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Predicting social adjustment based on mindfulness and emotion regulation in university students through panel data model

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Abstract

Background: Given the important role of social adjustment in improving mental health and quality of life among university students, we must analyze the factors affecting adjustment. The present study aimed to investigate the relationship between mindfulness and emotion regulation with social adjustment in university students.

Methods: In this descriptive-correlational study, the path analysis method was used with panel data to predict social adjustment based on mindfulness and emotion regulation in university students. The statistical population included all university students in Ahvaz (Iran) in 2022–23. Convenience sampling was employed to select 222 students (177 females and 45 males), who responded to different questionnaires on mindfulness, emotion regulation, and social adjustment at two points of time two months (8 weeks) apart.

Results: The findings indicated that mindfulness had a positive significant relationship with emotion regulation in university students ($P<0.001$). However, emotion regulation had no significant effect on students' mindfulness. Moreover, there was no significant relationship between emotion regulation and social adjustment in the students.

Conclusion: According to the results, mindfulness can be employed to enhance emotion regulation in university students. Given the importance of social adjustment in the mental health and academic achievement of university students, future studies should analyze the relationships between other psychological variables and social adjustment.

Introduction

The youth are the primary assets of every country, and university admission is considered a critical step in their lives.[1] However, most people face many challenges and stressors as they enter universities. Academic education is accompanied by a wide variety of financial problems, separation from the family, arrival in an unfamiliar environment, new responsibilities, and unprecedented arrangements in life.[2,3] Therefore, university students may face frustration, conflict, and stress and resort to various techniques for adapting better to these circumstances.[4,5]

Adjustment is defined as a person's attempt at inhibiting potentially stressful situations.[6] It has important dimensions, one of which is social adjustment meaning adjustment to a social environment resulting from self-change or environmental change.[7] Social adjustment is aimed at establishing a balance between people's needs or wants and those of the society to which they belong. This kind of adjustment helps moderate personal and collective conflicts. Social adjustment is a major aspect of personal development, affecting all dimensions of life.[8] Studies have shown that adjustment improves academic achievement, occupational performance, self-esteem, and satisfaction with life.[9,10] However, the lack of social relationships is correlated with anxiety, depression, cognitive performance deficit, and substance abuse.[11,12] Given the important role of social adjustment in improving mental health and quality of life among university students, we must analyze the factors affecting adjustment.[13] According to Bandura's social cognitive theory (SCT), several social-cognitive-environmental factors affect a person's behavior in society.[14] Therefore, mindfulness is assumed to be one of the cognitive factors correlated with social adjustment.

With the emergence of the third wave of cognitive behavioral therapies in recent years, mindfulness is considered in both healthcare and psychological well-being.[15] Mindfulness denotes the awareness resulting from targeted attention directed to momentary experiences through a specific method. It is accompanied

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by acceptance, no spontaneous reactions, and no judgments.[16] Mindfulness is based on three components: lack of judgment, purposeful awareness, and attention focused on the current moment. Focusing attention on the current moment means considering all ongoing experiences, e.g., thoughts, feelings, emotions, physical senses, and the surrounding environment. This attention is paid in a specific method that is accompanied by acceptance and is free of any judgments. The intentional attention and the nonjudgmental acceptance of intrinsic and extrinsic experiences will help develop purposeful awareness.[17] Acceptance is one of the major features of mindfulness, enabling people to face their emotions and thoughts without involvement or avoidance and to face them with no judgments. Therefore, instead of being trapped in their habitual patterns in dealing with those experiences, a person can achieve appropriate coping strategies.[18] According to the literature, mindfulness is correlated with the experience of positive emotions, reduction in negative emotions, emotional intelligence improvement, and psychological well-being.[19,20]

Emotion regulation is an important variable assumed to affect the relationship between social adjustment and mindfulness. Emotion regulation encompasses a series of methods that people adopt to manage their emotions when they encounter unpleasant events.[21] Kok[22] defined emotion regulation as the process whereby people can moderate their emotions to respond to environmental expectations consciously or unconsciously. Emotions play a key role in coping with unpleasant experiences and life changes. Although emotions have physiological roots, people can master emotion expression methods. In different situations, people employ different emotion regulation strategies. Garnefski et al[23] divided these strategies into an adaptive category (i.e., adopting an approach, repaying positive attention, using positive marketing, planning, and accepting) and a non-adaptive approach (i.e., self-blame, blaming others, rumination, and catastrophizing). Studies have shown that employing adjusted emotion regulation strategies can improve emotional well-being, mitigate negative behaviors, and enhance interpersonal performance.[24,25] At the same time, emotion dysregulation is correlated with adjustment reduction and many clinical disorders.[26] According to Farsijani et al,[27] adjusted emotion regulation strategies and unadjusted emotion regulation strategies can positively and negatively predict social adjustment, respectively. Carrol et al[28] reported that mindfulness exercises could affect emotion regulation.

Many studies have adopted cross-sectional schemes to analyze the relationship between social adjustment and emotion regulation. To our knowledge, there has been no study of relationships between social adjustment, mindfulness, and emotion regulation in one longitudinal model. Given the paucity of panel data studies and their advantages to cross-sectional methods, this study used panel data to collect and analyze the research data. Based on the existing literature, we hypothesize that: Higher levels of mindfulness and emotion regulation skills will be positively associated with better social adjustment in university students. This means students with greater mindfulness and emotion regulation skills are likely to experience better social adjustment. According to the mentioned materials, the present study aimed to investigate the relationship between mindfulness and emotion regulation with social adjustment in university students through a panel data model.

Materials and Methods

In this descriptive-correlational study, the panel data method was used for path analysis with two measurements. The statistical population included all students at the Islamic Azad University of Ahvaz in 2022–23. The necessary arrangements were first made with the university officials for research purposes and procedures. Convenience sampling was then employed to select 18 classes (i.e., 8 master's classes and 10 bachelor's classes) from all university classes. The research questionnaires were then distributed in classes at the discretion of teachers. The students were provided with the necessary information on research purposes, voluntary participation, and confidentiality. In this longitudinal scheme with the panel analysis method, data were collected at two points in time that were two months apart. Since the priority of cause over effect is not maintained in cross-sectional schemes, causal inference about the mechanisms of effects in these relationships will face caution. In cross-sectional studies, the mutual effects of variables are assumed to be concurrent. However, when the prior levels of variables are not controlled, the paths of a model might be overestimated or underestimated in comparison with their real values. According to Kline,[29] longitudinal or panel models are the best alternatives for studies aimed at analyzing causal relationships, as these models measure variables at several points in time.

To unify questionnaires at the first and second stages, the students were asked to write certain codes on their questionnaires. The questionnaires of social adjustment, mindfulness, and emotion regulation were then distributed among students. Due to the attrition of participants in panel research, an attrition rate of 10% was considered in each measurement stage, and 340 students were selected with an attrition rate of 20% in both measurement stages. The research instruments were then distributed to the sample, and 333 questionnaires were collected. However, 35 questionnaires were excluded because they were incomplete, and 298 questionnaires remained. In the second measurement stage, 298 questionnaires were distributed among those very students who participated in the first measurement stage. However, 40 students were excluded due to unavailability, and 36 questionnaires were deleted due to incompleteness or repetitive responses.

Finally, 222 questionnaires were analyzed. The inclusion criteria encompassed being aged at least 18 years and being willing to participate in the study. The exclusion criteria included returning incomplete questionnaires and showing unwillingness to respond to the items.

Instruments

Social Adjustment Scale (SAS): Designed by Bell in 1961, the SAS is scored on a three-point scale (i.e., "Yes", "No", and "I don't know"). Affirmative and negative responses are scored zero and one, respectively. The scores range from 0 to more than 24. Higher scores indicate a lack of adjustment.[30] The reliability of the SAS was reported 0.90 using Cronbach's alpha.[31] Ebrahimi et al[31] established the BAI's content validity using a CVI of 0.88 and a CVR of 0.85.

Five Facet Mindfulness Questionnaire (FFMQ): Designed by Baer et al,[32] the FFMQ is a 39-item self-evaluation scale that measures five components of mindfulness: non-judgment, description, observation, aware actions, and non-reactivity. This questionnaire is scored on a five-point Likert scale ranging from 1 (never) to 5 (always). The total score is obtained from the summation of scores on each subscale, ranging between 39 and 135. Higher scores indicate higher levels of mindfulness. Cronbach's alpha coefficient for the FFMQ was 0.86.[33] A study by Heydarinasab[33] provided evidence for the validity of the Persian translation of the FFMQ.

Emotion Regulation Questionnaire (ERQ): Developed by Garnefski and Kraaij[34], the ERQ is an 18-item self-reporting instrument. This questionnaire includes nine emotion regulation strategies divided into two categories: adjusted strategies (i.e., accepting, repaying positive attention, refocusing on planning, reevaluating positively, and viewing) and unadjusted strategies (i.e., self-blame, rumination, catastrophizing, and blaming others). This questionnaire is scored on a five-point Likert scale ranging from 1 (never) to 5 (always). Higher scores on each subscale indicate the further use of that cognitive strategy. The reliability of the ERQ was confirmed using Cronbach's alpha ($\alpha = 0.90$).[35] The psychometric properties of the Persian version of the ERQ were investigated by Foroughi et al,[36] supporting its validity for use in Iranian populations.

Data analysis

Descriptive statistics, Pearson's correlation inference methods, and path analysis with panel data were used for data analysis in SPSS 26 and SmartPLS. The significance level was considered 0.05 ($\alpha = 0.05$).

Results

According to the analysis of demographics, the participants were 177 females and 45 males aged 19–47 years. There were 87 bachelor's students and 135 master's students. Table 1 presents the means, standard deviations (SD), and correlation coefficients of social adjustment, mindfulness, and emotion regulation in the first and second stages of measurement. According to Table 1, the coefficients of correlation were significant between the research variables ($P < 0.05$).

Before data analysis, the most important hypotheses of path analysis (i.e., normality, independence of errors, and lack of multi-collinearity) were checked. The skewness and kurtosis tests of variables were employed to analyze the normality of variables. The values of those tests ranged between -3 and + 3; therefore, the normality of the data was confirmed. Moreover, the Durbin–Watson test was conducted to analyze the independence of errors, the value of which ranged between 1.5 and 2.5 in both stages. This range indicates that the independence of errors was confirmed. The coefficient of tolerance and the variance inflation factor were used to test the lack of multi-collinearity, the hypothesis of which was confirmed.

Figures 1 and 2 depict the research model for explaining social adjustment based on mindfulness and emotion regulation.

Table 2 reports the standard goodness-of-fit indices in the first and second stages. According to the results, the model had acceptable goodness of fit.

According to Table 3, the relationship between mindfulness and emotion regulation was significant among university students ($P < 0.001$). According to the results, emotion regulation had no significant effect on students' mindfulness. Moreover, the relationship

Table 1. Mean, standard deviation (SD), and the Pearson correlation coefficient of the variables

Stages	Variables	Mean ± SD	1	2	3
First stage	1- Social adjustment	10.59 ± 7.09	1		
	2- Mindfulness	111.76 ± 17.57	0.14*	1	
	3- Emotion regulation	57.62 ± 6.47	0.32**	0.58**	1
Second stage	1- Social adjustment	10.11 ± 7.54	1		
	2- Mindfulness	113.84 ± 15.33	0.29**	1	
	3- Emotion regulation	57.03 ± 7.48	0.32**	0.63**	1

** $P < 0.01$; * $P < 0.05$

Table 2. Fit indicators of the model in the first and second stages

Fit indicators	χ^2	NFI	d-G	d-ULS	SRMR
First stage	1.177	0.988	0.006	0.003	0.018
Second stage	0.055	0.999	0.001	0.001	0.003

NFI: Normed Fit Index; SRMR: Standardized Root Mean Square Residual; d-G: Distance-Based Goodness of Fitd-ULS: Distance-Based Unweighted Least Squares

Table 3. Path coefficients of direct effects between research variables in the first and second stages

Stages	Path	β	*t*	*P*
First stage	Mindfulness → Emotion regulation	0.29	3.17	0.001
	Emotion regulation → Mindfulness	0.19	1.50	0.134
Second stage	Emotion regulation → Social adjustment	0.05	0.86	0.393
	Social adjustment → Emotion regulation	0.12	1.15	0.251

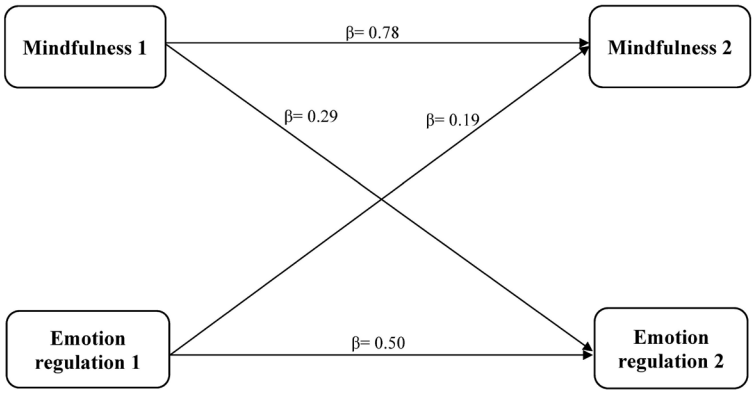

Figure 1. Model in the first stage and standard mode

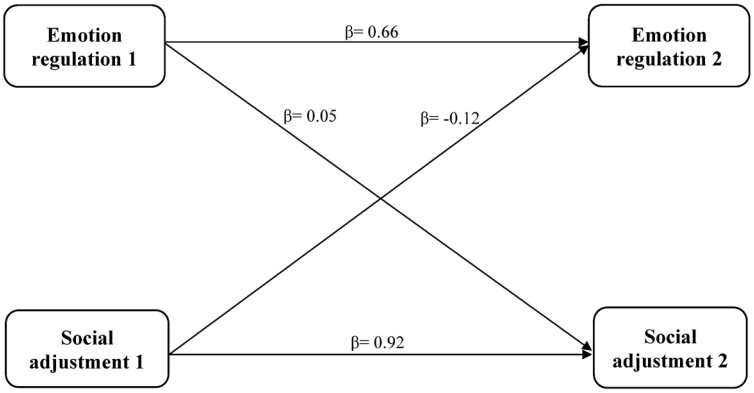

Figure 2. Model in the second stage and standard mode

between emotion regulation and mindfulness was not significant.

Discussion

This study investigated the relationships between mindfulness, emotion regulation, and social adjustment in university students. The findings confirmed our hypothesis that mindfulness and emotion regulation are positively associated in this population.[28,37]

Mindfulness refers to the cognitive processes through which individuals focus their attention on present-moment experiences and feelings without judgment. This allows students to observe their ongoing thoughts and emotions without becoming entangled in them. Consequently, mindfulness can cultivate a less reactive and more accepting approach towards internal experiences. Furthermore, mindfulness-based strategies that encourage acceptance of both pleasant and unpleasant thoughts and emotions can empower students to regulate their emotional responses. This empowers them to experience a wider range of emotions without succumbing to emotional distress.[37]

University admission marks a significant life transition for young people, often accompanied by heightened stress due to numerous personal and interpersonal challenges. These challenges can negatively impact academic performance and emotional well-being.[4] Mindfulness can serve as a valuable tool in such situations. It cultivates the ability to non-judgmentally observe present-moment experiences, facilitating a clearer understanding and acceptance of both emotions and objective phenomena.[16] This allows students to perceive and differentiate various aspects of their experiences, including thoughts and feelings. By promoting acceptance of emotions and cognitions across diverse situations, mindfulness encourages students to actively and consciously engage with their emotions, rather than resorting to avoidance strategies.

Interestingly, the present study did not find a significant relationship between emotion regulation and social adjustment. This contradicts findings by Farsijani et al[17] who reported that emotion regulation skills enhance the adoption of adaptive coping strategies, ultimately leading to reduced impulsivity and improved goal-oriented behaviors. Such skills could enable individuals to adapt flexibly across different situations, potentially fostering better social adjustment. However, in this study, emotion regulation did not emerge as a significant predictor of social adjustment among university students.

Social adjustment is a complex, multidimensional construct influenced by a multitude of factors, including personal characteristics, family dynamics, and environmental contexts. There is no single determinant, and various influences can contribute to its development.

This underscores the need for further research exploring the impact of additional variables on social adjustment.

University students face numerous academic challenges that necessitate additional skills beyond emotion regulation to promote social adjustment (e.g., problem-solving, self-efficacy, self-expression, social support networks, and communication skills).[8] While self-report measures offer valuable insights into students' self-perceptions, their accuracy can be limited due to several factors. First, students may lack complete awareness of their states and behaviors, leading to potential biases in their responses. Second, the questionnaire items themselves may be ambiguous or challenging to interpret, resulting in inconsistencies in meaning across participants. These limitations could impede the detection of a significant relationship between emotion regulation and social adjustment.

Furthermore, the null finding regarding the association between emotion regulation and social adjustment may be partly attributable to the cross-sectional design employed in the majority of previous studies.[38] Cross-sectional designs cannot definitively establish causality, making it difficult to draw firm conclusions about the direction of influence between these variables. Additionally, cross-sectional studies assume concurrent reciprocal effects between variables. However, without controlling for prior levels of the variables, the model estimates may be inflated or deflated relative to their true values. This highlights the need for future research utilizing longitudinal designs to explore the potential causal relationship between emotion regulation and social adjustment over time.

This study faced some limitations, e.g., the use of self-reporting questionnaires that are vulnerable to the biased responses given by participants. The research sample included students at the Islamic Azad University of Ahvaz. Therefore, further caution should be taken into account when the results are generalized to other populations. Since this study was a longitudinal scheme in which the questionnaires were distributed among students in two stages, the respondents may have become sensitive to the research instruments after repetition. Therefore, the samples may have become unrepresentative. Further studies should analyze the relationship between social adjustment and emotion regulation in longitudinal schemes.

Conclusion

Generally, mindfulness is one of the structures correlated with emotion regulation in university students. In conclusion, the research model had relative goodness of fit. Given the importance of social adjustment among students, future studies should analyze the relationships between other psychological variables and social adjustment in longitudinal panel schemes.

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Authors' Contribution

Conceptualization: Afsaneh Farashbandi.
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Competing Interests

The authors declare no conflict of interest.

Ethical Approval

The study was approved by the Ethical Committee of Islamic Azad University- Ahvaz Branch (IR.IAU.AHVAZ.REC.1402.073).

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