



The Mediating Role of Mindfulness in the Relationship Between Metacognitive Beliefs and Wisdom in Students

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Keywords:

Wisdom, Metacognitive Beliefs,

Mindfulness

Purpose: This study aimed to investigate the mediating role of mindfulness in the relationship between metacognitive beliefs and wisdom among students.

Methodology: The research methodology was applied in terms of its purpose and descriptive-correlational in terms of data collection method. The population of this study consisted of all students of the Free Universities of Tehran Province in the academic year 2021-2022, among whom 380 individuals were selected through multi-stage cluster sampling. In this research, Ardel's Wisdom Questionnaire (2003), Wells' Metacognitive Beliefs (2000), and Ryan and Brown's Mindfulness (2003) were used, all of which had acceptable reliability and validity. Structural equation modeling with SPSS-V23 and Lisrel-V8.8 software was used for data analysis and to address the research hypotheses.

Findings: The findings showed that mindfulness directly affects wisdom ($t = 11.57, \beta = 0.28$); metacognitive beliefs directly affect mindfulness ($t = 11.82, \beta = 0.38$); metacognitive beliefs directly affect wisdom ($t = 11.81, \beta = 0.37$); and the total effect of metacognitive beliefs on wisdom through the mediation of mindfulness was significant ($\beta = 0.49$).

Conclusion: Ultimately, it can be said that the research model also had a suitable fit. In general, it can be stated that with the increase in metacognitive beliefs and mindfulness variables, an increase in wisdom among students can be expected.

Introduction

Wisdom plays a vital role in many sectors and is particularly effective in the field of psychology, in improving university performance, and in guiding them towards excellence (Uge, Neolaka, & Yasin, 2019). Moreover, wisdom has significant impacts on success at individual, organizational, and societal levels and plays a role in enhancing the work outcomes of students and faculty members (Weststrate & Glück, 2017). Wisdom can also serve as an effective tool for coping with uncertain situations (Cheung & Chow, 2020). A deeper understanding of wisdom and its related concepts can provide a valuable context for improving theory and practice among students and be effective in achieving the numerous benefits of higher education that support performance and success (Rampal, Smith, & Soter, 2022). Enhancing the effectiveness and efficiency of universities through wisdom can lead to a competitive advantage, enabling universities to adopt a more global perspective on educating international students by strengthening their academic position (Attarania, Sholekar, & Shouqi, 2016). Research has shown that individuals who possess cognitive abilities, deep thinking, and emotions not only enjoy better physical health but also attain higher education, establish more successful social relationships, score higher in accepting experiences, and have stronger mental health (Gross, 2017). Moreover, Cheung and Chow (2020) found that wisdom has a greater impact on students' cognitive abilities than on physical health, social and economic status, physical environment, and social relationships. Superior mental functions and cognitive abilities are key details in the relationship with wisdom (Yang, 2020). These cognitive abilities, which include skills such as reasoning, problem-solving, planning, critical thinking, understanding complex ideas, and learning from experiences, fall under the general concept of mental capabilities, similar to the definition provided by Gottfredson (1997) for intelligence. Sternberg (2001) states that wisdom is related to practical intelligence, which refers to the use of intelligence for practical purposes and achieving personal goals; however, he emphasizes that analytical intelligence is also essential for the development of wisdom. Cognitive and judgmental abilities are recognized as main pillars in the development of wisdom (Liu, 2013). These relationships have been examined in developmental psychology, where several constructs such as practical intelligence, superior reasoning, dialectical thinking,

reflective judgment, and epistemic cognition illustrate how individuals critique ideas, acquire deep knowledge, and make precise judgments (Choi & Kaufman, 2022). Additionally, research by Barzegar Bafrooei, Gadam Pour, and Gholamrezaei (2021) has shown that cognitive abilities can increase wisdom among teachers. The findings of Nelson-Becker (2020) also indicate that individuals with more advanced cognitive abilities and higher levels of cognitive skills such as memory, selective attention, decision-making, planning, sustained attention, social cognition, and cognitive flexibility are better able to adapt to their educational and work environments, enjoy life, and feel joy. In recent decades, mindfulness has been considered as a mediating role in enhancing students' wisdom. Psychotherapies have always sought ways to manage and reduce human suffering (Lee, 2018). One of the ways that play a role in achieving freedom and liberation from these sufferings is mindfulness. Due to mechanisms such as acceptance, increased awareness, desensitization, presence in the moment, and non-judgmental observation, mindfulness can enhance the effectiveness of treatment by reducing symptoms and consequences post-illness and help prevent individuals from relapsing into suicide (Quinn-Nilas, 2020). Kabat-Zinn's approach for treating individuals includes body scanning or body awareness techniques. This approach focuses on intentional changes in the body and each part of the body in a non-judgmental manner. Through mindfulness-based practices, individuals learn to give alternative responses to emotional discomforts and reduce conditioned responses (Carpenter, 2019). In mindfulness, individuals learn to accept experiences as separate from themselves and as a transient state subject to change. Mindfulness exercises aim to increase distinct awareness acceptance by specifically focusing on physical and emotional discomforts, teaching individuals to observe emotional, physical, and cognitive states without involuntary reactions (Chen, Allen, & Hou, 2020). Research shows that mindfulness is associated with reductions in pain, anxiety, depression, and stress. Additionally, mindfulness can improve mood, reduce depression, and enhance mental health. Furthermore, mindfulness can be effective in improving sleep quality, concentration, and cognitive exercises. In fact, mindfulness helps individuals make better decisions and react better in various situations by being aware of their experiences and reactions (Maher & Cordova, 2019).

Therefore, among the potential outcomes of this research are the following: Given the practical and important role of students in building the future of their country and the fact that their level of cognitive abilities and mindfulness has a significant impact on their wisdom and academic success, the necessity of investigating the factors affecting the wisdom of this segment of society becomes more apparent. The university has various roles, and much is expected from students in advancing the scientific and cultural arena of the country. Students should move forward with motivation, dynamism, and transformation towards high goals with hope and joy, avoiding depression and stagnation that ultimately lead to downfall. In this context, the university, as an institution responsible for educating healthy and skilled forces, can identify factors affecting students' wisdom and utilize the results in improving educational, cultural, social, health programs, and also in enhancing counseling services in universities. On the other hand, it is worth mentioning that improving students' wisdom can not only increase their academic motivation and lead to success but can also provide positive outcomes for individuals' personal lives after graduation. In conclusion, given the importance of examining the status of cognitive abilities and mindfulness of students, who are the young, active, and influential layer of society with a special place in community health programs, and considering that low variables mentioned in the research have a negative impact on educational programs and academic performance, the importance and necessity of conducting this research are highlighted. Therefore, given the importance of students in building the future of the country and the impact of their cognitive abilities and mindfulness on wisdom and academic success, it is necessary to further investigate the factors affecting the wisdom of this group of society. The university has various roles, and high expectations exist from students in enhancing the scientific and cultural level of the country. Therefore, identifying factors affecting students' wisdom can help improve educational, cultural, social, and health programs of universities. Additionally, enhancing counseling services is of special importance. Increasing students' wisdom can not only boost their academic motivation and bring about academic success but can also have positive outcomes in their personal lives after graduation. Consequently, examining the impact of mindfulness as a mediating role in the relationship between cognitive abilities and students' wisdom is a

topic that demonstrates the importance and necessity of its investigation.

Methods and Materials

The present study employed a descriptive-correlational method through structural equation modeling for data collection. The population consisted of all undergraduate students at the Free Universities in Tehran Province for the academic year 2021-2022. The sampling method was multi-stage cluster sampling. Given the various districts of the province, five urban units were selected through cluster sampling: Shahriar, Robot Karim, Qods City, Tehran, and Islamshahr. Following this method, the sampling process involved first visiting faculty units, then selecting a number of them based on disciplines and classes for testing. The questionnaires were administered to students over a period of 60 days. Klein (2005) has proposed a specific solution for determining sample size in studies using structural equation modeling. According to him, the minimum ratio of sample size for each estimated parameter is 5:1; a 10:1 ratio is more suitable, and a 20:1 ratio is considered ideal. In the assumed model of the current study, according to Klein's view, 18 parameters are measured. Therefore, to achieve acceptable results (using the 20:1 rule), a sample of 350 participants is sufficient. However, considering the possibility of many questionnaires being incompletely answered, it was decided to involve at least 400 participants in this research, and eventually, 380 questionnaires were fully completed. After the students completed the questionnaires, all of them were reviewed and analyzed.

a) **Ardelt's Wisdom Questionnaire (2003) (3D-WS):** This questionnaire was designed by Ardelt in 2003. It consists of 39 items and three subscales: cognitive (14 questions), reflective (12 questions), and affective (13 questions), used for measuring wisdom. The scoring of the questionnaire is based on a 5-point Likert scale for options "strongly disagree," "disagree," "neutral," "agree," and "strongly agree," with scores of 5, 4, 3, 2, and 1, respectively. Some items are scored on a 5-point Likert scale for options "very true of me," "somewhat true of me," "neutral," "somewhat untrue of me," and "not at all true of me," with scores of 1, 2, 3, 4, and 5, respectively. Ardelt calculated the internal consistency for each of the three dimensions as 0.85 for the overall scale, 0.78 for the cognitive dimension, 0.75 for the reflective dimension, and 0.74 for the affective dimension. She also reported the psychometric

properties, including test-retest reliability (0.56) and inter-rater reliability as positive and significant, and convergent validity through correlation with the Psychological Well-being Scale as appropriate, and exploratory factor analysis confirmed the three theoretical factors measured (Ardelt, 2003). In Iran, Kachouie and Hooshiari (2020) used internal consistency for validity assessment and found correlations between the dimensions of wisdom, namely cognitive, reflective, and affective, with the total score as 0.77, 0.70, 0.74, and 0.71, respectively. Cronbach's alpha method was used to assess reliability, yielding coefficients of 0.70 for cognitive, 0.70 for reflective, 0.68 for affective dimensions, and 0.76 for the overall wisdom score.

b) Wells' Metacognitive Beliefs Questionnaire (2000): This tool is designed to measure several trait metacognitive elements that play a central role in the metacognitive model of psychological disorders. The Metacognitive Questionnaire is a 30-item self-report scale measuring the following metacognitive domains across five separate scales: 1) Positive beliefs about worry (e.g., "When my worrying starts, I cannot stop it") (questions 1, 7, 30, 19, 23, 28), 2) Negative beliefs about worry (questions 2, 4, 9, 11, 15, 21), 3) Lack of cognitive confidence (e.g., "I have a poor memory") (questions 8, 14, 17, 24, 26, 29), 4) Need to control thoughts (e.g., "Not being able to control my thoughts is a sign of weakness") (questions 6, 13, 20, 22, 25, 27), 5) Cognitive self-consciousness (e.g., "I pay a lot of attention to how my mind works") (questions 3, 5, 10, 12, 16, 18) (Wells, 2000). Responses are given on a Likert scale from "Do not agree" (1) to "Strongly agree" (4). Cronbach's alpha coefficient for its subscales ranges from 0.72 to 0.93. Test-retest reliability over a period of 22 to 118 days was reported as follows: overall score 0.75, positive beliefs scale 0.79, uncontrollability/danger 0.59, cognitive confidence 0.69, need to control thoughts 0.74, and cognitive self-consciousness 0.87 (Wells & Cartwright-Hatton, 2004). In Iran, Shirinzadeh Dastgiri et al. (2008) reported the internal consistency coefficient using Cronbach's alpha for the entire scale as 0.91 and for its subscales ranging from 0.71 to 0.87, and test-retest reliability of this test over four weeks for the entire scale as 0.73 and for its subscales ranging from 0.28 to 0.68. The subscales' correlation with the total test ranged

from 0.58 to 0.87, and their intercorrelations ranged from 0.26 to 0.62.

c) Ryan and Brown's Mindfulness Questionnaire (2003) (MAAS): Mindfulness is defined as awareness that arises through paying attention, on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment. In other words, mindfulness is an involuntary contemplation on current and ongoing events, defined as a type of receptive and non-judgmental awareness of what is currently happening. Truly mindful individuals perceive internal and external realities freely and without distortion, possessing a great ability to deal with a wide range of thoughts, emotions, and experiences (both pleasant and unpleasant). The Mindfulness Scale is a 15-item test developed by Brown and Ryan (2003) to measure the level of consciousness and attention to current events and experiences in everyday life. The test questions measure the construct of mindfulness on a six-point Likert scale (from a score of one for almost always to a score of six for almost never). This scale provides an overall score for mindfulness ranging from 15 to 90, with a higher score indicating greater mindfulness. Internal consistency of the test items based on Cronbach's alpha coefficient has been reported from 0.80 to 0.87 (Brown & Ryan, 2003; Linda et al., 2005). The scale's validity, given its negative correlation with measures of depression and anxiety and positive correlation with measures of positive affect and self-esteem, has been reported as sufficient. The test-retest reliability of this scale over a one-month period has been reported as stable. Cronbach's alpha for the questions of the Persian version of this scale in a sample of 723 students was calculated as 0.81 (Ghorbani et al., 2010). In the research by Jalali et al. (2014), Cronbach's alpha coefficient for this scale was calculated as 0.85.

Data obtained from the administration of questionnaires were analyzed using SPSS-V23 and Lisrel-V7.80 software. Structural equation modeling was also used to test the research hypotheses.

Findings

In the table below, central and dispersion indices related to the variables of the study are presented. It is worth mentioning that the minimum and maximum values for each of the variables below are 1 and 3, respectively.

Table 1. Descriptive Characteristics of Research Variables

Construct	Dimension	Mean	Standard Deviation	Skewness	Kurtosis
Wisdom	Cognitive	3.66	0.83	-0.36	-0.11
	Reflective	3.14	0.81	0.18	-0.37
	Affective	3.22	0.79	-0.02	-0.15
Metacognitive Beliefs	Positive about Worry	3.39	0.80	-0.12	-0.09
	Negative about Worry	3.16	0.75	-0.12	-0.26
	Weak Cognitive Confidence	3.34	0.71	-0.06	0.41
	Need to Control Thoughts	3.15	0.69	-0.08	0.32
	Cognitive Self-Awareness	3.17	0.74	-0.16	0.42
Mindfulness		3.45	0.91	-0.08	-0.23

In the Table 1, statistical characteristics such as mean, standard deviation, skewness, and kurtosis are shown for the study variables. Additionally, considering the skewness and kurtosis values within the reasonable

range (-2 to 2), the normality of the data can be accepted. The table below includes correlation coefficients between the study variables.

Table 2. Correlation Coefficient Between Research Variables

Construct	Wisdom	Metacognitive Beliefs	Mindfulness
Wisdom	1.000		
Metacognitive Beliefs	0.763**	1.000	
Mindfulness	0.698**	0.684**	1.000

**Significant at the 0.01 level

As indicated by Table 2, there are significant correlations between the study variables at the 0.01

level, meaning there is a significant relationship between the variables of the study.

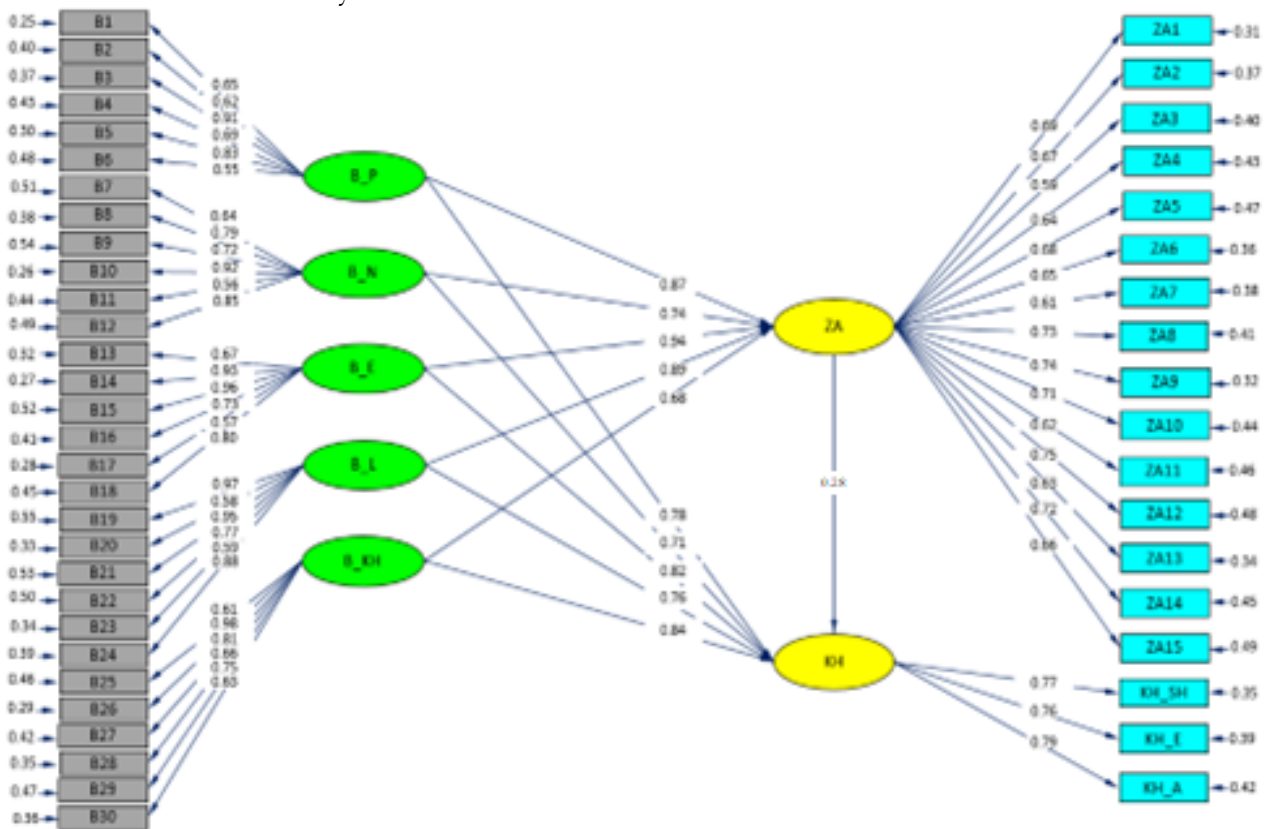


Figure 1. Model with Factor Loadings

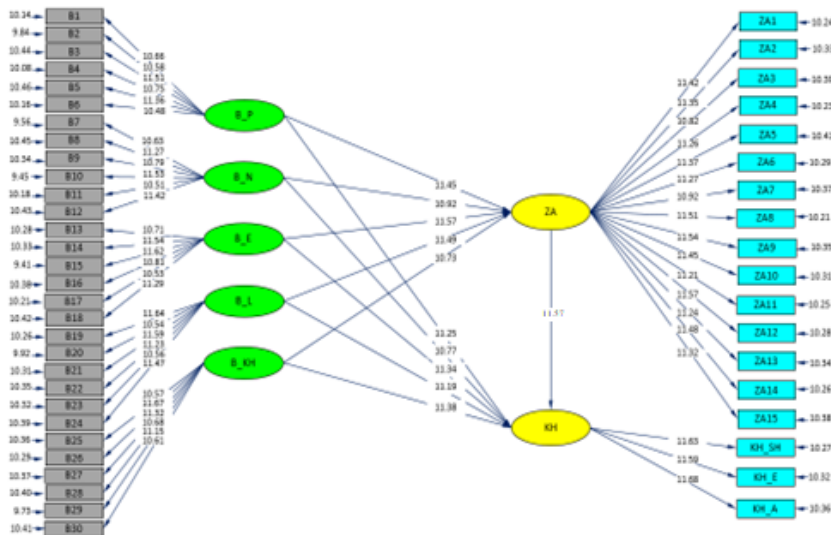


Figure 2. Model with T-Values

Subsequently, to examine the relationships between the study variables, confirmatory structural equation modeling is used. For this purpose, after drawing the

structure, adding model constraints, and selecting the maximum likelihood method, the model is executed, and the fit diagrams for Figures 1 and 2 are obtained.

Table 3. Summary of Important Model Fit Indices

Index	Abbreviation	Value	Acceptable Fit
Goodness of Fit Index	GFI	0.90	> 0.8
Adjusted Goodness of Fit Index	AGFI	0.88	> 0.8
Comparative Fit Index	CFI	0.99	> 0.9
Root Mean Square Error of Approximation	RMSEA	0.068	< 0.1

Based on the chi-square and RMSEA criteria, this model provides an appropriate fit to the data. As seen in Table 3, all indices have statistical sufficiency. Therefore, it

can be confidently concluded that the researcher has achieved a relatively complete fit regarding these indices.

Table 4. Path Coefficients and T-values

Path	Path Coefficient	T-value	Status
Metacognitive Beliefs → Mindfulness	0.38	11.82	Confirmed
Metacognitive Beliefs → Wisdom	0.37	11.81	Confirmed
Mindfulness → Wisdom	0.28	11.57	Confirmed

In Table 4, the path coefficients along with the t-values for the above hypothesis are presented. As evident, the paths under test are accepted.

Consequently, it can be concluded that metacognitive beliefs have an indirect effect on students' wisdom

(through mindfulness). To examine the direct and indirect effects of independent variables on the dependent variable, it is necessary to present the total, direct, and indirect effects for the endogenous variable of the model, which are observable in Table 5.

Table 5. Path Coefficients and T-values

Independent Variable	Dependent Variable	Direct Effect	Indirect Effect	Total
Mindfulness	Wisdom	0.28	---	---
Metacognitive Beliefs	Mindfulness	0.38	---	---
Metacognitive Beliefs	Wisdom	0.37	0.38*0.28=0.11	0.48

As seen in Table 5:

- The direct effect of using mindfulness on wisdom is 0.28.

- The direct effect of using metacognitive beliefs on mindfulness is 0.38.

- The indirect effect of cognitive beliefs through mindfulness on wisdom is 0.49.

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Conclusion

The current study aimed to investigate the mediating role of mindfulness in the relationship between metacognitive beliefs and wisdom among students. The results indicated that metacognitive beliefs have a direct impact on students' wisdom. Additionally, the results showed that metacognitive beliefs indirectly affect students' wisdom through mindfulness.

To comprehend the findings of the recent research, it is essential to delve into the concepts of metacognitive beliefs, mindfulness, and their interplay with wisdom. Metacognitive beliefs refer to individuals' beliefs about their own thinking processes and the control they have over these processes (Teasdale et al., 2002). These beliefs have been found to be associated with various psychological conditions such as anxiety, depression, and stress symptoms (Faedda et al., 2017). Additionally, metacognitive beliefs have been linked to emotional self-regulation and ego strength, which are crucial variables in organizing adaptive behavior and preventing negative emotions (Rafezi et al., 2022). Furthermore, metacognitive beliefs have been shown to contribute to anxiety and depression beyond other emotional distress variables (Fisher & Noble, 2017). Mindfulness, on the other hand, is the state of being attentive to and aware of what is taking place in the present moment without being reactive or overwhelmed by what is happening (Chadwick et al., 2009). It has been associated with reducing perceived stress and increasing self-esteem (Eva & Thayer, 2017). Moreover, mindfulness has been found to influence anxiety severity in adult patients, demonstrating its potential impact on emotional well-being (Obuća et al., 2022). The relationship between metacognitive beliefs and mindfulness has also been explored in the literature. Research has shown that metacognition is strongly correlated with symptoms of depression, anxiety, and obsessive-compulsive disorder (Solem et al., 2015). Additionally, the effects of mindful acceptance and reappraisal training on maladaptive beliefs about rumination have been highlighted, indicating the

potential of mindfulness in shifting metacognitive beliefs (Keng et al., 2016). The concept of wisdom, which is the focal point of the recent research, has been studied in various contexts. Wisdom has been suggested to play an important role in effective therapy, indicating its relevance in psychological well-being (Hanna & Ottens, 1995). Furthermore, wisdom has been associated with the ability to make sense of competing beliefs or action tendencies, serving as a metacognitive formulation that provides a platform for understanding complex situations (Răbu & McLeod, 2017).

In light of the recent research findings, it is evident that metacognitive beliefs directly impact students' wisdom, while also indirectly affecting wisdom through mindfulness. This suggests that individuals' beliefs about their thinking processes and their ability to regulate their thoughts play a significant role in the development of wisdom. Moreover, the mediating role of mindfulness indicates that being present and non-reactive to one's thoughts may contribute to the cultivation of wisdom among students. In conclusion, the recent research sheds light on the intricate relationship between metacognitive beliefs, mindfulness, and wisdom among students. It underscores the importance of understanding one's thinking processes and the potential impact of mindfulness on the development of wisdom. These findings have implications for educational and psychological interventions aimed at fostering wisdom and well-being among students.

Among the limitations of the current research include: the limitation of measuring variables that only self-report questionnaires were used. Given that the research was conducted in a limited community, caution should be exercised in generalizing the results to other communities. Since the only data collection tool in this research was a questionnaire, it is recommended to use other methods such as interviews and observations along with questionnaires in collecting research data to increase the validity of the obtained results. To ensure the results of this research, conducting broader studies in larger communities is suggested. The results showed that the variable of mindfulness plays a mediating role in the relationship with students' wisdom, meaning that with the increase in mindfulness, the level of wisdom in students increases. Based on the results of the research, it is recommended that cultural planners and educational institutions in the country pay attention and plan for improving the level of mindfulness and wisdom of students, and since mindfulness is among the variables

that have been effective in improving wisdom and is a skill that is capable of being taught, it is suggested that future research focuses on experimental designs related to the training of this skill. Given the effectiveness of wisdom and wisdom in people's lives and, on the other hand, the novelty of this concept in psychology, it is recommended to use media and mass communication tools such as television, radio, and virtual social networks for mass awareness and promotion of the concept of wisdom and presenting strategies to increase it.

Acknowledgments

The cooperation of all participants in the research is thanked and appreciated.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethics principles

In this study, ethical considerations such as obtaining full consent from all participants, maintaining confidentiality and secrecy of information, and allowing participants to withdraw from study.

Authors' Contributions

All authors contributed equally.

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