

Academic self-efficacy as a mediating variable between mental mindfulness and psychological and cognitive engagement of university students

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Abstract

University students play a significant role in shaping the future of nations and an effective university environment that can achieve psychological and cognitive engagement is very important. This research aims at identifying the mediating role of mental mindfulness between academic self-efficacy and engagement (psychological and cognitive) of university students. The self-efficacy scale, the mental mindfulness scale, and the university students' psychological and cognitive engagement scale were applied to a sample of (340) university students. Results demonstrated that academic self-efficacy mediates the relationship between mental mindfulness and psychological and cognitive engagement of university students. These results can be utilized in developing university students' mental mindfulness and providing those in charge of educational planning and policies with practical results that are beneficial in enhancing university students' self-efficacy, mental mindfulness, and engagement.

Keywords: Self-efficacy, mental mindfulness, engagement, mediating variable

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1. Introduction

The university stage is one of the most significant and critical stages of students' life and career. This stage is full of challenges and circumstances as students meet colleagues from different spectrums in terms of gender, religion, language, culture, ethnicity, and age. This requires a positive engagement that affects their educational process. Therefore, researchers have recently increased their interest in investigating the variable of students' engagement as a key to addressing many problems such as low achievement levels, boredom, alienation, and high levels of academic dropout (Fredricks et al., 2004).

One of the positive psychology concepts that affect students' university life is mental mindfulness. It increases the opportunity for openness to others, flexibility in dealing with new situations and information and avoiding intellectual formlessness (Masten & Reed, 2002). Mindfulness is a state that makes us sensitive to context and this sensitivity leads us to take control of our lives when we engage in mental learning, we avoid thoughts that unnecessarily restrict us (Langer, 2000). It reflects a state of change and it varies from one individual to another and can be developed through training and exercise (Park et al, 2013).

Mental mindfulness is not an easy concept to define, but it can be understood as a process in which new features of events are drawn. It does not matter whether what is observed is important or trivial, the important thing is that this drawing makes us more aware of what is happening in the present than we focus on what happened in the past, as when we focus on the past, we are governed by rules and procedures, and we don't focus on the present moment (Langer & Moldovenu, 2000).

Mindfulness is like many psychological terms about which there have been a lot of controversies and whose definitions have gone beyond the multiplicity of viewpoints of those who used them. Previous literature stated that it represents awareness efficiency with immediate internal or external experiences with the ability to observe and accurately describe what it carries of direct meaning without being bound by the previous judgment, accepting the reality as it is with conscious awareness and coexisting with the experience (Khashabah, 2018).

Others indicated that it is the individual's ability to notice internal and external experiences, pay attention to these experiences with total awareness of the experiences that already exist, and accept them without making any judgments or interacting with them (Al Badawi, 2018; Al Shahrani, 2018). Besides, Hammad (2018) views mental mindfulness as a state of active attention open to the present that enables individuals to monitor their thoughts and move without judging whether they are good or bad, right or wrong.

There are many explanatory models of mental mindfulness because the problem of the lack of conceptual clarity is one of the problems that face this concept (Pirson et al., 2012). It is a multidimensional concept that includes many learnable mental, emotional, and physical dimensions (Sesmiyanti, 2016). There have been many models that have tried to explain the dimensions of mental alertness.

Hasker (2010) stated that mental mindfulness consists of self-regulation of present-day attention with open-mindedness, and self-awareness of present-moment experiences, while Langer (2000) pointed out that this concept has four dimensions: mindfulness distinction, openness to the new, orientation towards the present and awareness of multiple points of view. Besides, other models stated that this concept is of five dimensions: observing, describing, acting with awareness nonjudging, and nonreactivity (Baer et al, 2006; Bohlmeijer et al. 2011, Hones et al, 2002).

Previous studies confirm that mental mindfulness is positively related to various psychological variables that enhance a person's ability and efficiency. This concept is correlated positively with self-efficacy (Mendi, 2018; McCann & Davis, 2018), self-regulation (Hammad, 2016), psychological happiness (Al Walidi,

2017), creativity (Gabora & Unrau, 2019), and learning styles (Younes, 2015). In other studies, mental mindfulness represents a mediating variable between young people's participation in social media and depression (Jones et al., 2022).

Academic self-efficacy is an urgent requirement and psychological need that pushed the individual to preserve and achieve. It is generated from his feeling that he has the ability and competence to perform the task and it differs from one person to another. It affects the student's interactions in different situations. Furthermore, it is one of the significant concepts in the educational field, as individuals' feeling of having high self-efficacy leads to positively exploiting their abilities, as it is affected by the individual's expectations regarding his abilities and capabilities and his previous experiences (Al Shalawi, 2018).

Pajares (2005) indicated that academic self-efficacy is a major focus of social learning theory, where individual beliefs are related to self-efficacy, motivation, and personal achievement. Bandura identified four primary sources of academic self-efficacy: experiences of academic achievement, persuasion, learning experiences by alternative modeling, and emotional arousal (Betz, 2004).

Due to the significance of the self-efficacy variable in the individual's psychological and academic aspects, various studies have investigated the effect of this variable on students' personalities. Al Yousef (2013) indicated the correlative relationship between perceived self-efficacy, social skills, and academic achievement (Bouras & Rouim, 2020). Besides, Kirst (2011) revealed a negative relationship between self-efficacy and some psychological variables such as neuroticism and fear of rejection, and a positive relationship between self-efficacy and openness to experience, extroversion, harmony, and self-confidence.

Academic self-efficacy can be developed with imagination (Yousef, 2020), feedback provided by the teacher to students (Siegle & McCoach, 2007), and encouraging students to use the best cognitive strategies to be self-organized and motivated to achieve the best results (Pintrich & D Groot, 1990).

The relationship between mental mindfulness and academic self-efficacy is an integrative one. They both affect the learning process through awareness of his internal experiences, external experiences, and performance while performing the tasks. Self-efficacy focuses on the cognitive aspects and the student's expectations and experiences of success and failure. Various studies demonstrated the positive relationship between these two variables and other positive psychology variables. In this regard, Abdullah (2012) demonstrated the positive correlation between learned self-efficacy, mental mindfulness, and cognitive functions. In addition, Abo Elela (2020) indicated a positive correlation between self-efficacy, mental mindfulness, and gratitude.

Academic engagement is one of the positive psychology variables that have an impact on the student's motivation toward the learning process and their self-efficacy. It is an essential and effective factor in positive educational and social outcomes (Zhou & Winne, 2012). Classroom engagement is one of the most recent topics that attract the researchers' interests, whether in educational fields or other fields because it is a state of positive emotional motivation for self-realization, which is characterized by dedication, vitality, and sincerity in work.

Engagement is the student's desire to participate in routine school activities such as attending class, performing work required of him, following teacher instructions in class, and participating in classroom learning activities (Fredricks, 2004). Some researchers divided engagement into four dimensions: academic, intellectual, peer integration, and out-of-classroom integration (Welch & Bonnan-White, 2012). Others indicated that engagement comprised social, cognitive, emotional, and academic dimensions or three dimensions: behavioral, emotional, and cognitive engagement (Van Uden et al., 2014; Fredricks et

al, 2004). Several studies indicated also that engagement consisted of only two dimensions: social and academic engagement (Tinto, 1993) or psychological and cognitive engagement (Appleton et al, 2006).

The current research concentrated on psychological and cognitive engagement. Psychological engagement reflects the feelings of interest, belonging and reactions to the educational process as a whole, the student's feeling of enthusiasm and interest, lack of anger, boredom and anxiety, respect in dealing with professors and colleagues, and his feelings towards them; while the cognitive engagement indicates the individual's desire and efforts to master difficult knowledge and skills during the learning process. the student to self-regulatory strategies in learning such as planning, linking old and new information, and evaluating and monitoring ideas (El Hajeen, 2016).

Engagement occurs when students are responsible for their learning during their self-learning (Rotgans & Schmidt, 2011). It helps to the development of self-organized learners and increased the students' motivation and classroom learning (Corno & Mannach, 2009). psychological and cognitive integration is represented in a kind of inorganic link between the student and the university environment in general and the learning environment in particular (Al Souat, 2015). The educational environment also has an impact on the cognitive, emotional, and behavioral engagement of students (Wang & Ecclos, 2013; Greene & Miller, 1996).

The state of engagement develops students' positive attitudes toward the education process and improves their academic achievement (Cleary & Zimmerman, 2012). It also develops basic thinking skills and higher-order thinking skills, especially reflective and systemic thinking skills, and helps improve relations between students and professors (El Sawat, 2015; Rotgans & Schmidt, 2011). T

here have been numerous studies that have focused on the study of engagement and its positive association with some psychological variables that affect the personality of the individual in general and his performance in the educational process in particular, such as the study of Al Zahrani (2018), which illustrated the relationship between academic engagement and psychological values and Sedaghat's et al. study (2011) that presented a model indicating the effect of motivation factors, including the ability to visualize and achieve, on cognitive engagement.

From the above-mentioned, several studies investigated the variables of mental mindfulness, self-efficacy, and engagement with other psychological variables. However, no research dealt with these three variables collectively in a study. This study seeks to highlight the correlations of these three variables among university students, by discovering the factors that have the most effective mediator role. The current research is expected to provide indications to stakeholders and higher education managers as the starting point to enhance the student's academic life. Hence, the current research aims to reveal the extent to which academic efficacy is a mediator variable between mental mindfulness and engagement (psychological and cognitive) among university students. In line with this aim, the following main hypothesis has been developed:

"There is good fitness to the proposed structural model of academic self-efficacy as a mediator variable between mental mindfulness and engagement".

This hypothesis includes the following sub-hypotheses:

- There is a significant direct effect of mental mindfulness on academic self-efficacy.
- There is a significant direct and indirect effect of mental mindfulness on engagement through academic self-efficacy.
- There is a significant direct effect of academic self-efficacy on engagement (psychological and cognitive).

1.2. The Proposed Research Model

The current research attempts to discover the best causal model between mental mindfulness, academic self-efficacy, and psychological and cognitive engagement of university students. The proposed model encompasses the following variables: the independent variable (mental mindfulness), the mediating variable (academic self-efficacy), and the dependent variable (psychological and cognitive engagement). The current research suggested that academic self-efficacy mediates the relationship between mental mindfulness and the psychological and cognitive engagement of university students, as shown in Figure (1)

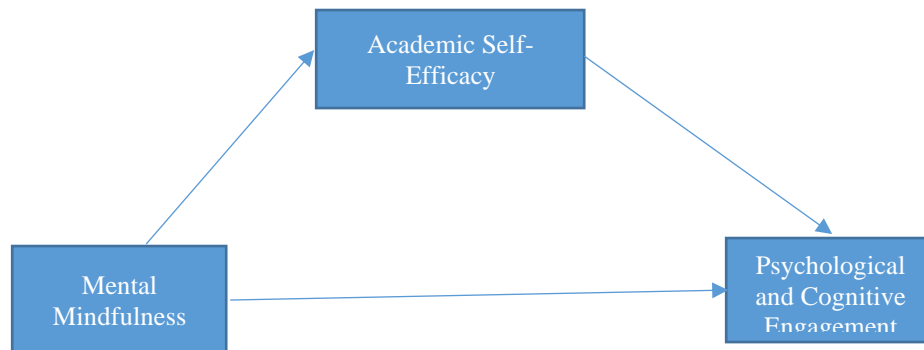


Figure 1: The mental mindfulness model as a mediator variable between academic self-efficacy and psychological and cognitive engagement.

2. Methods

2.1. Research model

The current research utilized the descriptive-analytic approach. The structural equation model was employed to test the validity of the hypothesis regarding the relationships between the research variables.

2.2. Study group

A number of (100) female students from Prince Sattam Bin Abdul Aziz University were selected homogeneously to verify the psychometric properties of the research tools. The basic research sample consisted of (340) female university students from the same university to apply the research tools in the second semester of the academic year 2022/2013.

2.3. Data collection tools

2.3.1. Mental mindfulness scale

The mental mindfulness scale for university students was developed by the researcher. The scale in its initial form consisted of 13 positive and negative items distributed into three dimensions: vigilance and curiosity, openness to the new, and awareness of multiple points of view. The instructions ask participants to rate on a 5-point Likert-type scale (ranging from exactly applicable to never applicable) for positive statements and vice versa for negative statements. There is no limited time to answer the scale. A high degree indicates a high level of a student's mental mindfulness.

To ensure the validity of the scale, it was presented to (7) professors of educational psychology to determine the suitability of the statements to measure mental mindfulness among university students. Based on the factorial analysis of a large-item pool representing these domains through principal components, three specific factors were identified (vigilance and curiosity, openness to the new, and awareness of multiple points of view). The results revealed that the three factors have 62.21% of the total

variance. Besides, the oblique Promax rotation demonstrated that the factor loading of items ranged between 2.64 and 1.92, confirming the verification of the structural validity of the scale.

The internal homogeneity was also calculated as an indicator of the validity of the scale by calculating the correlation between the degree of dimension and the total degree of the scale. The coefficients, respectively, were as follows (0.66, 0.71, 0.77). Cronbach's alpha internal consistency coefficient was calculated to define the scale reliability, where the values of the reliability coefficients in the total degree of the scale and dimensions were greater than 0.7.

2.3.2. The academic self-efficacy scale

The academic self-efficacy scale for university students was developed by the researcher. The scale in its initial form consisted of 18 positive and negative statements. The instructions ask participants to rate on a 5-point Likert-type scale (ranging from exactly applicable to never applicable) for positive statements and vice versa for negative statements. There is no limited time to answer the scale. A high degree indicates a high level of a student's academic self-efficacy.

In order to ensure the validity of the scale, it was presented to (7) professors of educational psychology to determine the suitability of the statements to measure academic self-efficacy among university students. Besides, the internal consistency was calculated as an indicator of the validity of the scale by calculating the correlation between the degree of the phrase and the total degree of the scale. The correlation coefficients ranged between (0.42: 0.83), indicating the scale's validity. Cronbach's alpha internal consistency coefficient was calculated to define the scale reliability, where the values of the reliability coefficients in the total degree of the scale and dimensions were greater than 0.7.

2.3.3. The psychological and cognitive engagement scale

The psychological and cognitive engagement scale for university students was developed by the researcher. The scale in its initial form consisted of 15 positive and negative statements. The instructions ask participants to rate on a 5-point Likert-type scale (ranging from exactly applicable to never applicable) for positive statements and vice versa for negative statements. There is no limited time to answer the scale. A high degree indicates a high level of a student's psychological and cognitive engagement.

In order to ensure the validity of the scale, it was presented to (7) professors of educational psychology to determine the suitability of the statements to measure psychological and cognitive engagement among university students. Based on the factorial analysis of a large-item pool representing these domains through principal components, two specific factors were identified (psychological engagement and cognitive engagement). The results revealed that the three factors have 62.21% of the total variance. Besides, the oblique Promax rotation demonstrated that the factor loading of items ranged between 3.44 and 3.52, confirming the verification of the structural validity of the scale.

The internal homogeneity was also calculated as an indicator of the validity of the scale by calculating the correlation between the degree of dimension and the total degree of the scale. The coefficients, respectively, were as follows (0.76, 0.70). Cronbach's alpha internal consistency coefficient was calculated to define the scale reliability, where the values of the reliability coefficients in the total degree of the scale and dimensions were greater than 0.7, confirming the scale's validity and reliability.

3. Results

3.1. . Results of validating the first hypothesis

' There is good fitness to the proposed structural model of academic self-efficacy as a mediator variable between mental mindfulness and engagement'. . To verify this hypothesis, the path analysis, and

maximum likelihood estimation to find out the effect of mindfulness as a mediating variable between academic self-efficacy and psychological and cognitive engagement.

The causal model that explains the relationships between these variables in light of previous research and studies was proposed to verify this hypothesis. An analysis of the structural equation model was conducted to verify the suitability of the proposed model with the data of the current research. The (IBM SPSS AMOS) was utilized and the following steps were followed to build the causal model.

- Building a causal model among the variables of the current research.
- Developing a pattern of relationship between variables.
- Drawing a schematic model for the path of relationships between variables.
- Calculating the track coefficients.
- Calculate model fit indexes to the proposed model.
- Analyzing and interpreting the results.

Results indicated goodness of fit indexes to the proposed model of mental mindfulness as a mediator variable between academic self-efficacy and the psychological and cognitive engagement of university students. To manifest this relationship, the researcher built the following model (Fig. 2).

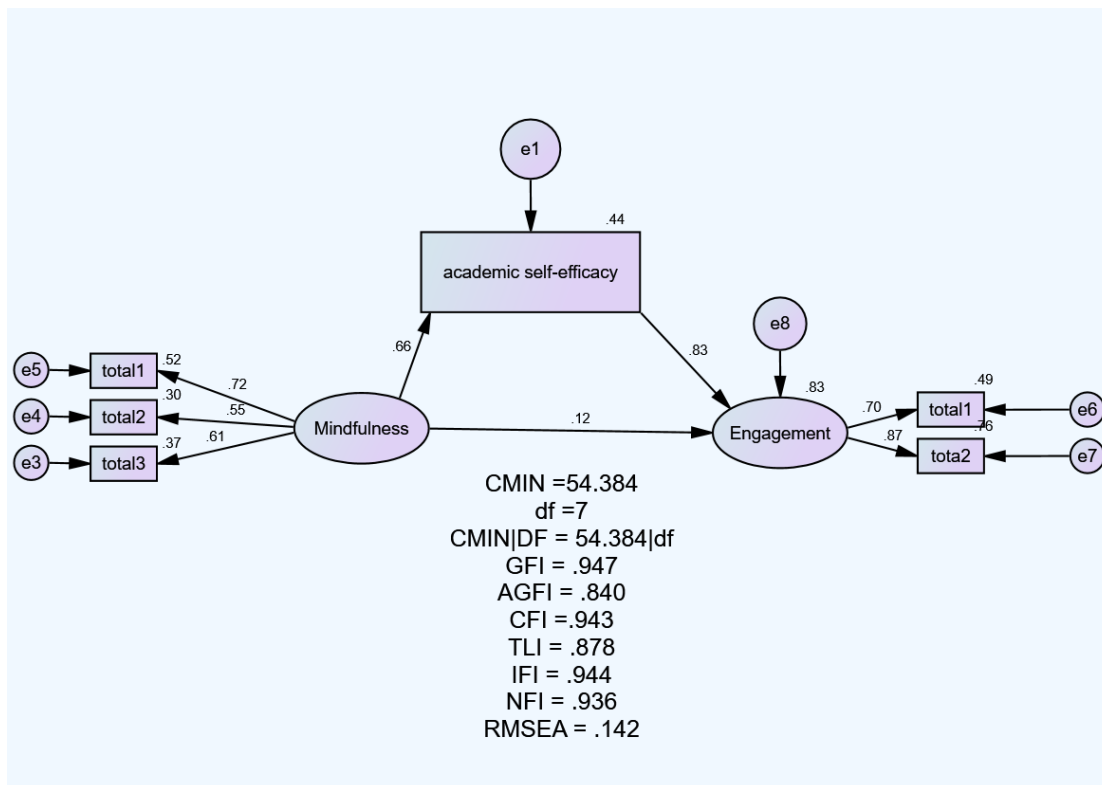


Figure 2. The structural model of the relationships between academic self-efficacy as a mediating variable, psychological and cognitive integration as dependent variables, and mental alertness as an independent variable.

Table 1. The goodness of fit statistics for the causal model

The goodness of fit indices	Value	Acceptable value*
Chi-square	54.384	Chi-square/degrees of freedom < 3

Degrees of freedom	7	
Chi-square/degrees of freedom	7.769	
Root Mean Square Error of Approximation (RMSEA)	0.142	RMSEA < 0.08
Comparative Fit Index (CFI)	0.943	CFI ≥ 0.95
Tucker-Lewis Index (TLI)	0.966	NFI ≥ 0.95
Normed fit index (NFI)	0.936	0: 1
The goodness of fit index (GFI)	0.947	0: 1
Adjusted Goodness of Fit Index (AGFI)	0.840	0:1
Incremental fit index (IFI)	0.944	
Standardized Root Mean Square Residual (SRMR)	0.0458	SRMR < 0.08

It is evident from table 1 that all values of fit indexes existed in the acceptable threshold levels, and this reflected good matching between the dimensions of the structural model: academic self-efficacy as a mediating variable, psychological and cognitive integration as dependent variables, and mental alertness as an independent variable

3.2. Results of validating the first sub-hypothesis

'There is a significant direct effect of mental mindfulness on academic self-efficacy. To verify the validity of this hypothesis, the path analysis method was utilized as indicated in table 2.

Table 2. Path analysis of direct effects of mental mindfulness and academic self-efficacy on psychological and cognitive engagement (n=239)

Variables		Effect	Error	Sig,
Mental Mindfulness	→ Academic Self-Efficacy	.622	.638	.015
Academic Self-efficacy	→ Psychological and Academic Engagement	0.764	.027	.014
Mental Mindfulness	→ Psychological and Academic Engagement	0.199	.195	.0163

Table 2 indicates that there is a direct and statistically significant effect of mental mindfulness on academic self-efficacy, where the value of the effect coefficient was (0.66), which indicates the direct effect at the level of (0.01). Accordingly, the hypothesis was validated and accepted.

3.3. Results of validating the second sub-hypothesis

'There is a significant direct and indirect effect of mental mindfulness on engagement through academic self-efficacy'. To verify the validity of this hypothesis, the path analysis method was utilized as indicated in Tables 2 and 3.

Table 3. Indirect effects of mental alertness on psychological and cognitive integration through academic self-efficacy (n=339)

Variables		Effect	Error	Sig,
Mental Mindfulness	→ Academic Self-Efficacy → Psychological and academic engagement	0.550	.0252	**.007

The results indicated that there is a direct, statistically significant effect of mental mindfulness on the psychological and cognitive engagement of university students, and the value of the direct effect coefficient was (0.119), and this direct effect is significant at the level (0.01).

The results also indicated that there is an indirect effect of mental mindfulness on psychological and cognitive engagement, whose value is (0.550), which is significant at the level of (0.01). Accordingly, the hypothesis was verified and accepted.

3.4. Results of validating the third sub-hypothesis

'There is a significant direct effect of academic self-efficacy on engagement (psychological and cognitive)'. To verify the validity of this hypothesis, the path analysis method was utilized as indicated in 2.

Table (2) showed that there is a direct effect of academic self-efficacy on psychological and cognitive engagement. The value of the direct effect coefficient was (0.83), and this direct effect is significant at the level of (0.01). Accordingly, the hypothesis was validated and accepted.

Besides, the results of the study, according to tables (2,3) and Figure (2), demonstrated that the value of the direct effect of the relationship between mental mindfulness and psychological and cognitive engagement was (0.119). The correlation between mental mindfulness and psychological and cognitive engagement increased when the academic self-efficacy variable mediated the relationship between them with indirect influence, where its value reached (0.550).

4. Discussion

The results of the current research indicated the validity of the proposed causal model in illustrating the mediating role of academic self-efficacy between mental mindfulness and psychological and cognitive engagement, which necessitates the need to pay attention to the development of mental mindfulness because of its effects on the students' academic self-efficacy and the need to develop university students' academic self-efficacy as it affects their psychological and cognitive engagement.

This result may be attributed to the traits of students with high mental mindfulness. They also have high academic self-efficacy and this affects their psychological and cognitive engagement in university. The explanation for this is that mental mindfulness affects the processes of awareness, attention, and mental openness. All of this significantly affects the student's personality. Accordingly, the individual's perceptions are affected by his continuous active awareness of what is going on around him, his love of exploration, and his openness to the new, which increases his convictions in his capabilities and his confidence. This state motivates him to make more effort to improve these aspects, which in turn affects his psychological and cognitive integration at the university.

Students' engagement is primarily affected by their self-efficacy, as it is one of the abilities that make students see themselves positively with high efficiency and confidence in themselves, which increases their abilities and willingness to contribute effectively in various areas of life. Engagement with the university may also be affected by their mental mindfulness. Davis & Hayes (2011) indicated that mental mindfulness enhances the inner calm of the mind and helps the individual to acknowledge and accept all aspects of life. Mindfulness has various applications related to performance and communication, as it helps the individual to get out of the narrow vision of things to open doors to new aspirations and abandon mental habits that are characterized by monotony.

The results showed a direct, positive, and statistically significant effect of mental mindfulness on academic self-efficacy, which indicates that students' possession of mental mindfulness makes them positive and highly efficient, increasing their abilities and willingness to contribute effectively in various

areas of life. This result is consistent with various previous study results that agreed on the correlative relationship between mental mindfulness and academic self-efficacy (Al Shalawi, 2018; Abo Elela, 2020).

Hence, it is clear that the high level of mental mindfulness contributes to the student's academic self-efficacy, which improves their efficiency in learning and raises their motivation to learn and try to master it, while the decrease in the level of mental mindfulness of students negatively affects the students' motivation and interest in their studies. This is consistent with what was recommended by Al Harbi (2020) about the need to design training programs to raise the level of mental mindfulness among female students, and the need to include a course in universities to enhance mental mindfulness. This result is consistent with the results of various previous studies, which reported that students' engagement in academic life is affected by numerous variables including their mental capabilities (Al Mahamid & Arabiat, 2005) and which reported a positive correlative relationship between mental mindfulness and engagement (Al Sayed, 2019; Awadin, 2020).

The direct, positive and statistically significant effect of academic self-efficacy on the psychological and cognitive engagement of university students can be illustrated that academic self-efficacy is one of the sources of strength that motivates students and motivates them to take an interest in the educational process and engage into the university environment psychologically through an interest in studying, less anxiety and boredom, and increased respect for both colleagues and professors. It also affects their cognitive engagement by making the effort that enables them to master difficult skills and knowledge.

This result agrees with the results of various previous studies, indicating that the individual's awareness of his abilities is one of the most significant indicators of engagement (Al Qadi, 2012) and that there is a positive relationship between academic self-concept and the student's engagement in the learning environment (Wengler, 2009; Mahmoud, 2017). Hence, the results confirmed that academic self-efficacy partially mediates the relationship between mental mindfulness and psychological and cognitive engagement of university students.

5. Conclusion

The results of the current research showed the validity of the proposed causal model in the partial mediation of academic self-efficacy and the relationship between mental mindfulness and psychological and cognitive engagement among university students. In addition, the results showed a direct positive effect of mental mindfulness on academic self-efficacy. It also showed a direct effect of academic self-efficacy on psychological and cognitive engagement, and at the same time, it showed a direct and indirect positive effect of mental mindfulness on psychological and cognitive engagement. Accordingly, the research recommends the following:

- Preparing training and workshops for faculty members to enable them to help students achieve psychological and cognitive engagement.
- Directing the attention of education officials to the significance of mental mindfulness and academic self-efficacy in achieving psychological and cognitive engagement.
- Directing the attention of educators to make learning experiences pleasant experiences to raise their self-efficacy.
- Training faculty members to employ skills related to mental mindfulness as activities attached to the courses.
- Preparing training programs to develop academic self-efficacy for university students.
- Preparing training programs to improve the psychological and cognitive engagement of students.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

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