the Minnesota Multiphasic Personality Inventory-3 (MMPI-3) at the National Level

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A B S T R A C T

Purpose: The present study aimed to evaluate the criterion validity of the third edition of the Minnesota Multiphasic Personality Inventory (MMPI-3) at the national level.

Methods and Materials: This study employed a psychometric design and was categorized under methodological research designs. The statistical population consisted of all Iranian men and women aged 18 to 50 years. From this population, 2,500 individuals were selected using proportional stratified sampling from six provinces across five geographical regions: North, South, East, West, and Central Iran. Data were collected using the Minnesota Multiphasic Personality Inventory-3 (MMPI-3) and the Millon Clinical Multiaxial Inventory-IV (MCMI-IV). The statistical model used for determining criterion validity was correlation analysis. Data analysis was conducted using SPSS version 22.

Findings: The results indicated that there were significant correlations between the clinical scales of the MMPI-3 and the MCMI-IV using the correlation method.

Conclusion: Based on the findings of the study, the MMPI-3 demonstrates validity in assessing clinical scales and is considered a valid instrument. Therefore, it can be utilized for evaluating the clinical characteristics of Iranian citizens aged 18 to 50 years.

Keywords: *Minnesota Multiphasic Personality Inventory, Criterion Validity, Millon Clinical Multiaxial Inventory-IV, MMPI-3, MCMI-IV*

1. Introduction

There are various ambiguities in the field of psychological assessment, particularly concerning personality and personality disorders, which make it difficult to conduct accurate evaluations in these areas. Such ambiguities have led to extensive research dedicated to the diagnosis of personality disorders and the use of various tools for that purpose (Zeinali, 2023).

Psychological questionnaires or inventories have a long-standing history, extending back nearly 200 years. Among them, the most commonly used and comprehensive psychological tool employed in both normative and clinical populations is the Minnesota Multiphasic Personality Inventory (MMPI), which has been in use for nearly a century (Marnat & Hoseini-Nasab, 2017).

The MMPI is the most well-known and widely used personality inventory, utilized globally for decades. Its development began in 1943, and it has undergone four major revisions since then. The first revision was introduced in 1989 as the second edition of the inventory. In 2003, the clinical scales of the instrument were fully restructured, and the demoralization scale—previously a source of overlap among clinical scales—was separated and presented as a distinct scale. Additionally, the Masculinity/Femininity and Social Introversion scales were removed. This version was introduced as the MMPI-2 Restructured Clinical Scales (MMPI-2-RC) (Ben-Porath, 2003).

Due to the significant attention and positive reception MMPI-2-RC received from experts in psychometrics, psychotherapy, and mental health, Tellegen and Ben-Porath decided to revise the entire format of the questionnaire. In 2008, they introduced a newly restructured form—later known as the "golden version"—to professionals in the field. This new version, MMPI-2 Restructured Form (MMPI-2-RF), included updated scales and profiles (Ben-Porath & Tellegen, 2008).

This version remained in use until 2020, when the newest edition, the Minnesota Multiphasic Personality Inventory-3 (MMPI-3), was released by Ben-Porath and Tellegen. Although MMPI-3 shares many similarities with MMPI-2-RF, it successfully addressed and corrected deficiencies of its predecessor, which may be considered a trial version in hindsight. Featuring 52 scales and eight primary domains (including validity scales), this inventory has secured a distinct position in the field (Ben-Porath & Tellegen, 2020a).

The main scales of the MMPI-3 include Validity, Higher-Order, Clinical, Somatic-Cognitive, Internalizing, Externalizing, Interpersonal, and Personality Psychopathology scales. Specifically, the MMPI-3 consists of 10 validity scales, 3 higher-order scales, 8 clinical scales, 4 somatic-cognitive scales, 10 internalizing scales, 7 externalizing scales, 5 interpersonal scales, and 5 personality psychopathology scales (Ben-Porath & Tellegen, 2020b).

In the process of standardizing psychological tools, the evaluation of validity and reliability is among the most crucial steps in psychometric analysis. The psychometric properties of assessment instruments—such as construct validity, criterion validity, diagnostic validity, and reliability—play a vital role in ensuring their accuracy and utility. Construct validity refers to the extent to which a tool accurately measures the theoretical construct it is intended to assess and is typically evaluated through confirmatory or exploratory factor analysis. Criterion validity assesses the correlation between the instrument's outcomes and established external benchmarks. If achievable, criterion validity contributes significantly to improving an instrument's overall quality (Ebadi et al., 2016).

Tartak and colleagues conducted a study examining the criterion validity of the CAT-PD and MMPI-3 tools for detecting simulated overreporting and underreporting patterns. Their research demonstrated the diagnostic utility of these tools under conditions of response distortion (Tartak et al., 2024). Similarly, Agarwal and colleagues investigated the effectiveness of MMPI-3 validity scales under in-person versus telehealth administration conditions. Their results revealed no significant differences in the scales' effectiveness across administration modes, particularly when post-test questionnaires were used to exclude invalid respondents (Agarwal et al., 2023).

Anestis and colleagues compared MMPI-3 scales with ASEBA Adult Self-Report (ASR) scales in a sample of Black and White participants regarding internalizing and externalizing issues. Their findings indicated significant correlations between rule-breaking behavior, impulsivity, thought problems, and substance use, but no meaningful associations were found in domains such as externalizing problems, aggression, attention problems, or intrusiveness (Anestis et al., 2024).

Additional international studies have confirmed that MMPI-3 possesses multiple forms of validity, particularly criterion validity, across different populations and clinical settings (Agarwal et al., 2023; Anestis et al., 2024; Keen et al., 2024; Kremyar et al., 2023; Lane et al., 2024; Marek et al., 2024; Pona et al., 2023; Sutphin et al., 2024; Tartak et

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al., 2024; Whitman et al., 2023; Whitman et al., 2024; Zeinali, 2023).

Furthermore, domestic studies conducted in Iran on the standardization and psychometric evaluation of the MMPI-3 have provided encouraging results. For instance, the research by Alipour Jonaghani focused on the standardization of MMPI-3 in Islamshahr. This study assessed the relationship between the MMPI-3 and the Personality Psychopathology Assessment Questionnaire, revealing significant positive correlations (above 0.60) across most scales of the two instruments (Alipour Jonaghani, 2022).

In conclusion, given the growing use of the MMPI-3 as a widely applied clinical and diagnostic tool, its validation and localization for different populations—including Iranian society—are of undeniable importance. While the instrument's structure and content are grounded in modern psychometric theory and designed to update earlier versions, evaluating its criterion validity at the national level—especially through comparisons with other well-established instruments such as the MCMI-IV—constitutes a crucial step in ensuring its diagnostic accuracy and effectiveness. Accordingly, this study aims to answer the fundamental question: Does the MMPI-3 demonstrate appropriate criterion validity at the national level in Iran?

2. Methods and Materials

2.1. Study Design and Participants

This study was of a psychometric nature and falls within the domain of methodological research designs. The statistical population consisted of all Iranian men and women aged 18 to 40 years in 2024. Given that an exact list of the population members was not available and could not be compiled, the population was treated as infinite. Since the focus of this study was on the criterion validity of the third version of the Minnesota Multiphasic Personality Inventory (MMPI-3) at the national level, and the population consisted of Iranian citizens, the sample size was determined based on a review of prior standardization studies involving normative groups, the number of items in the MMPI-3 (335 items), and proportional sampling strategies. A total of 2,500 participants were selected using proportional stratified sampling.

To do this, Iran was divided into five geographical regions: North, South, East, West, and Central. One province was selected from each region, except for the Central region where two provinces were selected. The provinces included Tehran, Isfahan, Mazandaran, Khorasan Razavi, Kermanshah, and Fars. From each province, the provincial capital and several additional cities were included. Approximately 400 individuals were selected from each province, with roughly equal representation of men and women. Participants were required to be between 18 and 50 years old and to have completed at least eight years of formal education. Based on clinical interviews and medical history, individuals with any history of brain injury were excluded. In the end, a total of 2,500 men and women were assessed using the MMPI-3 and MCMI-IV, either in person or online. Exclusion criteria included incomplete or invalid responses on the questionnaires. Ethical considerations included obtaining informed consent, maintaining confidentiality, and ensuring no harm to participants.

2.2. Measures

2.2.1. Minnesota Multiphasic Personality Inventory–3 (MMPI-3)

The MMPI-3 is the most recent version of the MMPI series and was developed following the procedures used to create the MMPI-2-RF. It was introduced in 2020 by Yossef Ben-Porath and Auke Tellegen. The MMPI-3 consists of 335 items and includes eight domains: Validity Scales, Higher-Order Scales, Clinical Scales, Somatic/Cognitive Scales, Internalizing Scales, Externalizing Scales, Interpersonal Scales, and Personality Psychopathology Scales.

The Validity Scales assess the test's internal consistency and response integrity and include: Inconsistent Responses (TRIN), Variable Responses (VRIN), Infrequent Responses (F), Infrequent Psychopathology Responses (Fp), Infrequent Somatic Responses (Fs), Symptom Validity (FBS), Response Bias (RBS), Uncommon Virtue (L-r), and Uncommon Conformity (K-r).

Higher-Order Scales include Emotional/Internalizing Dysfunction (EID), Thought Dysfunction (THD), and Behavioral/Externalizing Dysfunction (BXD).

The Restructured Clinical Scales include Demoralization, Somatic Complaints, Low Positive Emotions, Antisocial Behavior, Ideas of Persecution, Dysfunctional Negative Emotions, Aberrant Experiences, and Hypomanic Activation.

Somatic/Cognitive Scales include Malaise, Neurological Complaints, Eating Concerns, and Cognitive Complaints.

Internalizing Scales consist of Suicidal/Death Ideation, Helplessness/Hopelessness, Self-Doubt, Inefficacy, Stress,

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Worry, Obsessions, Anxiety-Related Experiences, Anger Proneness, and Fears.

Externalizing Scales include Family Problems, Juvenile Conduct Problems, Substance Abuse, Impulsivity, Activation, Aggression, and Cynicism.

Interpersonal Scales include Grandiosity, Domineering, Social Avoidance, Interpersonal Passivity, and Shyness.

Finally, the Personality Psychopathology Five Scales include Aggressiveness, Psychoticism, Disconstraint (Irresponsibility), Negative Emotionality/Neuroticism, and Introversion/Low Positive Emotionality.

The study by Alipour, Kamkari, and Kiumarthi demonstrated that the internal consistency of all MMPI-3 scales, measured via Cronbach's alpha, exceeded 0.70, indicating acceptable reliability.

2.2.2. Millon Clinical Multiaxial Inventory-IV (2015)

This inventory contains 195 items and evaluates 30 different scales to assess personality disorders and related conditions. Emphasizing its content validity, the inventory covers five major domains: Validity Indicators, Clinical Personality Patterns, Severe Personality Pathology, Clinical Syndromes, and Severe Clinical Syndromes.

The Validity Indicators include Disclosure, Desirability, Debasement, and Inconsistency indices. Clinical Personality Patterns include Schizoid, Avoidant, Depressive, Dependent, Histrionic, Turbulent, Narcissistic, Antisocial, Sadistic, Compulsive, Negativistic (Passive-Aggressive), and Masochistic.

Severe Personality Pathology includes Schizotypal, Borderline, and Paranoid scales.

Clinical Syndromes include Generalized Anxiety, Somatic Complaints, Bipolar Spectrum, Persistent Depression, Alcohol Use, Drug Use, and Post-Traumatic Stress.

Severe Clinical Syndromes include the Schizophrenic Spectrum, Major Depression, and Delusional Disorder.

This tool is considered valid and reliable, especially in clinical settings, with all scales demonstrating coefficients above 0.81 and a total scale reliability of 0.85.

2.3. Data Analysis

All personality profile instruments used in this study include quantitative and continuous scales, measured on an interval scale. Data analysis was conducted through correlational methods comparing clinical scales across the two questionnaires. All statistical analyses were performed using SPSS version 22.

3. Findings and Results

Correlations were calculated between the clinical scales (Higher-Order Dysfunction and Restructured Clinical Scales) of the MMPI-3 and the personality clinical patterns, severe personality pathologies, clinical syndromes, and severe clinical syndromes of the MCMI-IV. The results are presented in Tables 1 and 2.

Table 1

Correlations Between MCMI-IV Personality and Clinical Syndrome Scales and MMPI-3 Higher-Order Dysfunction Scales for Concurrent Criterion Validity

Dimensions	Components	Emotional Dysfunction	Thought Dysfunction	Behavioral Dysfunction
Clinical Personality Patterns	Schizoid	0.533	0.377	0.294
	Avoidant	0.722	0.363	0.189
	Depressive/Melancholic	0.792	0.481	0.358
	Dependent	0.560	0.343	0.196
	Histrionic	0.532	0.028	0.043
	Turbulent	0.606	0.003	0.025
	Narcissistic	0.066	0.435	0.436
	Antisocial	*0.295*	0.408	0.546
	Sadistic	0.306	0.476	0.531
	Compulsive	0.193	0.018	0.203
	Negativistic	0.608	0.527	0.458
	Masochistic	0.721	0.460	0.354
Severe Personality Pathology	Schizotypal	0.658	0.607	0.502
	Borderline	0.730	0.559	0.481
	Paranoid	0.413	0.524	0.392
Clinical Syndromes	Generalized Anxiety	0.570	0.558	0.437

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	Somatic Complaints	0.685	0.485	0.336
	Bipolar Spectrum	0.243	0.497	0.443
	Chronic Depression	0.807	0.488	0.360
	Alcohol Use	0.306	0.390	0.490
	Drug Use	0.162	*0.232*	0.347
	PTSD	0.561	0.590	0.506
Severe Clinical Syndromes	Schizophrenic Spectrum	0.560	0.626	0.523
	Major Depression	0.769	0.506	0.355
	Delusional Disorder	0.254	0.509	0.373

According to the correlation coefficients between the MCMI-IV and MMPI-3 scales, there is a significant positive relationship at $\alpha = 0.01$ between the Emotional Dysfunction scale of the MMPI-3 and the Avoidant, Depressive/Melancholic, Negativistic, Masochistic, Schizotypal, Borderline, Somatic Complaints, Chronic Depression, and Major Depression scales of the MCMI-IV, with coefficients exceeding 0.60. Additionally, Thought Dysfunction in MMPI-3 showed strong correlations ($r > 0.60$) with the Schizotypal and Schizophrenic Spectrum scales of the MCMI-IV.

Table 2

Correlations Between MCMI-IV Clinical and Personality Scales and MMPI-3 Restructured Clinical Scales for Concurrent Criterion Validity

Dimensions	Components	Demoralization	Somatic Complaints	Low Positive Emotions	Antisocial Behavior	Ideas of Persecution	Dysfunctional Negative Emotions	Aberrant Experiences	Hypomanic Activation
Clinical Personality Patterns	Schizoid	0.311	0.321	0.293	0.379	0.451	0.387	0.282	0.535
	Avoidant	0.338	0.489	0.201	0.385	0.603	0.355	0.242	0.700
	Depressive/Melancholic	0.435	0.420	0.330	0.505	0.685	0.479	0.381	0.806
	Dependent	0.316	0.292	0.202	0.392	0.566	0.315	0.317	0.548
	Histrionic	0.160	0.633	0.051	0.075	0.248	0.039	0.119	0.449
	Turbulent	0.228	0.699	0.258	0.069	0.307	0.013	0.106	0.554
	Narcissistic	0.189	0.261	0.297	0.409	0.235	0.426	0.446	0.123
	Antisocial	0.287	0.055	0.445	0.372	0.289	0.397	0.461	0.326
	Sadistic	*0.291*	0.005	0.414	0.476	0.475	0.456	0.499	0.325
	Compulsive	0.033	0.261	*0.214*	0.002	0.010	0.023	0.082	0.144
	Negativistic	0.341	0.228	0.355	0.591	0.634	0.481	0.484	0.623
	Masochistic	0.355	0.438	0.341	0.457	0.615	0.467	0.397	0.720
Severe Personality Pathology	Schizotypal	0.424	0.242	*0.405*	0.605	0.659	0.608	0.579	0.693
	Borderline	0.445	0.341	0.429	0.534	0.659	0.576	0.494	0.747
	Paranoid	0.275	0.108	0.293	0.576	0.499	0.460	0.444	0.420
Clinical Syndromes	Generalized Anxiety	0.441	0.170	0.371	0.534	0.649	0.540	0.508	0.616
	Somatic Complaints	0.480	0.346	0.338	0.450	0.607	0.488	0.343	0.698
	Bipolar Spectrum	0.277	0.165	0.305	0.453	0.429	0.517	0.601	0.276
	Chronic Depression	0.435	0.431	0.342	0.501	0.677	0.471	0.379	0.825
	Alcohol Use	0.220	0.079	0.426	0.327	0.297	0.406	0.423	0.343
	Drug Use	0.070	0.021	0.274	0.269	0.167	0.210	*0.280*	0.202
	PTSD	0.448	0.110	0.422	0.548	0.619	0.575	0.499	0.603
Severe Clinical Syndromes	Schizophrenic Spectrum	0.405	0.142	*0.416*	0.622	0.630	0.605	0.584	0.577
	Major Depression	0.480	0.410	0.329	0.492	0.642	0.496	0.364	0.784
	Delusional Disorder	0.271	0.035	0.232	0.525	0.373	0.458	0.444	0.252

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In summary, there is strong evidence of concurrent criterion validity between the MMPI-3 and MCMI-IV across multiple corresponding scales. This includes high correlations ($r > 0.60$) between constructs such as Ideas of Persecution, Hypomanic Activation, and Dysfunctional Negative Emotions in MMPI-3 with Schizotypal, Borderline, Generalized Anxiety, Chronic Depression, and Schizophrenic Spectrum in MCMI-IV. These findings support the validity of the MMPI-3 in clinical assessment when used alongside established instruments such as the MCMI-IV.

4. Discussion and Conclusion

The aim of the present study was to examine the criterion validity of the third edition of the Minnesota Multiphasic Personality Inventory (MMPI-3) through comparison with the fourth edition of the Millon Clinical Multiaxial Inventory (MCMI-IV). Concurrent criterion validity is considered one of the fundamental subtypes of criterion-related validity. It refers to the extent to which the results of a test correlate with those of an already validated instrument when both are administered within the same timeframe. The primary purpose of this type of validity assessment is to determine whether the test in question can accurately identify a psychological feature or disorder at the present moment. In psychological research, this form of validity is typically evaluated by comparing the test under investigation to an established instrument that serves as a concurrent benchmark.

In this study, concurrent criterion validity was assessed by administering both the MMPI-3 and the MCMI-IV simultaneously to a sample of 2,500 Iranian citizens from five major geographic regions of the country. The correlation between the clinical scales of the MMPI-3 and those of the MCMI-IV was examined to determine the strength of association. The findings revealed that significant positive correlations existed between the clinical scales of the two instruments. Importantly, most correlation coefficients were greater than 0.60, which is generally considered a strong effect size in psychological measurement. These results indicate that the MMPI-3 demonstrates sound concurrent criterion validity when evaluated against a gold-standard diagnostic instrument in clinical psychology, namely the MCMI-IV.

Among the scales analyzed, the strongest relationships were observed for the MMPI-3 scales of Emotional Dysfunction, Ideas of Persecution, and Hypomanic Activation. The Emotional Dysfunction scale in the MMPI-3 showed high correlations with the Avoidant, Depressive, Negativistic, Masochistic, Schizotypal, Borderline, Somatic Complaints, Chronic Depression, and Major Depression scales of the MCMI-IV. These correlations suggest that individuals scoring high on emotional impairment in the MMPI-3 are likely to show a similar pattern of results on the MCMI-IV, further supporting the convergent structure of both instruments.

Similarly, the Ideas of Persecution scale in the MMPI-3 demonstrated strong correlations with a wide range of clinically significant scales from the MCMI-IV, including Avoidant, Depressive, Negativistic, Masochistic, Schizotypal, Borderline, Somatic Complaints, Chronic Depression, Generalized Anxiety, Post-Traumatic Stress Disorder (PTSD), Major Depression, and the Schizophrenic Spectrum. This extensive overlap indicates that persecutory ideation as captured by the MMPI-3 is closely related to several pathological features assessed by the MCMI-IV, particularly those involving affective instability, interpersonal hypersensitivity, and paranoid ideation.

The Hypomanic Activation scale in the MMPI-3 also yielded high correlations with several MCMI-IV scales, including Avoidant, Depressive, Masochistic, Borderline, Somatic Complaints, Chronic Depression, Generalized Anxiety, PTSD, and Major Depression. These findings suggest that hypomanic behavioral tendencies captured by MMPI-3 are significantly aligned with broader dysregulation patterns observed in various personality and mood-related domains assessed by the MCMI-IV. Taken together, these correlations confirm that the MMPI-3 and MCMI-IV share considerable overlap in measuring related psychopathological constructs, thereby providing empirical support for the concurrent validity of the MMPI-3.

The present findings are consistent with those of several previous studies. For instance, the study by Sutphin, Hicks, Marek et al. (2022) examined the validity of the MMPI-3 Eating Concerns scale in college students and confirmed its relevance in measuring disordered eating behaviors (Marek et al., 2022). Whitman et al. (2024) evaluated the concurrent criterion validity of MMPI-3 and NEO-PI-3 scores in psychological screenings of public safety candidates, demonstrating that MMPI-3 scores correspond meaningfully with established personality profiles (Whitman et al., 2024). They also investigated patterns of symptom overreporting and underreporting among disability claimants using MMPI-

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3, further reinforcing its diagnostic applicability. In a similar line of inquiry, Kremyar et al. (2023) explored the utility of MMPI-3 in evaluating PTSD symptom clusters in forensic disability assessments and supported its diagnostic precision (Kremyar et al., 2023). Furthermore, the study by Alipour, Kamkari, and Kiumarthi (2022) on the standardization of MMPI-3 in an Iranian sample demonstrated strong psychometric properties, including significant associations with dimensions of personality psychopathology (Alipour Jonaghani, 2022).

Based on the present findings, it is recommended that the MMPI-3 be utilized as a valid and reliable tool for assessing the clinical features of psychological functioning in the Iranian population, especially in the domain of mental health diagnosis and screening. Given its demonstrated concurrent validity with the well-established MCMI-IV, mental health professionals in Iran can confidently employ the MMPI-3 to evaluate psychological disorders and personality traits relevant to clinical decision-making. Additionally, it is suggested that future studies examine the criterion validity of the MMPI-3 with other well-established instruments such as the NEO-PI-R, the Personality Psychopathology Five (PSY-5), and other clinical diagnostic measures to further reinforce the generalizability and robustness of the MMPI-3 in diverse psychological contexts.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the study and participated in the research with informed consent.

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