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Psychometric Properties of the Persian Version of the Interpersonal Mindfulness Scale (IMS) among Iranian Adolescents

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Abstract

Interpersonal mindfulness, involving present-moment awareness and acceptance during social interactions, is crucial for emotional regulation and adaptive interpersonal functioning. This study examined the psychometric properties of the Persian version of the Interpersonal Mindfulness Scale (IMS), a 27-item instrument with four subscales: presence, awareness of self and others, nonjudgmental acceptance, and nonreactivity. The cross-sectional sample

included 15- to 17-year-old Iranian adolescents (2023–2024), recruited via convenience sampling. Participants completed the Persian version of the IMS alongside the Five-Facet Mindfulness Questionnaire (FFMQ), Mindful Attention Awareness Scale (MAAS), and Prosocial Personality Battery (PBS). Face and content validity were confirmed by expert reviews, with all items exceeding thresholds for Content Validity Ratio (CVR > 0.62, $p < 0.05$) and Content Validity Index (CVI > 0.79). Confirmatory Factor Analysis supported the original four-factor structure, demonstrating good model fit (CMIN/DF = 3.51, IFI = 0.91, CFI = 0.91, TLI = 0.90, RMSEA = 0.06). Convergent validity was acceptable, with Average Variance Extracted (AVE) close to or above 0.50 for most factors. Reliability analyses revealed strong internal consistency (Cronbach's alpha: 0.77–0.92; overall 0.81) and good test-retest stability over one month (0.77–0.86). Construct validity was supported by significant positive correlations between IMS and FFMQ ($r = 0.35$, $p < 0.01$), MAAS ($r = 0.57$, $p < 0.01$), and PBS ($r = 0.63$, $p < 0.01$). These results indicate that the Persian IMS is a valid and reliable tool for assessing interpersonal mindfulness in Iranian adolescents.

Keywords
Interpersonal mindfulness; adolescent; validation; social relationships

1. Introduction

The concept of mindfulness, rooted in the Buddhist term Sati, refers to a purposeful, non-judgmental awareness of the present moment, encompassing attention, understanding, and a deeper form of remembrance beyond mere recall [1]. Over recent decades, mindfulness has become a central construct in psychology, recognized for its role in enhancing emotional regulation and well-being [2]. Modern societal shifts from rural to urban living and the rise of industrialization have introduced complex social and individual challenges, including increased stress and anxiety, which often reduce individuals' capacity to remain present and attentive. This disconnection from the present moment can affect not only personal well-being but also interpersonal relationships. The significance of fostering present-moment awareness in social contexts is particularly pronounced in collectivist cultures like Iran, where social harmony and interdependence are highly valued.

Extensive research has linked individual mindfulness practices to numerous psychological benefits, but there is growing attention to the role of mindfulness within interpersonal relationships. Interpersonal mindfulness involves maintaining a mindful, compassionate, and non-judgmental awareness during social interactions, thereby enhancing empathy, communication, and resilience. This construct is especially relevant during adolescence, a critical developmental period characterized by complex social and emotional changes [3].

Kabat-Zinn formalized the modern psychological construct of mindfulness in 1979 as deliberate, present-moment awareness characterized by non-judgmental attention [4]. Since then, researchers have expanded this concept, converging on the understanding that mindfulness involves an open and accepting awareness of thoughts, feelings, and bodily sensations as they arise [5].

Mindfulness can be viewed as a cognitive process that fosters focused attention on authentic goals while maintaining an open, non-judgmental attitude toward ongoing experiences [6]. It is also conceptualized as a mode of "being" or "understanding" that requires awareness of one's emotions. A failure to remain present can create a disconnection from reality, impairing one's ability to comprehend and respond thoughtfully to their environment [7].

Mindfulness reflects a quality of consciousness defined by sustained, focused attention to the present moment without evaluation or commentary, allowing individuals to experience reality directly [8]. Two key characteristics emerge across various definitions: enhanced attention and awareness of present experiences and a receptive, accepting stance toward these experiences [9]. Mindfulness thus involves engagement with both external stimuli (e.g., sounds, sights) and internal states (e.g., emotions), [10] co-occurring within the individual's awareness [11]. Importantly, mindfulness is distinct from relaxation techniques or altered states of consciousness. It does not imply clearing the mind of thoughts, pursuing a particular goal, or assuming a specific physical posture [12]. Instead, mindfulness is a metacognitive process in which individuals monitor and regulate their cognitive and emotional responses, gaining greater flexibility in how they process and react to information [13].

Empirical studies have consistently shown the benefits of mindfulness across various psychological and physical conditions. These include reductions in anxiety, panic disorders, chronic pain, substance use, and neuroticism, as well as improvements in self-esteem and symptoms of depression, PTSD, and chronic illnesses such as cancer and fibromyalgia [14]. However, the majority of mindfulness research particularly within the Iranian context has focused on intrapersonal aspects, overlooking its relevance in interpersonal domains. Given that daily social interactions frequently require mindful awareness, this gap underscores the need for research exploring mindfulness in relational and social contexts.

Interpersonal mindfulness is particularly evident in one's ability to remain present and attentive during social interactions. Mindful listening, for instance, involves maintaining sustained, non-judgmental attention toward others while setting aside personal biases, emotional reactivity, or premature interpretations based on past experiences [15]. This mindful presence fosters more attuned verbal and non-verbal communication, facilitating greater emotional resonance, mutual understanding, and relational harmony [16].

Interpersonal mindfulness refers to the moment-to-moment awareness individuals maintain during social interactions. This includes conscious attention to one's own emotions, bodily sensations, intentions, and experiences, alongside sensitivity to the verbal and non-verbal cues of others, such as tone of voice, facial expressions, and body language. Because interpersonal exchanges often involve active listening and emotional engagement, the core components of interpersonal mindfulness include awareness, focused attention, acceptance, and deliberate, non-reactive responses during interaction [17].

Despite the growing recognition of mindfulness in relational contexts, existing measures primarily assess intrapersonal mindfulness and fail to capture its interpersonal dimensions. Instruments such as the Philadelphia Mindfulness Scale [18], the Freiburg Mindfulness Inventory [19], the Mindful Attention Awareness Scale [20], and the Toronto Mindfulness Scale [21]. These instruments primarily focus on acceptance and awareness, but do not assess mindfulness in interpersonal contexts. This measurement gap limits researchers' ability to examine mindfulness as it manifests in real-life social interactions. Moreover, these tools, developed in Western contexts,

may not adequately reflect the relational dynamics embedded within collectivist cultures like Iran, further emphasizing the need for culturally adapted instruments.

To address this gap, Pratscher et al. developed the Interpersonal Mindfulness Scale (IMS), a standardized measure designed to assess mindfulness within social interactions [17]. Adapted from the Interpersonal Mindfulness in Parenting Scale [22]. The IMS retains four key dimensions: listening with full attention, non-judgmental acceptance, emotional awareness of self and others, and self-regulation during interpersonal exchanges. While the original parenting scale included a fifth dimension, compassion, this component was omitted in the IMS to generalize the measure for broader interpersonal use [17].

The Interpersonal Mindfulness Scale (IMS) is a 27-item instrument designed to assess mindfulness within interpersonal contexts. It comprises four subscales: (1) Presence – maintaining attention to the present moment during interactions; (2) Awareness of Self and Others – recognizing one's own emotions and internal states while being attuned to others' moods and non-verbal cues; (3) Nonjudgmental Acceptance – listening and engaging with others without evaluative judgment; and (4) Non-reactivity – responding thoughtfully rather than impulsively. Previous studies have demonstrated the IMS's acceptable reliability and construct validity [23]. However, it is crucial to establish these psychometric properties within the specific population of Iranian adolescents before widespread application.

Given the absence of culturally adapted instruments for assessing interpersonal mindfulness in Iran, this study aims to translate, culturally adapt, and validate the Interpersonal Mindfulness Scale (IMS) [17]. The psychometric evaluation will include assessments of construct validity, convergent validity, internal consistency, and test–retest reliability among Iranian adolescents. Establishing the validity and reliability of the IMS within this population will provide researchers and clinicians with a culturally appropriate and psychometrically robust tool for measuring interpersonal mindfulness. This validation will support the development of targeted interventions to improve adolescents' social and emotional well-being and facilitate future empirical research on relational mindfulness in non-Western cultural contexts. Validating the Persian version of the Interpersonal Mindfulness Scale provides not only a reliable instrument for measuring this construct among Iranian adolescents but also supports the development of targeted interventions aimed at improving social skills and mental health. Moreover, it lays the groundwork for future research on interpersonal mindfulness within collectivist cultural contexts.

2. Materials and Methods

2.1 Study Participants

The present study is a cross-sectional investigation, with the statistical population comprising Iranian adolescents aged 15 to 17 during the academic year 2023–2024. To enhance the methodological rigor, the STROBE checklist for cross-sectional studies was employed [24]. The sampling method used was non-random, with participants selected through convenience sampling.

In total, 707 adolescents (465 girls = 65.8% and 242 boys = 34.2%) responded to the questions. Meanwhile, 59.5% (421) of participants lived with both parents, 33.1% (234) lived with their mother, and 7.4% (52) lived with their father. All participants were high school students, studying in the 10^{th}, 11^{th}, or 12^{th} grade. 21.1% (149) of participants had a history of psychological counseling that had lasted for over a year. A total of 318 participants were 15 years old (45%), 116 were 16 years old

(16.4%), and 273 were 17 years old (38.6%). Regarding the educational background of the parents, 55.9% (395) of the fathers had completed higher education (bachelor's degree or above), while 44.1% (312) had completed education below the bachelor's level. Similarly, 49.9% (353) of the mothers had completed higher education (bachelor's degree or above), while 50.1% (354) had completed education below the bachelor's level.

Participants were required to meet several criteria: (1) be enrolled in high school (approximately 15-17 years old) to align with Erik Erikson's psychosocial theory of development [25], (2) be fluent in Farsi and Iranian citizens, (3) have no history of mental or cognitive disorders, and (4) provide written informed consent. The study excluded individuals with mental health issues such as anxiety, stress, or undiagnosed depression [25]. To ensure the accuracy of participant responses, we recommended reviewing the questionnaire before answering. We set required answers for each item and ensured anonymity of responses, with participants not being required to provide their names, and participation being voluntary.

2.2 Measures

2.2.1 Interpersonal Mindfulness Scale (IMS)

It was developed by Pratscher et al. in 2019 to assess interpersonal mindfulness [17]. This 27-item instrument measures four distinct dimensions: presence, which refers to maintaining attentional focus on the present moment during interactions; awareness of self and others, which pertains to recognizing one's own emotions and mental states while also being attuned to the moods and nonverbal cues of others in social exchanges; nonjudgmental acceptance, which involves listening without judgment and embracing interpersonal experiences with openness; and non-reactivity, which signifies the ability to allocate time for thoughtful responses rather than reacting impulsively in interpersonal situations. It exhibited strong psychometric properties, demonstrating robust validity and reliability, with a Cronbach’s alpha coefficient of 0.88 [23].

2.2.2 Five Facet Mindfulness Questionnaire (FFMQ)

This is a 39-item scale developed by Baer et al. in 2006 to assess mindfulness [26]. The scale was derived using a factor analysis approach, integrating components from several pre-existing mindfulness measures, including the Freiburg Mindfulness Inventory [19], the Mindfulness Attention Awareness Scale [20], the Mindfulness Inventory of Kentucky [27], the Cognitive and Affective Mindfulness Scale–Revised [28], and the Southampton Mindfulness Questionnaire [29]. Baer (2006) conducted factor analysis on a sample of university students and identified five distinct factors: observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience. The observing factor refers to attentiveness to external and internal stimuli, including emotions, cognitions, sensations, sounds, and smells. Describing pertains to the ability to articulate experiences using language. Acting with awareness involves engaging in activities with full attention, as opposed to performing actions automatically or absentmindedly. Non-judging of inner experience reflects a refusal to evaluate thoughts and emotions as good or bad. In contrast, non-reactivity to inner experience involves allowing thoughts and feelings to arise without immediate engagement or impulsive reaction [30]. Research has demonstrated that the internal consistency of these factors is satisfactory, with Cronbach’s alpha coefficients ranging from

0.75 (for non-reactivity) to 0.91 (for describing). The inter-factor correlations were moderate and statistically significant, ranging from 0.15 to 0.34 [31]. A study conducted in Iran found that the test-retest correlation coefficients for the FFMQ among the Iranian sample ranged from 0.57 (for non-judging) to 0.84 (for observing). The Cronbach's alpha coefficients were also within an acceptable range, varying from 0.55 (for non-reactivity) to 0.83 (for describing) [32].

2.2.3 The Mindful Attention Awareness Scale (MAAS)

This scale has been widely used in recent years. It is a 15-item scale developed by Brown and Ryan in 2003. It consists of 15 items rated on a 6-point Likert scale, ranging from 1 (almost always) to 6 (rarely). The scale is a self-report, unidimensional measure with Cronbach's alpha coefficients ranging from 0.80 to 0.87 in student samples, indicating strong internal consistency [20]. The Spanish version of the scale demonstrated a Cronbach's alpha of 0.89, with additional reliability estimates of 0.86 using the split-half method and 0.82 using test-retest reliability over a two-week interval. A study in Iran found that the internal consistency of the IMS, as measured by Cronbach's alpha, was 0.87 [33].

2.2.4 Prosocial Personality Battery (PBS)

It is a 30-item measure that was developed by Penner in 2002 to assess prosocial tendencies as personality traits within social psychology [34]. It comprises seven subscales: social responsibility, empathetic concern, perspective-taking, personal distress, mutual moral reasoning, other-oriented reasoning, and self-reported altruism. Items 1 to 25 are rated on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), while Items 26 to 30 use a frequency-based scale ranging from 1 (Never) to 5 (Very Often). The total score on the PBS ranged from 30 to 150, with certain items being reverse-scored [34]. A study in Iran reported high reliability for the PBS, with a test-retest reliability coefficient of 0.98 and an internal consistency coefficient (Cronbach's alpha) of 0.79, both of which were considered satisfactory [35].

2.3 Procedure

The research followed Brislin's three-phase translation and adaptation method [36, 37]. In the first phase, the Interpersonal Mindfulness Scale (IMS) was translated into Persian using a back-translation technique. A bilingual psychologist and an expert in the English language independently translated the scale into Persian. A second team, unaware of the original English version, back-translated the Persian version into English. The accuracy of the translation was evaluated by comparing the back-translated version with the original text.

In the second phase, psychometric properties of the translated IMS were assessed for validity and reliability. Three independent translators reviewed the translation for linguistic accuracy and cultural appropriateness. An English professor further refined the final version to enhance clarity while preserving the original item structure. The questionnaire included sociodemographic questions related to age, educational status, and parental background. Data were collected from Iranian adolescents through various platforms, including Instagram, Telegram, WhatsApp, internet advertisements, and email, using Google Forms. Since participation was voluntary, no missing data

were recorded. The construct validity of the scale was assessed through convergent validity, Cronbach's alpha, and test-retest reliability.

In the final phase, a pilot study was conducted with 20 adolescent participants to evaluate the clarity and cultural relevance of the translated scale. Participant feedback was incorporated, and necessary revisions were made to resolve ambiguities. The final version underwent confirmatory factor analysis (CFA) using a new dataset to establish its validity.

2.4 Statistical Analysis

Before conducting any statistical analyses, we initially assessed the descriptive properties and distribution of the data. The normality of the data was evaluated using skewness and kurtosis indices. The skewness values ranged from -0.98 to 0.6, and the kurtosis values ranged from -1.95 to -0.08. The results showed that the data had a normal distribution, as the acceptable range for skewness and kurtosis is usually between ±2 and ±5 [38]. To identify and address potential outliers, we employed the Mahalanobis distance index. This approach initially identified 38 outliers, which were subsequently removed. A subsequent check using the same index identified an additional 14 outliers, which were also removed to preserve the integrity of the dataset. After these preliminary steps, we used SPSS Statistics Version 22 and AMOS 26 to do psychometric evaluations of the Persian version of the Interpersonal Mindfulness Scale (IMS). These included reliability and validity analyses. A correlation analysis was performed to explore the relationships between various variables, including the Prosocial Personality Battery (PBS), Mindful Attention Awareness Scale (MAAS), and Five-Facet Mindfulness Questionnaire (FFMQ), using IBM SPSS Statistics 26.0. To assess internal consistency, we computed Cronbach's alpha. Cronbach's alpha is a widely accepted and standard measure of internal consistency reliability in psychological research, providing comparability with prior studies. However, it assumes equal factor loadings, which may not always hold, especially in multidimensional constructs such as the IMS. To address this limitation and provide a more accurate reliability assessment, we complemented Cronbach's alpha with Composite Reliability (CR), which accounts for varying factor loadings. Test-retest reliability was employed to examine the temporal stability of the scale. This multi-method approach ensures a comprehensive and robust evaluation of the instrument's reliability. A confirmatory factor analysis (CFA) was conducted using AMOS 26 to evaluate the structural integrity of the IMS. Several fit indices were considered, including the Root Mean Square Error of Approximation (RMSEA), the Parsimony Normed Fit Index (PNFI), the Comparative Fit Index (CFI), the Incremental Fit Index (IFI), the Standardized Root Mean Square Residual (SRMR), and the Normed Fit Index (NFI). These indices were expected to meet the following criteria: CFI, IFI, and NFI > 0.90; AGFI > 0.80; PNFI > 0.50; RMSEA < 0.08; and SRMR < 0.09. The analysis yielded satisfactory results, supporting the psychometric properties of the Persian version of the IMS.

2.5 Ethics Statement

This study adhered to ethical guidelines, ensuring that written informed consent was obtained from participants and their parents or legal guardians, while maintaining confidentiality at all times. Participation was voluntary, anonymous, and coded to ensure test-retest reliability (with a one-month interval). Respondents had the right to withdraw at any time.

3. Results

3.1 Face Reliability

To assess the reliability of the IMS face, the study employed both qualitative and quantitative methodologies. The qualitative face validity was evaluated by a panel of five experts, comprising two psychologists and three university professors, to determine the level of difficulty, disproportion, ambiguity in phrasing, and the presence of semantically anomalous terms. The experts' feedback was incorporated into the questionnaire through minor modifications to enhance clarity and coherence. To establish the quantitative face validity, the impact score for each question was calculated. For this purpose, all 27 items were assessed using a five-point Likert scale, ranging from 1 ("never") to 5 ("almost always"). The questionnaire was administered to a sample of 10 participants to examine its reliability. Following the completion of the scale by the target group, the face reliability was determined using the impact score formula (Impact Score = Frequency (%) × Importance). The results confirmed that all items exhibited acceptable levels of face reliability.

3.2 Content Validity

Content validity assesses the extent to which the items of a scale adequately represent the subject matter of the research. It is evaluated through qualitative and quantitative approaches. To determine qualitative content validity, five experts were invited to provide written corrective feedback after a thorough review of the scale items. During their qualitative assessment, they were instructed to consider various aspects, including grammatical accuracy, appropriate vocabulary usage, question significance, proper sequencing of items, and the estimated time required to complete the scale. Following their evaluations, the necessary modifications were implemented to refine the scale. To assess the quantitative content validity and ensure that the most significant and relevant content was included, the Content Validity Ratio (CVR) was employed. The Content Validity Index (CVI) was utilized to confirm that the scale's questions were optimally formulated. To calculate the CVR, 12 experts were asked to analyze transactional behavior by rating each question on a three-point Likert scale: (1) "Not necessary," (2) "Useful but not necessary," and (3) "Necessary." Based on Lawshe's criterion and the given number of experts, an index value exceeding 62% indicated that the presence of the corresponding item was necessary and significant at $p < 0.05$. As all items yielded coefficients above this threshold, no item was eliminated (Table 1). We assessed the CVI based on three essential criteria: simplicity and fluency, relevance, and clarity and transparency. Items were rated using a four-point Likert scale: (1) "Irrelevant," (2) "Requires significant revision," (3) "Relevant but needs revision," and (4) "Completely relevant." Its CVI score had to exceed 0.79 for an item to be considered valid. Since all items met this criterion, no modifications or eliminations were deemed necessary.

Table 1 CVI and CVR for items of the Interpersonal Mindfulness Scale (IMS).

			CVI		CVR
No	Item	Simplicity (1-4)	Relevant (1-4)	Necessary (1-3)	Clearness (1-4)
1	When I am with other people, I am aware of my moods and emotions.	0.93	1	1	0.93
2	When I am conversing with another person, I am fully engaged in the conversation.	1	1	1	1
3	When in a discussion, I accept that others have opinions different from mine.	0.93	0.93	1	0.93
4	In tense moments with another person, I am aware of my feelings but do not let them take over.	1	1	1	1
5	When a person is talking to me, I find myself thinking about other things, rather than giving them my full attention.	1	1	1	1
6	When I receive an angry text/email from someone, I try to understand their situation before responding.	1	1	1	1
7	I listen for the meaning behind another person's words through their gestures and facial expressions.	1	1	1	1
8	When I am upset with someone, I notice how I am feeling before responding.	0.93	0.93	1	0.93
9	I listen carefully to another person, even when I disagree with them.	1	0.93	1	1
10	I find myself listening to someone with one ear while doing something else at the same time.	0.93	0.93	1	0.93
11	I take time to form my thoughts before speaking.	1	1	1	1
12	I consider the potential impact of my words on another person before I speak.	0.93	0.93	1	0.93
13	When interacting with someone I know, I am often on autopilot, not really paying attention to what is actually happening in the moment.	1	1	1	1
14	When I am with another person, I try to accept how they are behaving without wanting them to behave differently.	1	1	1	1
15	I am aware of others mood and tone of voice while I am listening to them.	1	1	1	1
16	I am aware of my facial and body expressions when interacting with others.	1	1	1	1
17	When I am with others, I am easily distracted and my mind tends to wander.	1	1	1	1

18	When interacting with others, I am aware of their facial and body expressions.	1	1	1	1
19	I pick up on the intentions behind what another person is trying to say	1	1	1	1
20	I listen to another person without judging or criticizing them.	1	1	1	1
21	I give the appearance of listening to another person when I am not really listening.	0.93	1	1	0.93
22	Before I speak, I am aware of the intentions behind what I am trying to say.	1	1	1	1
23	When I am interacting with another person, I get a sense of how they are feeling.	1	1	1	1
24	I accept that another person's current situation or mood might influence their behavior.	1	1	1	1
25	Rather than being distracted, I find it easy to be present in the moment when interacting with another person.	1	1	1	1
26	When speaking to another person, I am aware of how I feel inside.	1	1	1	1
27	I've noticed how my mood affects my behavior towards others.	1	1	1	1

NOTE: CVI: Content Validity Index- F: $^{ne}/_{N}$ and CVR: Content Validity Ratio- F: $(^{ne - N/2}/_{N/2})$.

3.3 Construct Validity

The construct validity of the BCS was assessed using maximum likelihood confirmatory factor analysis (CFA). Initially, the factor loadings of the items were examined, and any item with a negative factor loading or a factor loading less than 0.4 was excluded. However, none of the items assessing the IMS were eliminated (Figure 1). The validity of the model can be evaluated using an index referred to as goodness of fit. The acceptable thresholds for model fit indices are as follows: normed chi-square (CMIN/DF < 5), root mean square error of approximation (RMSEA < 0.08), incremental fit index (IFI > 0.9), Tucker-Lewis index (TLI > 0.9), and comparative fit index (CFI > 0.9). A review of the fit indices for the measurement model revealed that the model provided a suitable fit to the IMS data (CMIN/DF = 3.512, IFI = 0.91, CFI = 0.91, TLI = 0.90, RMSEA = 0.06). The mean and standard deviation of all items measuring the IMS are presented in Table 2.

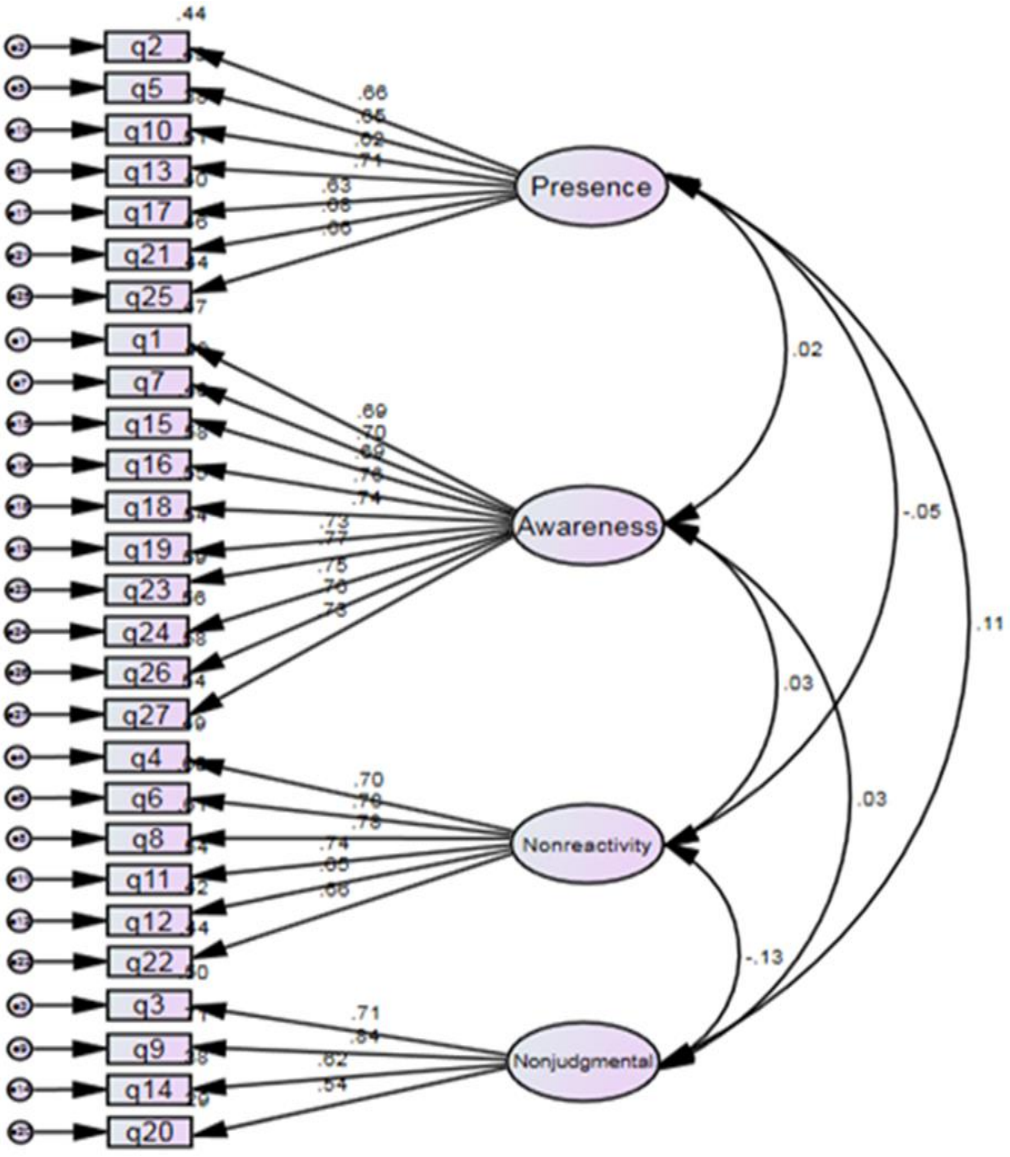

Figure 1 Confirmatory analysis of the four factors of the Interpersonal Mindfulness Scale (IMS) ($p < 0.01$).

Table 2 mean and deviation standard of all questions for Interpersonal Mindfulness Scale (IMS).

NO	Items	Mean	Std. Deviation
1	When I am with other people, I am aware of my moods and emotions.	3.31	1.66
2	When I am conversing with another person, I am fully engaged in the conversation.	2.89	1.17
3	When in a discussion, I accept that others have opinions different from mine.	2.91	1.23
4	In tense moments with another person, I am aware of my feelings but do not let them take over.	3.53	1.26
5	When a person is talking to me, I find myself thinking about other things, rather than giving them my full attention.	2.97	1.18
6	When I receive an angry text or email from someone, I try to understand their situation before responding.	3.56	1.24
7	I listen for the meaning behind another person's words through their gestures and facial expressions.	3.25	1.60
8	When I am upset with someone, I notice how I am feeling before responding.	3.60	1.23
9	I listen carefully to another person, even when I disagree with them.	2.83	1.26
10	I find myself listening to someone with one ear while doing something else at the same time.	2.73	1.21
11	I take time to form my thoughts before speaking.	3.65	1.24
12	I consider the potential impact of my words on another person before I speak.	3.39	1.24
13	When interacting with someone I know, I am often on autopilot, not really paying attention to what is actually happening in the moment.	3.12	1.26
14	When I am with another person, I try to accept how they are behaving without wanting them to behave differently.	2.80	1.26
15	I am aware of others mood and tone of voice while I am listening to them.	3.21	1.47
16	I am aware of my facial and body expressions when interacting with others.	3.18	1.55
17	When I am with others, I am easily distracted and my mind tends to wander.	3.24	1.17
18	When interacting with others, I am aware of their facial and body expressions.	3.02	1.72
19	I pick up on the intentions behind what another person is trying to say	3.27	1.47
20	I listen to another person without judging or criticizing them.	2.90	1.22

21	I give the appearance of listening to another person when I am not really listening.	3.15	1.16
22	Before I speak, I am aware of the intentions behind what I am trying to say.	3.58	1.23
23	When I am interacting with another person, I get a sense of how they are feeling.	3.2	1.68
24	I accept that another person's current situation or mood might influence their behavior.	3.27	1.51
25	Rather than being distracted, I find it easy to be present in the moment when interacting with another person.	3.11	1.16
26	When speaking to another person, I am aware of how I feel inside.	3.20	1.54
27	I've noticed how my mood affects my behavior towards others.	3.24	1.48

The Convergent Validity (CV), Composite Reliability (CR), and Cronbach's alpha coefficient were assessed for variables. Average Variance Extracted (AVE) was employed to evaluate the convergent validity of the four factors of the IMS. A value of AVE > 0.50 indicates that aspects of the IMS demonstrate acceptable convergent validity.

The intra-class correlation reliability of the four factors was determined using both composite reliability and Cronbach's alpha coefficient. The test-retest reliability was utilized to assess the stability of the four factors of the IMS over time.

It is considered that the scale exhibits good validity if the composite reliability, Cronbach's alpha coefficient, and test-retest reliability (with a one-month interval) values exceed 0.70.

The results of the analysis demonstrate that the IMS exhibits strong convergent validity and composite reliability. The findings indicate that the IMS has a high Cronbach's alpha coefficient and robust test-retest reliability (Table 3).

Table 3 Average Variance Extracted, Composite Reliability, Cronbach's Alpha, and Test-Retest Reliability for IMS Factors.

Variable	AVE	CR	Cronbach's alpha	test–retest reliability
Presence	0.44	0.823	0.834	0.83
Awareness of S and O	0.54	0.753	0.92	0.769
Nonjudgmental	0.49	0.772	0.77	0.772
Nonreactivity	0.52	0.759	0.865	0.861
IMS	0.501	0.776	0.814	0.752

NOTE: AVE: = $\frac{\sum \lambda_I^2}{n}$, CR: = $\frac{(\sum \lambda_i)^2}{(\sum \lambda_i)^2 + (\sum \varepsilon_2)}$.

3.4 Convergent Validity

An analysis of the correlation matrix of the variables under study reveals a positive correlation between the factors of IMS and the Five Facet Mindfulness Questionnaire (FFMQ), Mindful Attention Awareness Scale (MAAS), and Prosocial Personality Battery (PBS) (Table 4).

Table 4 Pearson Correlations between IMS Subscales and Related Constructs (FFMQ, MAAS, PBS).

Variable	1	2	3	4	5	6	7	8
1-Presence	1							
2-Awareness	0.02	1						
3-Nonjudgmental	0.09*	0.03	1					
4-Nonreactivity	-0.06	0.03	-0.11**	1				
5-IMS	0.41**	0.81**	0.27**	0.35**	1			
6-FFMQ	0.10*	0.42**	0.10*	0.37**	0.53**	1		
7-MAAS	0.12**	0.18**	0.25**	0.10**	0.290**	0.57**	1	
8-PBS	0.14**	0.35**	0.156**	0.29**	0.48**	0.93**	0.63**	**1**

NOTE: Correlation is significant at the 0.01 level (2-tailed)**, Correlation is significant at the 0.05 level (2-tailed)*.

IMS = Interpersonal Mindfulness Scale, Presence = Showing attention to the present moment, Awareness = Awareness of self and others, Nonjudgmental = Acceptance without judgment, Non-reactivity = Not reacting, IMS = Interpersonal Mindfulness Scale, FFMQ = the Five Facet Mindfulness Questionnaire, MAAS = Mindful Attention Awareness Scale, PBS = Prosocial Personality Battery.

The Interpersonal Mindfulness Scale (IMS) demonstrated significant positive correlations with the three measures examined, indicating that higher interpersonal mindfulness is associated with greater general mindfulness (FFMQ, MAAS) and higher prosocial tendencies (PBS). The IMS showed a moderate positive correlation with the FFMQ ($r = 0.35^{**}$, $p < 0.01$) and a strong positive correlation with the MAAS ($r = 0.57^{**}$, $p < 0.01$), supporting its construct validity within broader mindfulness frameworks. The strongest correlation was observed between IMS and PBS ($r= 0.63^{**}$, $p < 0.01$), suggesting that individuals with higher interpersonal mindfulness are more likely to exhibit prosocial behaviors.

Analysis of IMS subscales revealed distinct but consistent patterns: Nonjudgmental acceptance correlated very strongly with the FFMQ ($r = 0.81^{**}$, $p < 0.01$), Presence and Awareness showed moderate correlations with the FFMQ ($r = 0.35^{**}$ and $r = 0.27^{**}$, respectively, $p < 0.01$), and Nonreactivity had a weak but significant positive correlation with the PBS ($r = 0.29^{**}$, $p < 0.01$). Among the IMS subscales, only Nonreactivity demonstrated a significant correlation with the PBS; other subscales, including Presence, Awareness, and Nonjudgmental acceptance, did not show significant associations with prosocial tendencies. These results indicate nuanced relationships between different facets of interpersonal mindfulness, general mindfulness, and prosocial tendencies.

4. Discussion

This study examined the psychometric properties of the Interpersonal Mindfulness Scale (IMS) in an Iranian sample. This is the first investigation of the scale's statistical properties in this context; the findings provide valuable insights into its cross-cultural applicability. Face and content validity analyses confirmed that all scale items were appropriate for the Iranian population, and no modifications were required. We checked the construct validity using confirmatory factor analysis

(CFA) and maximum likelihood estimation (MLE). All factor loadings were good, and no items needed to be removed. The model's fit indices indicated a satisfactory fit to the IMS data. The average variance extracted (AVE) values were also higher than 0.50, which shows that the four IMS factors are valid.

We found satisfactory levels of reliability and internal consistency by calculating the composite reliability and Cronbach's alpha coefficients. The convergence observed between the IMS and instruments such as the FFMQ, MAAS, and PBSQ warrants further consideration. These findings confirmed the IMS as a reliable and valid measure for assessing interpersonal mindfulness in an Iranian context. The IMS focuses on mindfulness in social situations. Still, its relationship with the FFMQ shows how it is linked to more general aspects of mindfulness, such as observing, describing, and acting without judgment or reaction. The positive association with the MAAS underscores the IMS's sensitivity to general attentional capacity and present-moment awareness. The relationship with the PBSQ suggests that interpersonal mindfulness may be closely tied to prosocial tendencies, such as empathy and altruism. Therefore, these scales provide different but complementary views on the complex nature of mindfulness, with the IMS focusing on how it manifests in relationships.

These findings align with Pratscher et al.'s 2019 research, which examined four groups: teachers of mindfulness techniques, users of these techniques, experienced advisors, and ordinary individuals [17]. The highest mean IMS score was observed among mindfulness instructors, while the lowest belonged to individuals with no prior exposure to these techniques. This significant association between familiarity with mindfulness practices and IMS scores suggests that greater engagement with mindfulness enhances interpersonal mindfulness.

Overall, the results indicate that the IMS possesses strong psychometric properties in an Iranian sample, providing confidence in its utility. Higher IMS component scores correlate with increased mindfulness and reduced psychological distress. Mindfulness facilitates a more detached approach to emotional states, such as anxiety, which in turn reduces automatic behavioral responses and promotes more effective social interactions [39, 40].

These findings underscore the role of mindfulness techniques in promoting interpersonal awareness and emotional regulation. Given the widespread recognition of mindfulness practices, greater familiarity with these techniques may lead to more effective social interactions and enhanced psychological well-being.

The findings of this study are consistent with those of Pratscher et al. (2019), confirming that the IMS is a valid instrument for assessing mindfulness in interpersonal relationships [17]. The study also demonstrates that the scale is highly reliable and valid, indicating that it can be used with confidence on Iranian samples. In other words, this study provides preliminary evidence of the IMS's psychometric soundness within the Iranian context.

However, a significant limitation is that the study sample consisted only of educated individuals, which may not accurately reflect the broader educational diversity of Iranian adolescents. This focus narrows the population to which results can be generalized. Future research should validate the scale in more diverse populations. Future research should prioritize recruiting larger and more varied samples of Iranian adolescents to enhance the representativeness and generalizability of the findings. This includes participants from various geographic regions, socioeconomic backgrounds, educational levels, and cultural groups, especially those underrepresented in the current study, such as rural youth and adolescents with limited access to psychological services. Employing probability-based sampling methods will strengthen the external validity of the IMS. These efforts

will ensure a comprehensive evaluation of the scale's psychometric properties and its practical applicability across the entire target population.

Moreover, the sample was not demographically balanced. The majority of participants were female, urban high school students with relatively well-educated parents, and a notable proportion had prior experience with psychological counseling. These characteristics may not fully represent the broader Iranian adolescent population, especially those from rural areas, lower socioeconomic backgrounds, or with limited access to mental health services. The generalizability of the findings to all Iranian adolescents should be approached with caution. In addition, the study's reliance on convenience sampling introduces a notable methodological limitation. While practical, this non-random sampling method raises the risk of selection bias, as participants may differ systematically from those not included in the sample. Such bias could stem from unequal access to online platforms, greater interest in mindfulness among certain adolescents, or unmeasured confounding variables. Generalizing the findings to the broader population of Iranian adolescents should be done cautiously. Future research should prioritize probability-based sampling strategies to enhance the representativeness and external validity of the results. The present study primarily utilized Cronbach's alpha to assess the internal consistency reliability of the IMS, without incorporating a test-retest procedure to evaluate its temporal stability. While Cronbach's alpha provides valuable information about the scale's internal coherence at a single time point, it does not capture the consistency of the measure over time, which is critical for establishing reliability in longitudinal contexts. To address this significant limitation, future research should employ longitudinal designs that include test-retest reliability assessments across multiple intervals (e.g., two weeks, one month, and three months). Such an approach would allow for a more comprehensive evaluation of the scale's stability, ensuring that the IMS reliably measures interpersonal mindfulness across different time points. Longitudinal data would enable researchers to investigate the predictive validity of the IMS by examining how scores relate to meaningful long-term outcomes, including interpersonal conflict resolution, relationship satisfaction, and mental health indicators. These insights are essential for understanding the practical utility of the IMS and its sensitivity to changes in interpersonal functioning over time. Incorporating these methodological enhancements will not only strengthen the psychometric robustness of the IMS but also enhance its applicability in diverse adolescent populations, thereby supporting its use as a reliable and valid instrument in both research and applied settings.

It is essential to recognize the profound impact of cultural factors on both the experience and measurement of interpersonal mindfulness. Within the Iranian context, collectivist values and a strong emphasis on preserving social harmony significantly shape individuals' interpersonal behaviors and their responses to psychological assessments such as the IMS. A prominent example is the culturally embedded practice of 'Taarof,' which involves a complex form of polite deference and indirect communication. Through 'Taarof,' individuals may express humility, modesty, or socially expected politeness, which often does not fully reflect their genuine feelings or intentions. For instance, in everyday interactions, a person practicing 'Taarof' might decline an offer multiple times before accepting it or offer compliments and praise more as a social courtesy than as a sincere evaluation. Such behaviors can influence how participants interpret and respond to IMS items related to non-judgmental acceptance and non-reactivity. Due to 'Taarof,' respondents may underreport interpersonal conflicts or negative judgments to maintain harmony and avoid

confrontation, resulting in an inflated or socially desirable portrayal of mindfulness in interpersonal contexts.

These culturally specific communication norms emphasize the value of supplementing quantitative assessments with qualitative methods, such as interviews and focus groups, to explore how interpersonal mindfulness is experienced and expressed within Iranian culture. Such approaches are crucial for assessing the cultural validity of the IMS and ensuring that its application accurately reflects the social realities of the population being studied. Taking these cultural nuances into account is indispensable for valid measurement, accurate interpretation, and meaningful application of the IMS across diverse cultural settings.

The IMS can serve not only as an assessment tool but also as a foundation for designing and evaluating interventions aimed at enhancing interpersonal mindfulness among adolescents. For example, educators and mental health professionals can use IMS results to identify areas such as emotional reactivity or lack of present-moment awareness in social contexts and tailor mindfulness-based training programs accordingly. Repeated administration of the IMS before and after such interventions can help track individual progress and assess the effectiveness of the program. As a culturally validated tool, the Persian IMS enables the development of context-specific strategies to cultivate interpersonal mindfulness, ultimately promoting healthier peer relationships and social-emotional resilience in Iranian adolescents.

The validated Persian version of the IMS offers a practical and culturally sensitive tool for assessing interpersonal mindfulness among Iranian adolescents. By measuring key components such as emotional reactivity, non-judgmental acceptance, and present-moment awareness within social interactions, the IMS enables educators, counselors, and mental health professionals to identify specific interpersonal strengths and challenges in this population. This diagnostic capability facilitates the design of targeted mindfulness-based interventions tailored to adolescents' unique social contexts and cultural norms, including considerations of practices like 'Taarof' that influence communication and social harmony.

Moreover, the IMS can be used longitudinally to monitor individual progress throughout such interventions, providing feedback on their effectiveness in cultivating greater interpersonal mindfulness. Regular assessment with the IMS enables the adjustment of intervention strategies to support adolescents' social-emotional development and resilience better. Ultimately, the scale's culturally validated framework supports not only the measurement but also the cultivation of interpersonal mindfulness, which can contribute to healthier peer relationships, improved emotional regulation, and enhanced psychological well-being among Iranian youth.

The findings of this study have important implications for both research and practice. In educational settings, the Persian version of the IMS can be used to assess and promote interpersonal mindfulness among students, contributing to more empathetic and collaborative learning environments. In clinical contexts, it enables counselors to evaluate interpersonal awareness and design interventions that improve emotional and relational functioning. For researchers, the IMS offers a culturally adapted and standardized measure to investigate interpersonal mindfulness in relation to conflict resolution, relationship quality, and mental health. Its use supports evidence-based practices and enhances understanding of interpersonal functioning in Iranian adolescents. These implications highlight the scale's relevance for future research, intervention development, and policy planning.

Overall, the results demonstrated that the IMS possesses strong psychometric properties in Iranian adolescents, indicating that it is suitable for assessing interpersonal mindfulness in this population.

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Study Design: NH, RN. Data Collection and Analysis: NH, RN, DF, PFG, SMY. Manuscript Preparation: NH, RN.

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