

Development and Validation of the Academic Mindfulness Questionnaire in Iranian Students (AMQ-5): The Formation of a Concept

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Abstract

Introduction: Although different tools have been designed to measure mindfulness, none has comprehensively examined academic mindfulness. Therefore, the present study aimed to build a reliable and valid tool for academic mindfulness measurement in students.

Method: The research was a descriptive-correlational study and a validation of the test. Participants included 420 students of Bu-Ali Sina University in the academic year of 2022-2023, selected by multistage cluster random sampling method and completed the Academic Mindfulness Questionnaire (AMQ-5), Fear of Self-compassion Scale, and Academic Engagement Questionnaire. Data were analyzed using exploratory and confirmatory factor analysis.

Results: Examination of the data by exploratory factor analysis showed that all 20 items had acceptable factor loads and revealed five factors (self-compassion, accepting without judgment, presence in the moment, performing tasks with awareness, and listening with full attention). Moreover, according to the confirmatory factor analysis, the questionnaire had an acceptable fit (RMSEA=0.047, AGFI=0.91, NFI=0.96, CFI=0.98). The findings showed that academic mindfulness was significantly correlated with fear of self-compassion and academic engagement. Moreover, Cronbach's alpha coefficient was 0.89.

Conclusion: According to the findings of the present study, it can be concluded that the academic mindfulness questionnaire has a good validity and reliability and can effectively measure academic mindfulness in the five factors mentioned.

Keywords: Academic Mindfulness, Reliability, Validity

Introduction

Over the past few decades, mindfulness has been a relatively unfamiliar concept in much of cultures perhaps because of its origins in Buddhism [1]. However, in recent years mindfulness has received a great deal of attention in the scientific community [2-6]. In general, mindfulness is a way of paying attention that originated in Eastern meditation practices. It has been described as bringing one's complete attention to the present experience on a moment-to-moment basis and as paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally [1]. Moreover, drawing on a number of interrelated concepts from both Western and Eastern psychological literature, Martin [7] defines mindfulness as a state of psychological freedom that occurs when attention remains quiet and limber, without attachment to any particular point of view. Ordinarily, the psychological freedom with which this attention is associated is not simply a freedom from the views of others (e.g., family, peers, or culture). Rather, it is an emancipation from one's own habitual view of self and the world [7].

In recent years, mindfulness has been considered in eating, parenting, and in sport [8-11]. Yet, to date, mindfulness has not been extensively researched or implemented into university, and school [12]. Accordingly, this study aimed to investigate a dimension of mindfulness that is considered as an individual difference variable and, to the best of our knowledge and according to the literature review that was conducted, has not been studied yet, but it can provide us with greater insight into the background of academic behaviors and into the processes that are involved in such behaviors.

The importance of mindfulness and its role in education and learning are highlighted in all available evidence and research. The results of the related studies suggest that the promotion of mindfulness in students increases their efficiency and effectiveness in academic settings. Accordingly, some studies have found a significant positive relationship between mindfulness and academic performance [2-4]. When explaining this relationship, authors argue that mindfulness reduces stress and anxiety or increases attention and memory, which lead to increased academic performance [5]. In addition, mindfulness motivates people to find more adaptive strategies to better cope with rumination and academic problems. This would allow people to participate appropriately in academic activities and thus realize their academic potential [2-4]. Accordingly, academic mindfulness is one of the factors affecting a student's academic process.

Taking into account the theoretical foundations and the definitions that have been offered for mindfulness [8, 9, 13-15], and also its application in the academic world, academic mindfulness can be defined as paying attention to the current experiences in academic affairs and interacting with them without making judgments or becoming preoccupied with the past or the future. Previous studies have shown that academic mindfulness can be classified into five components:

Presence in the moment: Presence in the moment is one of the most important features of mindfulness that is common to all the definitions offered for mindfulness [13, 15, 16]. Presence in the moment causes awareness of the present moment experience vividly and in a balanced way so that the person neither ignores the unpleasant aspects of his/her life nor ruminates about them [13]. Accordingly, mindfulness is the mind's ability to know what is happening here and now. Mindfulness gives one the space or freedom to "see" what is going on without rushing in to stop, change, or "fix" the experience. Paying attention in this way permits one to "gather the data" of experience and to use this full, mindful awareness as a basis for making decisions about future behavior [17]. Moreover, presence in the moment is the opposite of mindlessness, and it has been emphasized that mindlessness must be avoided [18, 19].

Listening with full attention: Clear attention and receptive awareness of the experiences of the present moment are central aspects of mindfulness [13, 14].

Moreover, Bishop [6] pointed out that the concepts involved in mindfulness all involve different aspects of attention [20]. This component has also been emphasized in mindful parenting, where listening is combined with focused and quality attention, which can lead to direct and effective interactions among individuals [10]. In general, when we listen mindfully, we bring our full awareness to the speaker. In listening with full attention, the listener brings full attention to the speaker, in order to understand her communication and receive it non-reactively, with empathy and compassion [21]. Moreover, mindful attention is thought to help one deeply experience and learn from the present without the distractions of self-evaluations or worries about the past or future [22, 23]. Consequently, this dimension of academic mindfulness combines listening with a quality of focused attention and awareness that goes beyond simply hearing words that are said [10].

Performing tasks with awareness: Performing tasks with awareness is among the features and skills that are emphasized in mindfulness. In other words, engaging fully in one's current activity with undivided attention, or focusing with awareness on one thing at a time, is a central component of many descriptions of mindfulness. Acting with awareness is contrasted with the concept of "automatic pilot" in which behaviors occur without awareness because attention is focused elsewhere. Accordingly, acting with awareness includes attending to one's activities of the moment [24, 25].

Self-compassion: Self-compassion is also one of the important concepts in mindfulness which has been emphasized by researchers. In general, mindfulness includes not only cognitive attention to but also an affectionate, friendly interest in one's present experiences [15]. Research on self-compassion is part of a larger movement by Western psychologists to investigate the validity of Buddhist ideas concerning the causes and amelioration of suffering and to examine the usefulness of techniques such as mindfulness for adaptive functioning [26]. The definition of self-compassion, moreover, is not distinguished from the more general definition of "compassion". Compassion involves being open to and moved by the suffering of others, so that one desires to ease their suffering [22, 27]. Consequently, self-compassion, therefore, involves being touched by and open to one's own suffering, not avoiding or disconnecting from it, generating the desire to alleviate one's suffering and to heal oneself with kindness [27].

Accepting without judgment: Accepting without judgment is another feature expressed in the definitions of mindfulness. To accept without judgment is accepting, allowing, or being non-judgmental or non-evaluative about present moment experiences [24]. Mindfulness has the feature of not judging what is happening in the present moment [15]. However, non-judgement does not mean non-preference. For example, non-judgement is important in Buddhist psychology where we learn to experience the moment 'as it is' [28]. Moreover, to accept without judgment is to refrain from applying evaluative labels such as good/bad, right/wrong, or

worthwhile/worthless [24]. In general, acceptance entails embracing everything that is happening in our lives with the qualities of kindness, openness, and trust without relying on habitual patterns of reaction to and avoidance of difficult experiences [18].

In general, mindfulness has spread worldwide in the past years [29-31] and its literatures have grown exponentially [29]. With increased interest in mindfulness-based and mindfulness integrated interventions for medical, psychiatric, and healthy stressed populations [1, 32, 33] the importance of assessing the phenomenon itself has been recognized. Moreover, there are several reasons for such assessments, including the basic scientific principle that a phenomenon can be studied only if it can be properly defined and measured [33]. Consequently, many instruments have been developed to measure mindfulness in recent years, of which those developed by Brown and Ryan [13], Walach et al. [11], and Baer et al. [14, 24] are among the most important ones.

Despite this development of scientific-theoretical perspectives and the correlational and effectiveness studies that have been conducted on mindfulness, very few studies have investigated the theoretical foundations of academic mindfulness. This concept has also received little attention in the development of assessment tools. Preparing the suitable ground for determining the level of academic mindfulness, and applying mindfulness programs for improving this variable in people, requires assessment of the state of academic mindfulness by using appropriate assessment tools. Accordingly, to expand the results of previous research and reach a comprehensive study regarding the questionnaire of interest, the present research intends to develop a suitable instrument for assessing academic mindfulness, and to determine whether the designed questionnaire has acceptable reliability and validity.

Method

This research was a descriptive-correlational study, exploratory and a validation of the test. The statistical population of the study consisted of Bu-Ali Sina University students in the academic year of 2022-2023. In this study, the multistage cluster random sampling method was used for data collection. In the present study, the sample size was as large as 400 individuals according to the research objectives and considering the methods used for data analysis. To select the sample, six faculties from all faculties of Bu-Ali Sina University were first randomly selected. Then, the desired sample was determined by randomly selecting the necessary classrooms from each faculty. Then, the questionnaires were handed out to the participants in person and they were asked to complete the questionnaires. Out of 450 selected students participating in completing the questionnaires, those who filled out the questionnaires correctly and accurately were included in the study, and the

rest were excluded from the research, resulting in 420 participants in the study. Moreover, the inclusion criteria included being a student at Bu-Ali Sina University and tendency to participate in the study. The exclusion criteria included incomplete completion of questionnaires. The participants were informed about all ethical considerations, such as the aims of the study, their right to withdraw at any time during the study, and the confidentiality of their data.

In this research, data were analyzed using exploratory and confirmatory factor analysis, in SPSS and LISREL software. The tools used in this study were as follows:

Academic Mindfulness Questionnaire: The academic mindfulness questionnaire was designed in three steps. The sources related to mindfulness were collected in the first step. To do so, the opinions and viewpoints of scholars such as Kabat-Zinn [9, 15], Brown and Ryan [13], Baer et al. [14, 24], Neff [22], Walach et al. [11], and Hoy et al. [8] were studied. In addition, interviews were held with the experts in mindfulness. Finally, the dimensions of academic mindfulness about which questions could be asked were determined. In the second step, the items were designed and were distributed among a number of experts in this area to assess their content validity. For this purpose, 11 of the experts in the related area were asked to answer each item in the questionnaire based on a 3-point Likert scale (1. Essential, 2. Useful but not essential, 3. Not necessary). Their answers were then calculated using the CVR formula [34]. Since the calculated validity for all the items was greater than 0.80, the content validity of the 20 item questionnaire was desirable.

Consequently, the 20-item academic mindfulness questionnaire was constructed and standardized based on a 5-point Likert scale (1=strongly agree to 5=strongly disagree). The questionnaire is composed of five factors: Self-compassion, accepting without judgment, presence in the moment, performing tasks with awareness, and listening with full attention. Scores obtained from this questionnaire range from 20 to 100.

Academic Engagement Questionnaire: This questionnaire (Reeve and Tseng, 2011; Reeve, 2013) contains 17 items that measures academic engagement on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree) [35, 36]. This questionnaire includes behavioral, agentic, cognitive, and emotional subscales. Scores obtained from this questionnaire range from 17 to 119. Evidence has shown that this questionnaire has sufficient validity and reliability. Accordingly, the reliability of the subscales of the questionnaire was reported to be between 0.84 and 0.90 using Cronbach's alpha coefficient [35, 36]. Moreover, Ramazani and Khamesan [37] reported Cronbach's alpha coefficient of 0.92 for the Persian version of the questionnaire. In the present study, Cronbach's alpha coefficient was used to assess reliability in four components and the total questionnaire, indicating values of 0.89, 0.90, 0.90, and 0.81, for behavioral component, agentic, cognitive, and

emotional, respectively, and 0.93 for all questionnaire items.

Fear of Self-Compassion Scale: This scale (Gilbert et al., 2011) contains 15 items that measures fear of self-compassion on a 5-point Likert scale from 0 (don't agree at all) to 4 (completely agree). Scores obtained from this scale range from 0 to 60. Evidence has shown that this scale has sufficient validity and reliability. Empirical evidence has shown that this scale has sufficient validity and reliability. Accordingly, Gilbert et al. [38] reported reliability of this scale using Cronbach's alpha of 0.92. Moreover, Malekpour and Bassaknejad [39] reported Cronbach's alpha coefficient of 0.88 for the Persian version of the scale. In this study, the scale had a Cronbach's alpha coefficient of 0.93.

Results

Demographic data indicated that out of 420 participants in this research, 227 (54%) participants were female and 193 (46%) were male.

Table 1 shows that the correlation coefficients between all the variables were significant. Accordingly, each of the factors had a significant correlation with the whole questionnaire, which their range was from 0.72 to 0.76. Moreover, the findings showed that academic mindfulness was significantly correlated with fear of self-compassion (-0.57) and academic engagement (0.62).

To examine the questionnaire, the exploratory factor analysis with the principal component analysis and the varimax rotation were used. Accordingly, the appropriateness of the data for exploratory factor analysis was assessed using the Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of Sphericity. The results of KMO=0.897; Approx. Chi-Square=2845.529; df=190; and P=0.001 indicated the appropriateness of the data for analysis.

Eigenvalues greater than one were used to extract the factors. This criterion resulted in the extraction of five factors that together accounted for about 60% of the total

variance of academic mindfulness. According to the content measured by each dimension, five factors discovered were named self-compassion, accepting without judgment, presence in the moment, performing tasks with awareness, and listening with full attention, respectively (Table 2).

According to Table 3, the results of exploratory analysis showed that the factor load of the questionnaire items was higher than 0.60. Based on the Table 3, four items (3, 13, 1, and 7) on the self-compassion factor, four items (6, 20, 12, and 17) on the accepting without judgment factor, four items (11, 16, 8, and 2) on the presence in the moment factor, four items (18, 9, 4, and 14) on the performing tasks with awareness factor, and four items (19, 5, 15, and 10) on the listening with full attention factor were loaded.

The findings showed that the result of chi-square on the degree of freedom is less than 2 and RMSEA is less than 0.05. Moreover, GFI, AGFI, IFI, NFI, and CFI indices are above 0.90, which indicates a good fit of the questionnaire (Table 4). Therefore, according to the confirmatory factor analysis, the questionnaire had an acceptable fit.

The standardized coefficients and T-values for the paths indicated that all the paths had significant coefficients (Figure 1).

Cronbach's alpha coefficient was used to assess reliability in five components and the total questionnaire, indicating values of 0.81, 0.77, 0.74, 0.74, and 0.76 for self-compassion, accepting without judgment, presence in the moment, performing tasks with awareness, and listening with full attention, respectively, and 0.89 for all questionnaire items. Additionally, to obtain test-retest reliability, the academic mindfulness questionnaire was administered to 105 students of Bu-Ali Sina University twice with a 2-week interval. The results showed that the test-retest reliability coefficient of this questionnaire was 0.86.

Table 1. Mean, Standard Deviation and Correlation Matrix between Research Variables

Research variables	Mean	SD	1	2	3	4	5	6	7
Academic mindfulness	68.64	13.75							
Self-compassion	14.11	3.87	0.72						
Accepting without judgment	13.33	3.74	0.74	0.46					
Presence in the moment	13.23	3.75	0.74	0.38	0.43				
Performing tasks with awareness	13.66	3.55	0.74	0.39	0.41	0.46			
Listening with full attention	14.29	3.53	0.76	0.41	0.46	0.48	0.51		
Academic engagement	85.53	19.03	0.62	0.39	0.37	0.44	0.53	0.59	
Fear of self-compassion	23.62	13.11	-0.57	-0.41	-0.42	-0.40	-0.43	-0.45	-0.58

(All results were significant at the $P < 0.01$)

Table 2. Total Variance Explained

Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.55	32.76	32.76	2.69	13.47	13.47
2	1.69	8.45	42.21	2.43	12.18	25.65
3	1.34	6.71	47.92	2.34	11.73	37.39
4	1.25	6.27	54.20	2.28	11.42	48.82
5	1.13	5.65	59.85	2.20	11.03	59.85

Table 3. Rotated Component Matrix

Questions	Item	1	2	3	4	5
3	I have an unkind and ruthless attitude towards my academic defects and shortcomings.	0.77				
13	I am unkind to, and ruthlessly criticize, myself when I fail to attain my academic goals.	0.76				
1	If I am in a stressful academic situation, I become unkind to and ruthless with myself instead of taking care of myself.	0.74				
7	I become unkind to myself and love myself less when my academic plans do not go as expected.	0.70				
6	Most of the time, I compare myself to my classmates.		0.74			
20	I constantly judge myself for my thoughts about the academic environment.		0.74			
12	I criticize and judge myself for my behaviors in the academic environment.		0.70			
17	Most of the time, I judge myself for the thoughts I have about the worthiness and worthlessness of my academic experiences.		0.65			
11	I hope time goes by fast and I come to the end of my studies.			0.73		
16	I spend the present moment worrying and having premonitions about my academic future.			0.71		
8	In the academic environment, I spend my time daydreaming.			0.66		
2	I am so busy thinking about my academic past that I cannot focus on the present moment.			0.61		
18	I perform my academic tasks hastily and in an agitated state without paying attention to them.				0.77	
9	I complete my academic tasks automatically without being aware of what activity I am carrying out.				0.68	
4	I think so much about completing my academic tasks that I forget how to do them.				0.67	
14	I am easily distracted, and hence lose my concentration, when I am doing my academic tasks.				0.62	
19	If I become distracted when the teacher/professor is teaching, I cannot get my focus back.					0.76
5	I do not pay attention to the tone of voice or facial expression of the teacher when he/she is teaching.					0.69
15	Most of the time I forget what the teacher/professor has taught.					0.64
10	I am constantly getting lost in my own thoughts and ruminating when the teacher/professor is teaching.					0.60

Table 4. Fit Indices

Indicators	Value
P-Value	0.001
X ²	309.71
df	160
X ² /df	1.93
GFI	0.93
AGFI	0.91
IFI	0.98
CFI	0.98
NFI	0.96
RMSEA	0.047
SRMR	0.043

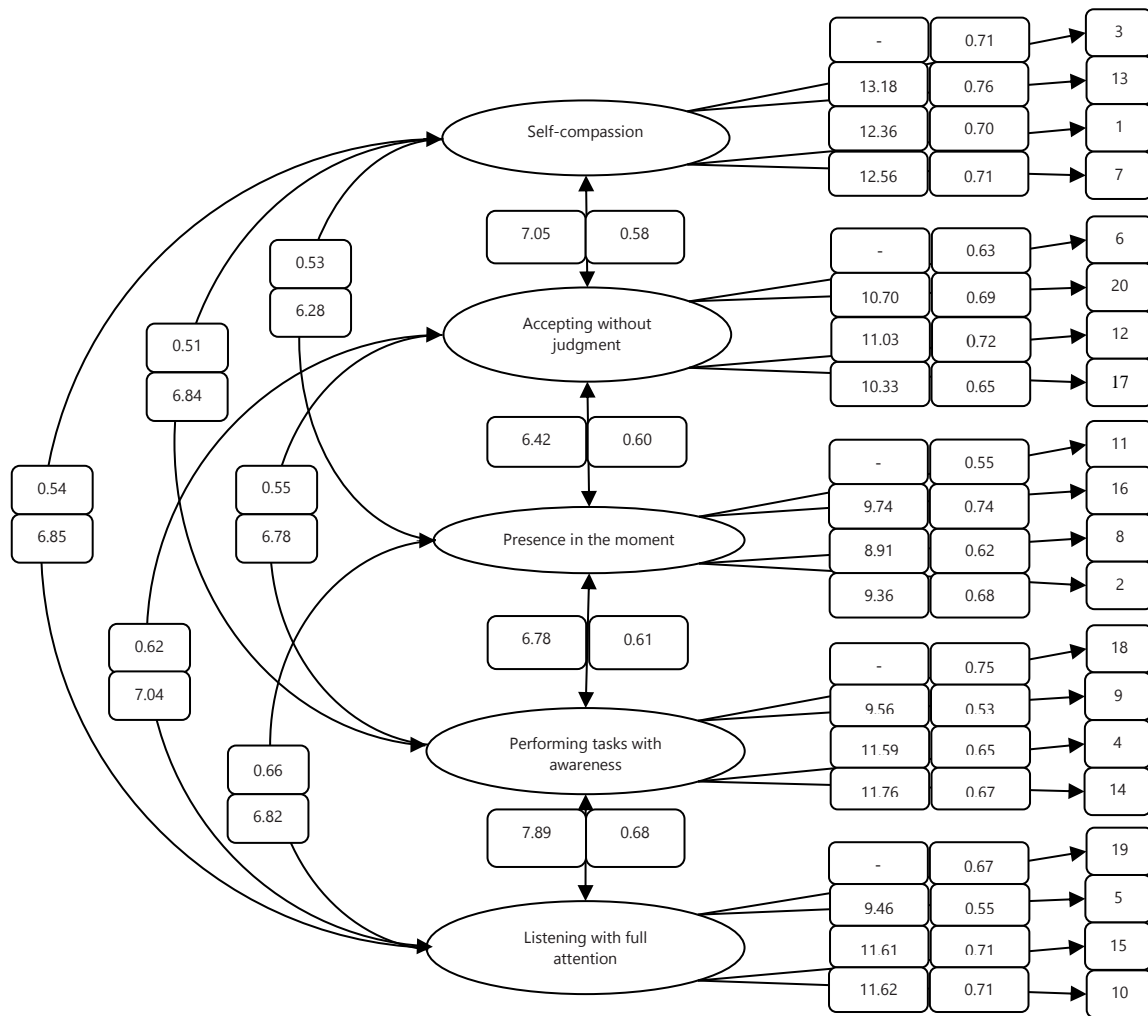


Figure 1. T-value and standardized coefficients.

Discussion

The present study aimed to build a reliable and valid tool for academic mindfulness measurement in students. For this purpose, the reliability and validity of this questionnaire were evaluated using various methods. Examination of the data by exploratory factor analysis showed that all 20 items had acceptable factor loads and revealed five factors. Moreover, according to the confirmatory factor analysis, the questionnaire had an acceptable fit. The findings showed that the correlation coefficients between all the variables were significant and each of the factors had a significant correlation with the whole questionnaire.

The results of the present study were consistent with those of other studies [11, 13, 14, 15, 22, 24]. Accordingly, Neff [22] showed a direct relationship between self-compassion and mindfulness, which needs to be considered when designing a questionnaire for mindfulness. Neff [22] believes that self-compassion requires that individuals do not avoid or repress their painful feelings, so that they are able to acknowledge and feel compassion for their experience in the first place. Thus, a compassionate attitude toward oneself requires the equilibrated mental perspective known as mindfulness. Moreover, in their studies, Woods and Proeve [31] and Gilbert et al. [40] concluded that mindfulness was significantly correlated with fear of self-

compassion and self-compassion. In general, mindfulness has been linked to compassion in that when someone is mindful, they are very attentive not only to other approaches or ideas but to other individuals [5]. In other words, mindfulness is not a cold detached process but one infused with compassion, affiliation, and kindness [40].

Baer et al. [14, 24] also developed a mindfulness questionnaire and studied the components of mindfulness. The results of their studies indicated that mindfulness had components such as observe, describe, accept (without judgment), and act with awareness, which should be taken into consideration when developing tools to assess mindfulness. Moreover, Kabat-Zinn [15] argued that compassion, presence in the moment, nonjudgmentally, and mindful attention were the main aspects of mindfulness; which had to be taken into consideration when designing a questionnaire for mindfulness.

Moreover, the findings showed that academic mindfulness components were positively correlated with students' academic engagement. In general, many studies have demonstrated the positive relationship between mindfulness and academic performance [3, 4]. Accordingly, Egan et al. [2] concluded that mindfulness affects academic performance. Based on previous studies [9, 15], mindfulness leads to a process that allows people

to consciously interact with the present moment, and this conscious attention in turn enables them to focus on the current activity and purpose. Consequently, mindfulness helps people to achieve a variety of promising improvements in their academic performance. It also enables learners to develop self-regulation skills [2-4]. In general, academic mindfulness inspires people to make conscious endeavors and believe strongly in their efforts and increase their participation based on their abilities in order to succeed.

In general, the academic mindfulness questionnaire has good validity and reliability and given the relatively short time required to fill it, it can be an appropriate tool for being used in academic settings. However, the academic mindfulness questionnaire is a new instrument and future studies are necessary to further examine the validity of this instrument and assess its generalizability aspect. Moreover, it seems that academic mindfulness, which has not received enough attention in past studies, plays an integral role in academic and learning, and needs to be studied more deeply in future research.

This study had some restrictions that may limit the generalization of results: one of these restrictions is that the data of the present study were collected through self-report of the subjects, so it faces limitations such as the effect of respondent tendency to provide socially appropriate answers. Moreover, one of the limitations of this study was the limited sample size which just included the students of Bu-Ali Sina University.

Conclusion

In the present study, a 20-item questionnaire was developed to measure academic mindfulness. One of the positive features of this instrument, which was developed based on the theoretical foundations of mindfulness, is its novelty. This research prepares the necessary background for measuring academic mindfulness; accordingly, we can expect that it will be able to provide researchers with useful scientific information on academic settings, person, and learning and prepare the ground for correct planning in order to decrease the problems in academic settings and learning.

Conflicts of Interest

The authors declare no conflicts of interest.

Ethical Approval

All ethical considerations were applied in this study.

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