

MMPI-3 Psychopathological Profiles in Iranian Patients with Somatic Symptom and Related Disorders: A Cross-Sectional Study

Yazdan Naderi Rajeh¹, Parisa Kameli², Asghar Norouzi³, Maryam Rezapour¹

¹Psychiatry and Behavioral Sciences Research Center, Addiction Institute, Mazandaran University of Medical Sciences, Sari, Iran; ²Faculty of Psychology and Educational Sciences, Islamic Azad University, Roudehen, Iran; ³Department of Psychology, Sari Branch, Islamic Azad University, Sari, Iran

Correspondence: Parisa Kameli, Faculty of Psychology and Educational Sciences, Islamic Azad University, Roudehen, Iran, Email parisa.kameli@gmail.com

Background: Somatic symptom and related disorders are characterized by persistent physical symptoms accompanied by psychological distress, functional impairment, and complex patterns of emotional and cognitive vulnerability. Although these disorders are clinically important, multidimensional psychopathological profiling with contemporary instruments remains limited in Middle Eastern populations. This study aimed to characterize the MMPI-3 psychopathological profile of Iranian patients with somatic symptom and related disorders.

Methods: Using convenience sampling, this cross-sectional study included 120 patients diagnosed with somatic symptom and related disorders according to DSM-5 criteria at Imam Khomeini Hospital, Sari, Iran, between May and September 2024. Participants completed the Minnesota Multiphasic Personality Inventory-3. MMPI-3 T-scores were compared with the normative mean of 50 using one-sample t-tests. Cohen's d effect sizes were calculated, and domain-wise Bonferroni correction was applied.

Results: Patients showed the largest elevations in Anxiety (mean T-score = 62.71, d = 0.99), Anger Proneness (mean T-score = 58.63, d = 0.96), Low Positive Emotions (mean T-score = 59.26, d = 0.87), Somatic Complaints (mean T-score = 61.03, d = 0.86), Fearfulness (mean T-score = 63.66, d = 0.85), Dysfunctional Negative Emotions (mean T-score = 59.48, d = 0.84), and Negative Emotionality/Neuroticism (mean T-score = 58.94, d = 0.82). In contrast, Juvenile Conduct Problems, Antisocial Behavior, Aggressiveness, and Disconstraint were lower than normative values. The overall profile indicated a predominantly internalizing pattern rather than an externalizing behavioral profile.

Conclusion: Iranian patients with somatic symptom and related disorders showed a distinctive MMPI-3 profile marked by internalized emotional distress, somatic-cognitive preoccupation, and reduced externalizing pathology. These findings support the clinical value of structured psychological assessment in this population and highlight treatment-relevant targets, including anxiety, hopelessness, body-focused preoccupation, emotion regulation difficulties, and suicide-risk monitoring.

Keywords: somatic symptom disorder, psychosomatic disorders, MMPI-3, psychopathology, internalizing spectrum, suicide ideation, behavior management

Background

Somatic symptom and related disorders are clinically important conditions in which persistent physical symptoms are accompanied by disproportionate psychological distress, excessive health-related thoughts, and functional impairment. These disorders occupy an important position at the interface of psychiatry, psychology, and general medicine because patients frequently present first with bodily complaints rather than overt psychological symptoms. This presentation can complicate diagnosis, increase repeated healthcare use, and delay appropriate psychological or psychiatric intervention.¹⁻³

Mental disorders contribute substantially to the global burden of disease, and their impact has increased over recent decades. This burden is particularly relevant in Middle Eastern populations, where sociocultural, structural, and healthcare-related factors may influence the recognition, expression, and management of psychological distress.^{4,5} In

many clinical contexts, distress may be communicated through physical symptoms, making the assessment of somatic symptom presentations especially important. In Iran, previous studies have reported associations between somatization, anxiety, depression, alexithymia, and psychosomatic complaints, but comprehensive psychometric profiling of patients with somatic symptom and related disorders remains limited.⁶

A key theoretical construct in this field is alexithymia, which refers to difficulty identifying, describing, and regulating emotions. When emotional distress is poorly recognized or verbally expressed, it may be experienced and communicated through somatic channels. This mechanism is consistent with the broader internalizing model of psychopathology, in which anxiety, depression, helplessness, worry, and stress are expressed inwardly rather than through externalizing behaviors such as aggression, substance misuse, or antisocial conduct. Distinguishing internalizing from externalizing patterns may therefore help clinicians understand the dominant psychological profile of patients with somatic symptom and related disorders and tailor management accordingly.^{7,8}

The Minnesota Multiphasic Personality Inventory-3 (MMPI-3) provides a contemporary, multidimensional assessment of psychopathology and personality functioning. Its scale structure allows simultaneous evaluation of higher-order emotional, thought, and behavioral dysfunction; somatic and cognitive complaints; internalizing and externalizing symptoms; interpersonal functioning; and personality psychopathology. This makes it particularly suitable for identifying broad psychological patterns in patients whose primary presentation is somatic. However, few studies have used the MMPI-3 to characterize somatic symptom and related disorders in Middle Eastern clinical populations.⁹

A detailed MMPI-3 profile may also have practical treatment implications. If patients with somatic symptom and related disorders show a predominantly internalizing profile, management may need to prioritize anxiety, hopelessness, emotional regulation, body-focused preoccupation, and suicide-risk monitoring rather than approaches directed mainly at externalizing behavior. Such profiling may support more individualized treatment planning and clarify the role of psychological interventions such as cognitive-behavioral therapy, acceptance-based therapy, and emotion-focused approaches.^{10–12}

The present study aimed to characterize the psychopathological profile of Iranian patients with somatic symptom and related disorders using the MMPI-3. Specifically, the study addressed the following research questions:

1. Do patients with somatic symptom and related disorders differ from population norms across MMPI-3 higher-order, clinical, somatic/cognitive, internalizing, externalizing, interpersonal, and personality psychopathology scales?
2. Is the dominant MMPI-3 profile of this clinical group characterized primarily by internalizing distress and somatic-cognitive preoccupation rather than externalizing pathology?
3. What treatment-relevant psychological targets can be inferred from the observed MMPI-3 profile?

We hypothesized that, compared with population norms, patients with somatic symptom and related disorders would show higher scores on emotional dysfunction, somatic/cognitive complaints, and internalizing scales, and lower or non-elevated scores on externalizing scales.

Methods

Study Design and Setting

This descriptive cross-sectional study was conducted at the psychosomatic department of Imam Khomeini Hospital, Sari, Iran, between May and September 2024. The study was designed to characterize the MMPI-3 psychopathological profile of patients diagnosed with somatic symptom and related disorders.

Participants and Sampling

Participants were recruited using convenience sampling from patients presenting to the psychosomatic department during the study period. The sampling frame consisted of 700 patients who attended the department between May and September 2024. After applying the inclusion and exclusion criteria and excluding patients with incomplete or invalid questionnaire data, 120 patients were included in the final analysis (Figure 1).

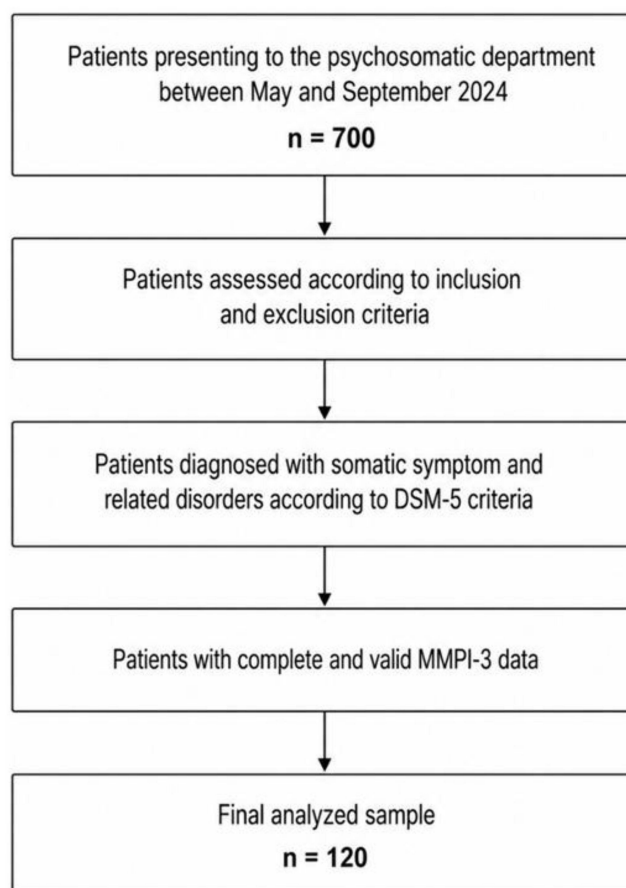


Figure 1 Participant selection flow diagram. The diagram shows the selection process for patients included in the final analysis. A total of 700 patients presented to the psychosomatic department during the study period. After applying the inclusion and exclusion criteria and retaining patients with complete and valid MMPI-3 data, 120 patients were included in the final analysis.

Abbreviations: DSM-5, Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition; MMPI-3, Minnesota Multiphasic Personality Inventory-3.

Eligible participants were adults aged 18 to 65 years who had at least a middle-school level of education, were diagnosed with a somatic symptom or related disorder according to DSM-5 criteria by a psychiatrist, and provided written informed consent. The diagnostic categories included somatic symptom disorder, illness anxiety disorder, and conversion disorder/functional neurological symptom disorder. Patients were excluded if they had an acute unstable medical condition requiring urgent treatment, a severe psychiatric disorder such as psychotic disorder or bipolar disorder that substantially impaired cooperation with assessment, incomplete MMPI-3 data, invalid response patterns, or unwillingness to continue participation.

The final analyzed sample consisted of 120 patients, including 72 females and 48 males, with a mean age of 42.5 years. The age range was 19 to 65 years. Marital status and diagnostic characteristics are presented in Table 1.

No formal a priori power analysis was performed before data collection. The target sample size was determined pragmatically based on the number of eligible patients with complete and valid MMPI-3 data during the study period. As a sensitivity estimate, a sample size of 120 provides approximately 80% power to detect a small-to-moderate one-sample effect size of Cohen's $d = 0.32$ at a two-sided α level of 0.01. The absence of an a priori power analysis is acknowledged as a study limitation.

Procedure

Potential participants were identified through clinical referral and medical record review. Eligibility was determined according to the predefined inclusion and exclusion criteria. Patients who met the criteria were approached in the clinic,

Table 1 Demographic and Clinical Characteristics of the Study Sample

Characteristic	Value
Final analyzed sample, n	120
Age, years, mean	42.5
Age range, years	19–65
Female, n (%)	72 (60.0)
Male, n (%)	48 (40.0)
Educational eligibility	At least middle-school diploma
Clinical setting	Psychosomatic department, Imam Khomeini Hospital, Sari, Iran
Data collection period	May–September 2024
Diagnostic framework	DSM-5 criteria
Included diagnostic categories	Somatic symptom disorder; illness anxiety disorder; conversion disorder/functional neurological symptom disorder
Main presenting complaints	Chronic musculoskeletal pain; non-specific gastrointestinal symptoms; chronic fatigue
Inclusion criteria	Age 18–65 years; middle-school education or higher; DSM-5 diagnosis of a somatic symptom or related disorder; written informed consent
Exclusion criteria	Acute unstable medical condition; severe psychotic or bipolar disorder impairing cooperation; unwillingness to continue participation

informed about the study aims, assured of confidentiality, and asked to provide written informed consent. Participants then completed the Minnesota Multiphasic Personality Inventory-3 under the supervision of trained research personnel.

Measure

The Minnesota Multiphasic Personality Inventory-3 is a 335-item self-report psychological assessment instrument designed to evaluate broad dimensions of psychopathology and personality functioning. Items are answered in a true/false format. The MMPI-3 includes validity scales and substantive scales assessing higher-order dysfunction, restructured clinical domains, somatic/cognitive complaints, internalizing symptoms, externalizing symptoms, interpersonal functioning, and personality psychopathology.

The MMPI-3 normative reference is based on adult population data and uses standardized T-scores with a normative mean of 50. In the present study, participants' MMPI-3 scale scores were compared with the normative T-score mean of 50.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics, version 21. Descriptive statistics were calculated for demographic variables and MMPI-3 scale scores. Normality was assessed using the Kolmogorov–Smirnov test, skewness, and kurtosis values. Because the distributions were acceptable for parametric analysis, one-sample t-tests were used to compare MMPI-3 T-scores with the normative T-score mean of 50.

The primary unadjusted significance threshold was set at $\alpha = 0.01$. Exact p-values were reported where possible, and values smaller than 0.001 were reported as $p < 0.001$. To improve interpretability beyond statistical significance, Cohen's d effect sizes were calculated for each one-sample comparison using the formula $d = t/\sqrt{n}$, where $n = 120$. Positive values indicated scores above the normative mean, whereas negative values indicated scores below the normative mean.

To address multiple testing, Bonferroni correction was applied within each predefined MMPI-3 domain using the prespecified $\alpha = 0.01$ threshold divided by the number of scales in that domain. The domain-specific Bonferroni thresholds were $p < 0.0033$ for higher-order scales, $p < 0.00125$ for restructured clinical scales, $p < 0.0025$ for somatic/cognitive complaint scales, $p < 0.0010$ for internalizing scales, $p < 0.0014$ for externalizing scales, $p < 0.0020$ for interpersonal functioning scales, and $p < 0.0020$ for personality psychopathology scales. The revised tables report

Cohen's *d* and indicate whether each finding remained significant after domain-wise Bonferroni correction. To avoid overloading the primary domain tables, Cohen's *d* values and domain-wise Bonferroni-corrected interpretations are presented separately in Table 2.

Table 2 Effect Sizes and Bonferroni-Corrected Interpretation of MMPI-3 Scale Comparisons

Domain	Scale	p-value	Cohen's <i>d</i>	Bonferroni Threshold	Significant After Bonferroni Correction
Higher-order	Emotional/Internalizing Dysfunction	<0.001	0.76	0.0033	Yes
Higher-order	Thought Dysfunction	<0.001	0.57	0.0033	Yes
Higher-order	Behavioral/Externalizing Dysfunction	0.004	-0.27	0.0033	No
Restructured clinical	Demoralization	0.001	0.31	0.00125	Yes
Restructured clinical	Somatic Complaints	<0.001	0.86	0.00125	Yes
Restructured clinical	Low Positive Emotions	<0.001	0.87	0.00125	Yes
Restructured clinical	Antisocial Behavior	<0.001	-0.63	0.00125	Yes
Restructured clinical	Ideas of Persecution	<0.001	0.51	0.00125	Yes
Restructured clinical	Dysfunctional Negative Emotions	<0.001	0.84	0.00125	Yes
Restructured clinical	Aberrant Experiences	<0.001	0.56	0.00125	Yes
Restructured clinical	Hypomanic Activation	0.189	-0.12	0.00125	No
Somatic/cognitive complaints	Malaise	<0.001	0.35	0.0025	Yes
Somatic/cognitive complaints	Neurological Complaints	<0.001	0.63	0.0025	Yes
Somatic/cognitive complaints	Eating Behavior Complaints	<0.001	0.63	0.0025	Yes
Somatic/cognitive complaints	Cognitive Complaints	<0.001	0.38	0.0025	Yes
Internalizing	Suicidal/Death Ideation	<0.001	0.61	0.0010	Yes
Internalizing	Helplessness/Hopelessness	<0.001	0.50	0.0010	Yes
Internalizing	Self-Doubt	<0.001	0.31	0.0010	Yes
Internalizing	Inefficacy	0.008	0.25	0.0010	No
Internalizing	Stress	<0.001	0.38	0.0010	Yes
Internalizing	Worry	<0.001	0.50	0.0010	Yes
Internalizing	Compulsive Behaviors	<0.001	0.53	0.0010	Yes
Internalizing	Anxiety	<0.001	0.99	0.0010	Yes
Internalizing	Anger Proneness	<0.001	0.96	0.0010	Yes
Internalizing	Fearfulness	<0.001	0.85	0.0010	Yes
Externalizing	Family Problems	0.004	0.27	0.0014	No
Externalizing	Juvenile Conduct Problems	<0.001	-0.85	0.0014	Yes
Externalizing	Substance Abuse	0.005	-0.26	0.0014	No
Externalizing	Impulsivity	0.161	-0.13	0.0014	No
Externalizing	Activation	0.675	-0.04	0.0014	No
Externalizing	Aggression	<0.001	0.47	0.0014	Yes
Externalizing	Cynicism	<0.001	0.32	0.0014	Yes
Interpersonal functioning	Self-Importance	<0.001	-0.54	0.0020	Yes
Interpersonal functioning	Dominance	<0.001	-1.44	0.0020	Yes
Interpersonal functioning	Disaffiliativeness/Disconnection	<0.001	0.47	0.0020	Yes
Interpersonal functioning	Social Avoidance	0.492	0.06	0.0020	No
Interpersonal functioning	Shyness	0.913	0.01	0.0020	No
Personality psychopathology	Aggressiveness	<0.001	-0.46	0.0020	Yes
Personality psychopathology	Psychoticism	<0.001	0.50	0.0020	Yes
Personality psychopathology	Disconstraint	<0.001	-0.44	0.0020	Yes
Personality psychopathology	Negative Emotionality/Neuroticism	<0.001	0.82	0.0020	Yes
Personality psychopathology	Introversion/Low Positive Emotionality	0.026	0.21	0.0020	No

Notes: Cohen's *d* was calculated as $t/\sqrt{n}$, with $n = 120$. Positive *d* values indicate scores above the normative T-score mean of 50, whereas negative *d* values indicate scores below the normative mean. Bonferroni thresholds were calculated within each predefined MMPI-3 domain using $\alpha = 0.01$ divided by the number of scales in that domain. P-values were derived from the reported one-sample t-statistics with $df = 119$ and rounded for presentation.

Results

The final analyzed sample included 120 patients with somatic symptom and related disorders. Demographic and clinical characteristics of the sample are summarized in [Table 1](#).

Descriptive assessment of the MMPI-3 scale distributions showed acceptable normality for parametric analysis. Across the higher-order, restructured clinical, somatic/cognitive, internalizing, externalizing, interpersonal, and personality psychopathology domains, skewness and kurtosis values were within acceptable limits. Therefore, one-sample t-tests were used to compare patient MMPI-3 T-scores with the normative population mean of 50 ([Figure 2](#)).

On the higher-order scales, patients scored significantly above the normative mean on Emotional/Internalizing Dysfunction and Thought Dysfunction, indicating greater emotional distress and thought-related dysfunction. Behavioral/Externalizing Dysfunction was lower than the normative mean at the unadjusted $\alpha = 0.01$ threshold, although this finding did not remain significant after domain-wise Bonferroni correction ([Table 3](#)).

On the restructured clinical scales, significant elevations were observed for Demoralization, Somatic Complaints, Low Positive Emotions, Ideas of Persecution, Dysfunctional Negative Emotions, and Aberrant Experiences. Antisocial Behavior was significantly lower than the normative mean, whereas Hypomanic Activation did not differ significantly from the normative mean. These findings indicate a profile marked by demoralization, somatic preoccupation, negative affect, and unusual perceptual or thought experiences, rather than antisocial or hypomanic features ([Table 4](#)).

All somatic/cognitive complaint scales were significantly elevated compared with the normative mean. These included Malaise, Neurological Complaints, Eating Behavior Complaints, and Cognitive Complaints. This pattern supports the central role of bodily and cognitive symptom preoccupation in the clinical presentation of this group ([Table 5](#)).

Within the internalizing domain, patients showed significant elevations on Suicidal/Death Ideation, Helplessness/Hopelessness, Self-Doubt, Stress, Worry, Compulsive Behaviors, Anxiety, Anger Proneness, and Fearfulness. Inefficacy showed a smaller elevation and should be interpreted cautiously after correction for multiple comparisons. Overall, the internalizing profile was dominated by anxiety, fearfulness, anger proneness, hopelessness, and suicide-related ideation ([Table 6](#)).

In the externalizing domain, Aggression and Cynicism remained significantly elevated after Bonferroni correction, whereas Family Problems showed only an unadjusted elevation. Juvenile Conduct Problems remained significantly lower than the normative mean after correction, whereas Substance Abuse showed only an unadjusted reduction. Impulsivity and Activation did not differ significantly from normative values. This pattern suggests that although interpersonal conflict, anger, and cynical attitudes were present, broader externalizing behaviors such as substance misuse, conduct problems, and impulsivity were not prominent ([Table 7](#)).

On interpersonal functioning scales, Self-Importance and Dominance were significantly below the normative mean, whereas Disaffiliativeness/Disconnection was significantly elevated. Social Avoidance and Shyness did not differ significantly from normative values. This pattern suggests reduced dominance and interpersonal withdrawal/disconnection without a clear elevation in shyness or social avoidance ([Table 8](#)).

On personality psychopathology scales, Psychoticism and Negative Emotionality/Neuroticism were significantly elevated, whereas Aggressiveness and Disconstraint were significantly lower than normative values. Introversion/Low Positive Emotionality showed only a small elevation and did not remain significant using the primary $\alpha = 0.01$ threshold. Taken together, the personality psychopathology profile was characterized by negative emotionality and unusual experiences, with comparatively reduced externalizing personality features ([Table 9](#)).

Overall, the MMPI-3 profile of patients with somatic symptom and related disorders was characterized by elevated emotional distress, somatic/cognitive complaints, internalizing symptoms, negative emotionality, and reduced externalizing pathology. The strongest elevations were observed in anxiety, anger proneness, fearfulness, somatic complaints, low positive emotions, and dysfunctional negative emotions. These findings support the hypothesis that this clinical group demonstrates a predominantly internalizing psychopathological profile ([Tables 1–9](#)).

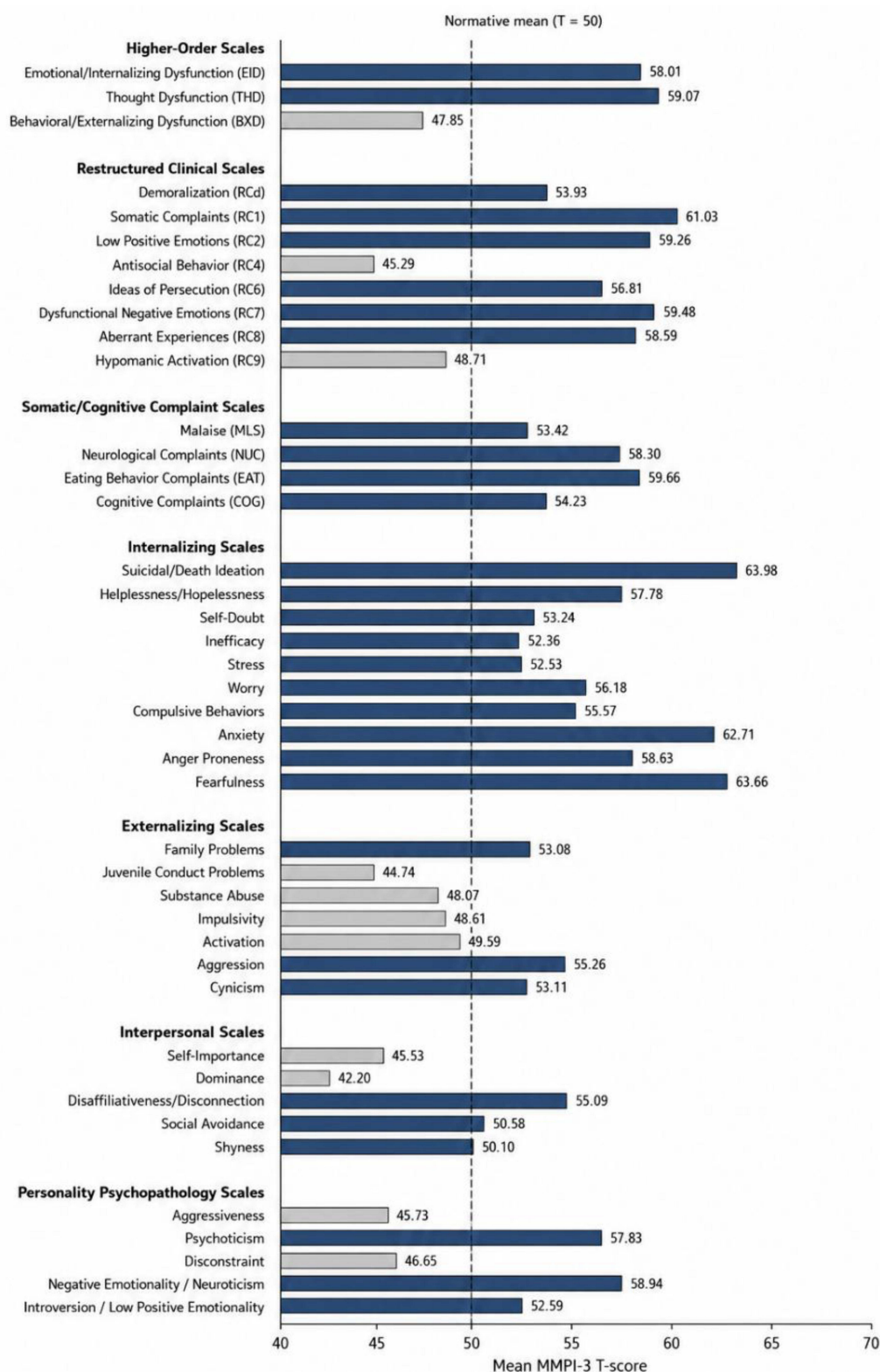


Figure 2 MMPI-3 profile of patients with somatic symptom and related disorders. The figure displays mean MMPI-3 T-scores across the analyzed clinical scales. The dashed reference line represents the normative T-score mean of 50. Scores above 50 indicate elevations relative to the normative mean, whereas scores below 50 indicate lower scores relative to the normative mean.

Table 3 Comparison of Higher-Order Deficiency Scale Scores Between Patients with Psychosomatic Disorders and Population Norms

Scale	Theoretical Mean	Empirical Mean	t-value	df	p-value
Emotional Deficiency	50	58.01	8.285	119	0.001
Thought Deficiency	50	59.07	6.23	119	0.001
Behavioral Deficiency	50	47.85	-2.95	119	0.004

Table 4 Scores on Restructured Clinical Scales (MMPI-3) in Patients with Psychosomatic Disorders

Scale	Theoretical Mean	Empirical Mean	t-value	df	p-value
Demoralization	50	53.93	3.36	119	0.001
Somatic Complaints	50	61.03	9.45	119	0.001
Low Positive Emotions	50	59.26	9.49	119	0.001
Antisocial Behavior	50	45.29	-6.90	119	0.001
Ideas of Persecution	50	56.81	5.58	119	0.001
Dysfunctional Negative Emotions	50	59.48	9.20	119	0.001
Aberrant Experiences	50	58.59	6.08	119	0.001
Hypomanic Activation	50	48.71	-1.32	119	0.187

Table 5 Somatic and Cognitive Complaint Scale Scores in the Study Sample

Scale	Theoretical Mean	Empirical Mean	t-value	df	p-value
Malaise	50	53.42	3.78	119	0.001
Neurological Complaints	50	58.30	6.95	119	0.001
Eating Behavior Complaints	50	59.66	6.93	119	0.001
Cognitive Complaints	50	54.23	4.20	119	0.001

Table 6 Internalizing Scale Scores in Patients with Psychosomatic Disorders

Scale	Theoretical Mean	Empirical Mean	t-value	df	p-value
Suicidal/Death Ideation	50	63.98	6.71	119	0.001
Helplessness/Hopelessness	50	57.78	5.50	119	0.001
Self-Doubt	50	53.24	3.41	119	0.001
Inefficacy	50	52.36	2.71	119	0.001
Stress	50	52.53	4.11	119	0.001
Worry	50	56.18	5.53	119	0.001
Compulsive Behaviors	50	55.57	5.76	119	0.001
Anxiety	50	62.71	10.89	119	0.001
Anger Proneness	50	58.63	10.50	119	0.001
Fearfulness	50	63.66	9.36	119	0.001

Table 7 Externalizing Scale Scores in Patients with Psychosomatic Disorders

Scale	Theoretical Mean	Empirical Mean	t-value	df	p-value
Family Problems	50	53.08	2.95	119	0.004
Adolescent Conduct Problems	50	44.74	-9.33	119	0.001
Substance Abuse	50	48.07	-2.88	119	0.005
Impulsivity	50	48.61	-1.41	119	0.159
Emotional Lability	50	49.59	-0.42	119	0.672
Aggression	50	55.26	5.12	119	0.001
Negativism	50	53.11	3.53	119	0.001

Table 8 Interpersonal Functioning Scale Scores in the Clinical Sample

Scale	Theoretical Mean	Empirical Mean	t-value	df	p-value
Self-Importance	50	45.53	-5.89	119	0.001
Dominance	50	42.20	-15.76	119	0.001
Disconnection	50	55.09	5.11	119	0.001
Social Avoidance	50	50.58	0.69	119	0.489
Shyness	50	50.10	0.11	119	0.906

Table 9 Personality Psychopathology Scale Profiles of Patients with Psychosomatic Disorders

Scale	Theoretical Mean	Empirical Mean	t-value	df	p-value
Instrumental Aggression	50	45.73	-4.99	119	0.001
Psychoticism	50	57.83	5.47	119	0.001
Irresponsibility	50	46.65	-4.82	119	0.001
Negative Emotions/ Neuroticism	50	58.94	9.03	119	0.001
Low Positive Emotions/ Introversion	50	52.59	2.26	119	0.025

Discussion

This study characterized the MMPI-3 psychopathological profile of Iranian patients with somatic symptom and related disorders. The main finding was a predominantly internalizing profile, marked by elevations in emotional/internalizing dysfunction, somatic and cognitive complaints, anxiety, fearfulness, anger proneness, helplessness/hopelessness, suicidal/death ideation, psychoticism, and negative emotionality/neuroticism. In contrast, several externalizing dimensions, including behavioral/externalizing dysfunction, antisocial behavior, juvenile conduct problems, substance abuse, aggressiveness, and disconstraint, were below normative values. Taken together, these findings suggest that the psychopathological expression of somatic symptom and related disorders in this sample was driven more by internalized distress, somatic-cognitive preoccupation, and negative affect than by overt externalizing behavior.

The elevated somatic/cognitive complaint scales are consistent with the clinical definition of somatic symptom and related disorders, in which bodily symptoms are accompanied by persistent health-related concern, distress, and functional impairment. The observed elevations in malaise, neurological complaints, eating behavior complaints, and cognitive complaints suggest that symptom burden in this population extends beyond isolated physical discomfort and involves broader cognitive and bodily preoccupation. This pattern supports the need for assessment models that evaluate both physical complaints and the psychological processes that maintain or amplify them.¹³

The strong internalizing profile is clinically important. Elevations in anxiety, fearfulness, worry, stress, helplessness/hopelessness, and suicidal/death ideation indicate that patients with somatic symptom and related disorders may experience substantial inwardly directed emotional distress. These findings are consistent with models in which unprocessed or poorly regulated emotional distress is expressed through bodily symptoms. They also support the relevance of alexithymia, emotional avoidance, health anxiety, and catastrophic interpretation of bodily sensations as potential mechanisms contributing to symptom persistence. The elevation of suicidal/death ideation is particularly important and suggests that suicide-risk screening should not be overlooked in patients whose primary presentation is somatic.

The contrast between elevated internalizing scales and reduced externalizing scales provides a useful clinical distinction. Patients did not show a broad pattern of antisocial behavior, substance abuse, conduct problems, impulsivity, or hypomanic activation. Instead, their profile suggested emotional constriction, distress, and bodily preoccupation. This distinction may help clinicians avoid misinterpreting these patients as primarily behaviorally dysregulated and instead direct attention toward anxiety, hopelessness, affect regulation, and health-related cognitive patterns.

The personality psychopathology findings further support this interpretation. Elevated negative emotionality/neuroticism suggests a tendency toward distress sensitivity and persistent negative affect. Elevated psychoticism should not be interpreted

as evidence of psychotic disorder in this context; rather, it may reflect unusual experiences, detachment, or atypical interpretations of bodily sensations in patients with severe somatic preoccupation. Lower aggressiveness and disconstraint are consistent with the broader finding that externalizing personality features were not dominant in this sample.

The Iranian context may also shape the presentation and reporting of symptoms. In many settings, psychological distress may be more socially acceptable when expressed through physical symptoms than through direct emotional disclosure. Cultural expectations, stigma surrounding psychiatric symptoms, family roles, gender norms, and patterns of healthcare access may all influence how patients describe distress and seek care. Therefore, somatic presentations in Iranian clinical settings should be understood not only as individual psychopathology but also as expressions shaped by sociocultural context. This reinforces the value of culturally informed assessment and management.^{14–16}

From a treatment perspective, the identified profile supports a stepped and integrated approach. Cognitive-behavioral therapy may help patients identify catastrophic health beliefs, reduce reassurance-seeking, and modify maladaptive interpretations of bodily sensations. Acceptance and commitment therapy may be useful for reducing experiential avoidance and improving psychological flexibility. Emotion-focused and dynamic approaches may be beneficial when emotional awareness and expression are limited. Given the elevation in suicidal/death ideation and helplessness/hopelessness, structured suicide-risk monitoring should be included in clinical management, even when patients present primarily with physical complaints.

Several alternative explanations should be considered. First, physical symptom burden itself may increase anxiety, hopelessness, and cognitive complaints, meaning that the observed psychological profile may be both a contributor to and a consequence of chronic somatic symptoms. Second, unmeasured factors such as pain severity, duration of illness, comorbid depression or anxiety disorders, medication use, socioeconomic stress, and previous healthcare experiences may influence MMPI-3 scores. Third, the clinical setting may have selected for patients with more severe or persistent symptoms than those seen in community settings.^{11,17,18}

Limitations

This study has several limitations

1. The cross-sectional design prevents causal interpretation. The findings show associations between somatic symptom and related disorders and MMPI-3 profile elevations, but they cannot determine whether psychological distress preceded, followed, or developed alongside somatic symptoms.
2. The study used a single clinical site in Sari, Iran. Therefore, the findings may not be fully generalizable to other regions, healthcare settings, or community samples.
3. The sample was based on patients who presented to a psychosomatic clinic, which may overrepresent individuals with more persistent, complex, or treatment-seeking symptoms.
4. The study compared MMPI-3 scores with normative T-score values rather than with a matched clinical or healthy control group. Future studies should include matched comparison groups to strengthen causal and diagnostic interpretation.
5. Potential confounding factors, including symptom duration, pain severity, medication use, psychiatric comorbidity, socioeconomic status, and treatment history, were not fully examined. Future research should include these variables to clarify predictors of MMPI-3 profile variation.
6. The study relied on self-report psychometric assessment. Although the MMPI-3 is a comprehensive and standardized instrument, self-report responses may be influenced by insight, response style, distress level, and cultural factors.

Despite these limitations, the study provides one of the first MMPI-3-based profiles of Iranian patients with somatic symptom and related disorders and highlights a clinically meaningful internalizing pattern with direct implications for assessment and treatment planning.

Conclusion

This cross-sectional MMPI-3 study identified a predominantly internalizing psychopathological profile in Iranian patients with somatic symptom and related disorders. The profile was characterized by elevated emotional distress, somatic-cognitive complaints, anxiety, fearfulness, hopelessness, suicidal/death ideation, and negative emotionality, together with reduced externalizing features such as antisocial behavior, substance abuse, aggressiveness, and disinhibition.

These findings suggest that clinical assessment and management of somatic symptom and related disorders should extend beyond physical complaints and include structured evaluation of internalizing distress, body-focused preoccupation, emotional regulation difficulties, and suicide risk. Future studies using longitudinal designs and matched comparison groups are needed to clarify the stability, predictors, and treatment relevance of this MMPI-3 profile.

Data Sharing Statement

The datasets generated and analyzed during the current study are not publicly available due to participant confidentiality, but are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate

This study was approved by the Ethics Committee of Islamic Azad University, Sari Branch (IR.IAU.SARI.REC.1403.228). Written informed consent was obtained from all individual participants included in the study. The study procedures were conducted in accordance with the ethical principles of the Declaration of Helsinki.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Funding

No funding was received for conducting this study.

Disclosure

The authors declare that they have no competing interests in this work.

References

1. Löwe B, Toussaint A, Rosmalen JGM, et al. Persistent physical symptoms: definition, genesis, and management. *Lancet*. 2024;403(10444):2649–2662. doi:10.1016/S0140-6736(24)00623-8
2. Henningsen P. Management of somatic symptom disorder. *Dialogues Clin. Neurosci.* 2018;20(1):23–31. doi:10.31887/DCNS.2018.20.1/phenningsen
3. D'Souza RS, Hooten WM. *Somatic Symptom Disorder: StatPearls*. Treasure Island (FL): StatPearls Publishing LLC.; 2026. Copyright © 2026.
4. Ferrari AJ, Santomauro DF, Mantilla Herrera AM, et al. Global, regional, and national burden of 12 mental disorders in 204 countries and territories, 1990–2019: a systematic analysis for the global burden of disease study 2019. *Lancet Psychiatry*. 2022;9(2):137–150. doi:10.1016/S2215-0366(21)00395-3
5. Fan Y, Fan A, Yang Z, Fan D. Global burden of mental disorders in 204 countries and territories, 1990–2021: results from the global burden of disease study 2021. *BMC Psychiatry*. 2025;25(1):486. doi:10.1186/s12888-025-06932-y
6. Al Busaidi ZQ. The Concept of Somatisation: a Cross-cultural perspective. *Sultan Qaboos Univ Med J*. 2010;10(2):180–186. doi:10.18295/2075-0528.1184
7. Taylor GJ, Porcelli P, Bagby RM. Alexithymia: a defense of the original conceptualization of the construct and a critique of the attention-appraisal model. *Clin Neuropsychiatry*. 2024;21(5):329–357. doi:10.36131/cnfioritidore20240501
8. Preece DA, Gross JJ. Defining alexithymia: the clinical relevance of cognitive behavioral vs psychoanalytic conceptualizations. *Pers Individ Dif*. 2024;228:112732. doi:10.1016/j.paid.2024.112732
9. Corey DM, Ben-Porath YS. Minnesota Multiphasic Personality Inventory-3. MMPI-3): user's guide for the public safety candidate interpretive reports. University of Minnesota Press; 2022.
10. Liu X, He M, Wang W, et al. Personality profile of the primary blepharospasm (BSP): an investigation using the Minnesota Multiphasic Personality Inventory. *Neurosci Lett*. 2020;722:134821. doi:10.1016/j.neulet.2020.134821

11. Smakowski A, Hüsing P, Völcker S, et al. Psychological risk factors of somatic symptom disorder: a systematic review and meta-analysis of cross-sectional and longitudinal studies. *J Psychosom Res.* **2024**;181:111608. doi:10.1016/j.jpsychores.2024.111608
12. Hsu JW, Lin WC, Tsai SJ, et al. Somatic symptom disorder, psychiatric comorbidities, and suicide. *J Affect Disord.* **2025**;373:459–464. doi:10.1016/j.jad.2024.12.105
13. Pearson assessments. Minneapolis, MN: Pearson. **2020**. MMPI-3 Scales. Available from: <https://www.pearsonassessments.com/content/dam/school/global/clinical/us/assets/mmpi-3/mmpi-3scales.pdf>.
14. Jafari A, Nejatian M, Momeniyan V, Barsaloni FR, Tehrani H. Mental health literacy and quality of life in Iran: a cross-sectional study. *BMC Psychiatry.* **2021**;21(1):499. doi:10.1186/s12888-021-03507-5
15. Elshamy F, Hamadeh A, Billings J, Alyafei A. Mental illness and help-seeking behaviours among Middle Eastern cultures: a systematic review and meta-synthesis of qualitative data. *PLoS One.* **2023**;18(10):e0293525. doi:10.1371/journal.pone.0293525
16. Taghva A, Farsi Z, Javanmard Y, Atashi A, Hajebi A, Khademi M. Stigma barriers of mental health in Iran: a qualitative study by stakeholders of mental health. *Iran J Psychiatry.* **2017**;12(3):163–171.
17. Hybelius J, Koscic A, Salomonsson S, et al. Measurement properties of the patient health questionnaire–15 and somatic symptom scale–8: a systematic review and meta-analysis. *JAMA Netw Open.* **2024**;7(11):e2446603–e. doi:10.1001/jamanetworkopen.2024.46603
18. Lehmann M, Pohontsch NJ, Zimmermann T, Scherer M, Löwe B. Diagnostic and treatment barriers to persistent somatic symptoms in primary care – representative survey with physicians. *BMC Fam. Prac.* **2021**;22(1):60. doi:10.1186/s12875-021-01397-w

Psychology Research and Behavior Management

Publish your work in this journal

Psychology Research and Behavior Management is an international, peer-reviewed, open access journal focusing on the science of psychology and its application in behavior management to develop improved outcomes in the clinical, educational, sports and business arenas. Specific topics covered in the journal include: Neuroscience, memory and decision making; Behavior modification and management; Clinical applications; Business and sports performance management; Social and developmental studies; Animal studies. The manuscript management system is completely online and includes a very quick and fair peer-review system, which is all easy to use. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors.

Submit your manuscript here: <https://www.dovepress.com/psychology-research-and-behavior-management-journal>

Dovepress
Taylor & Francis Group