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The Relationship Between Dimensions of Psychological Reappraisal of Stressful Situations and Anxiety and Depression in Medical Sciences Students

Omid Parvizifard[1]
Kermanshah University of Medical Sciences
Aliakbar Parvizifard[1]
parvizia@yahoo.com

Kermanshah University of Medical Sciences
Aliakbar Foroughi[1]
Kermanshah University of Medical Sciences
Peyman Davoodizadeh
Kermanshah University of Medical Sciences

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Abstract

Introduction

Reappraisal is a core emotion regulation strategy involving the cognitive reframing of emotional situations to modify their affective impact. Although various forms of reappraisal—including positive, compassionate, religious/spiritual, and logical/rational—have been identified, their distinct associations with anxiety and depression, particularly among medical students, remain insufficiently explored. This study aimed to investigate the relationship between these dimensions of psychological reappraisal and symptoms of anxiety and depression in Iranian medical sciences students.

Methods

This descriptive-analytical, cross-sectional study was conducted on 400 students from Kermanshah University of Medical Sciences, selected via convenience sampling. Participants completed the Five-Facet Reappraisal Questionnaire (FFRQ) and the Depression, Anxiety, and Stress Scale (DASS-21). Data were analyzed using Pearson correlation and stepwise multiple regression in SPSS-25.

Results

Significant inverse correlations were observed between most reappraisal dimensions and both anxiety and depression ($p < 0.01$). The strongest correlations were found for compassionate reappraisal (kindness-mindfulness) with depression ($r = -0.446$) and anxiety ($r = -0.421$), followed by positive reappraisal ($r = -0.423$ for depression; $r = -0.356$ for anxiety). Regression analyses revealed that compassionate reappraisal (kindness-mindfulness) was the strongest negative predictor for both depression ($\beta = -0.208$, $p < 0.001$) and anxiety ($\beta = -0.299$, $p < 0.001$). Notably, logical/rational reappraisal did not significantly predict either outcome in the final models.

Conclusion

The findings highlight that adaptive reappraisal strategies, particularly compassionate reappraisal, are associated with lower levels of anxiety and depression. Teaching these skills to students could be a valuable component of mental health promotion programs in academic settings.

1. Introduction

Depression and anxiety disorders are among the most prevalent and burdensome mental health conditions worldwide, frequently co-occurring and causing significant impairment in social, occupational, and academic domains (1, 2). University students, due to the cumulative pressures of academic demands, financial concerns, and social adjustments, constitute a particularly high-risk population (3, 4). Epidemiological studies indicate that a substantial proportion of university students experience clinically significant symptoms of depression and anxiety, highlighting the urgent need to identify protective factors and develop effective prevention strategies (4).Emotion regulation—the processes by which

individuals influence the emotions they experience, when they experience them, and how they express them—has emerged as a critical factor in the etiology and maintenance of mood and anxiety disorders (5–7).

Individuals with these conditions often demonstrate difficulties in implementing adaptive regulation strategies, relying instead on maladaptive approaches such as experiential avoidance or expressive suppression (8, 9). Among adaptive strategies, cognitive reappraisal has received the most empirical attention. Reappraisal involves changing the way one interprets a situation to alter its emotional significance, and its frequent use has been consistently linked to enhanced psychological well-being, reduced depressive symptoms, and increased positive affect (10–13).Accumulating evidence suggests that reappraisal is not a unidimensional construct but encompasses various qualitatively distinct forms (14). These include **positive reappraisal**, which involves finding beneficial or meaningful aspects in adversity (15); **compassionate reappraisal**, which entails reframing situations with self-kindness, non-judgmental awareness, and recognition of shared humanity (16, 17); **religious/spiritual reappraisal**, which frames experiences within a religious or spiritual context (18, 19); and **logical/rational reappraisal**, which involves evaluating situations objectively and analytically (20). While all share the goal of cognitive change, these different forms may have unique relationships with mental health outcomes.

Previous studies have established robust links between general cognitive reappraisal and reduced anxiety and depression (9, 21, 22). However, few investigations have simultaneously examined the unique contributions of multiple reappraisal dimensions within a single sample, particularly among medical sciences students who face exceptionally high levels of chronic stress. Understanding which specific reappraisal strategies are most strongly associated with better mental health outcomes could inform the development of targeted interventions. For instance, self-compassion—the core mechanism underlying compassionate reappraisal—has been shown to be strongly associated with lower levels of depression and anxiety across diverse populations (23, 24). Similarly, positive reappraisal has been identified as a key coping resource for managing stress and trauma (15, 25).

Despite these advances, the differential impact of specific reappraisal facets on anxiety and depression in high-stress student populations remains inadequately understood. Therefore, this study aimed to: (1) examine the relationships between five dimensions of reappraisal—positive, compassionate (kindness-mindfulness), compassionate (common humanity), religious/spiritual, and logical/rational—and symptoms of anxiety and depression, and (2) identify which of these dimensions are the most significant predictors of these symptoms in a sample of students from Kermanshah University of Medical Sciences.

2. Methods

2.1. Study Design and Participants

This study employed a descriptive-analytical, cross-sectional design. The target population consisted of all students (undergraduate, master's, and doctoral) enrolled at Kermanshah University of Medical

Sciences, Iran, during the 2022–2023 academic year. A sample of 400 students was selected using a convenience sampling method. The sample size was determined using the Cochran formula, assuming a total student population of approximately 4,400 and accounting for potential incomplete responses.

Inclusion criteria were: (1) current enrollment as a student at the university, (2) willingness to participate, and (3) ability to complete the questionnaires independently. Exclusion criteria were: (1) a diagnosed severe psychiatric disorder requiring hospitalization, and (2) failure to complete more than 10% of the questionnaire items.

2.2. Measures

2.2.1. Five-Facet Reappraisal Questionnaire (FFRQ)

Developed by Foroughi and Babajani (2022) (26), this 19-item self-report instrument assesses five dimensions of reappraisal: (1) positive reappraisal (4 items), (2) compassionate reappraisal—kindness-mindfulness (5 items), (3) compassionate reappraisal—common humanity (2 items), (4) religious/spiritual reappraisal (5 items), and (5) logical/rational reappraisal (3 items). Items are rated on a 5-point Likert scale ranging from 0 (almost never) to 4 (almost always). The FFRQ has demonstrated good psychometric properties in Iranian samples, with a Cronbach's alpha of 0.87 for the total scale and subscale alphas ranging from 0.63 to 0.81 (26).

2.2.2. Depression, Anxiety, and Stress Scale (DASS-21)

The DASS-21 is a 21-item scale developed by Lovibond and Lovibond (1995) to assess negative emotional states (27). It comprises three 7-item subscales measuring depression, anxiety, and stress. Participants rate the extent to which each statement applied to them over the past week on a 4-point Likert scale (0 = did not apply to me at all; 3 = applied to me very much).

The Persian version of the DASS-21 has demonstrated excellent psychometric properties in Iranian student populations, with Cronbach's alphas of 0.81 for depression, 0.74 for anxiety, and 0.78 for stress, and test-retest reliability coefficients ranging from 0.76 to 0.80 (28).

2.3. Procedure

After obtaining institutional ethics approval and necessary permissions, questionnaires were administered to students during regular class sessions. Prior to participation, all students received a comprehensive explanation of the study's objectives and procedures, and provided written informed consent. Participants were assured of the confidentiality of their responses and their right to withdraw from the study at any time without penalty. Data collection took approximately 15–20 minutes per participant.

2.4. Statistical Analysis

Data were analyzed using SPSS version 25. Descriptive statistics—including frequencies, percentages, means, and standard deviations—were computed to characterize the sample. Normality of distribution

was confirmed by examining skewness and kurtosis values, all of which fell within the acceptable range of -2 to + 2. Pearson product-moment correlation coefficients were used to examine bivariate relationships between reappraisal dimensions and depression and anxiety. Stepwise multiple regression analyses were subsequently performed to identify significant predictors of depression and anxiety among the reappraisal dimensions. A p-value of less than 0.05 was considered statistically significant.

3. Results

3.1. Participant Characteristics

A total of 400 students participated in the study. The sample consisted of 57.8% (n = 231) female and 42.3% (n = 169) male participants. The largest age group was 21–25 years, comprising 47.5% (n = 190) of the sample, and the majority of participants were single (83.5%, n = 334). In terms of educational level, 28.7% (n = 115) were medical students, 43.5% (n = 174) were undergraduate students in other fields, 13.0% (n = 52) were master's students, and 1.8% (n = 7) were doctoral students.

3.2. Correlational Findings

Pearson correlation analysis revealed significant negative relationships between most dimensions of reappraisal and both depression and anxiety ($p < 0.01$). As presented in Table 1, Compassionate Reappraisal (Kindness-Mindfulness) demonstrated the strongest negative correlations with depression ($r = -0.446$) and anxiety ($r = -0.421$), followed by Positive Reappraisal ($r = -0.423$ for depression; $r = -0.356$ for anxiety) and Compassionate Reappraisal (Common Humanity) ($r = -0.386$ for depression; $r = -0.361$ for anxiety). Religious/Spiritual Reappraisal showed a moderate negative correlation with depression ($r = -0.406$) but a weaker correlation with anxiety ($r = -0.193$). Logical/Rational Reappraisal exhibited the weakest, albeit significant, inverse correlations with both depression ($r = -0.238$) and anxiety ($r = -0.161$).

Table 1
Correlations Between Reappraisal Dimensions and Depression/Anxiety

Reappraisal Dimension	Depression (r)	Anxiety (r)
Positive Reappraisal	**-0.423****	**-0.356****
Compassionate (Kindness-Mindfulness)	**-0.446****	**-0.421****
Compassionate (Common Humanity)	**-0.386****	**-0.361****
Religious/Spiritual Reappraisal	**-0.406****	**-0.193****
Logical/Rational Reappraisal	**-0.238****	**-0.161****

**$p < 0.01$.

3.3. Regression Analyses

Stepwise multiple regression was conducted to determine which reappraisal dimensions significantly predicted depression and anxiety.

3.3.1. Predicting Depression

The final regression model (Model 5) for depression, which included all five predictors, explained 27.6% of the variance ($R^2 = 0.276$; Adjusted $R^2 = 0.266$). However, logical/rational reappraisal was not a significant predictor in the final model ($p = 0.771$). The significant negative predictors were:

- Compassionate Reappraisal (Kindness-Mindfulness) ($\beta = -0.208$, $p < 0.001$)
- Religious/Spiritual Reappraisal ($\beta = -0.162$, $p = 0.003$)
- Positive Reappraisal ($\beta = -0.157$, $p = 0.006$)
- Compassionate Reappraisal (Common Humanity) ($\beta = -0.123$, $p = 0.023$)

3.3.2. Predicting Anxiety

The final regression model (Model 5) for anxiety explained 22.5% of the variance ($R^2 = 0.225$; Adjusted $R^2 = 0.215$). Similar to the depression model, logical/rational reappraisal did not significantly predict anxiety ($p = 0.357$). The significant predictors were:

- Compassionate Reappraisal (Kindness-Mindfulness) ($\beta = -0.299$, $p < 0.001$)
- Positive Reappraisal ($\beta = -0.194$, $p = 0.001$)
- Compassionate Reappraisal (Common Humanity) ($\beta = -0.167$, $p = 0.003$)
- Religious/Spiritual Reappraisal ($\beta = 0.118$, $p = 0.034$)

A summary of the stepwise regression results for both depression and anxiety is presented in Table 2.

Table 2
Summary of Stepwise Regression Results for Predicting Depression and Anxiety

Predictor Variable	Depression (Final Model)	Anxiety (Final Model)
	β	β
Compassionate Reappraisal (Kindness-Mindfulness)	**-0.208*** **	**-0.299*** **
Positive Reappraisal	**-0.157** **	**-0.194*** **
Compassionate Reappraisal (Common Humanity)	**-0.123***	**-0.167** **
Religious/Spiritual Reappraisal	**-0.162** **	**+ 0.118***
Logical/Rational Reappraisal	**-0.014** (ns)	**-0.046** (ns)
R^2	**0.276**	**0.225**
Adjusted R^2	**0.266**	**0.215**

***p < 0.05; **p < 0.01; ***p < 0.001; ns = non-significant (p > 0.05).*

4. Discussion

This study aimed to examine the relationships between multiple dimensions of psychological reappraisal and symptoms of anxiety and depression in medical sciences students. The findings largely confirm that adaptive reappraisal strategies are associated with better mental health outcomes, while also revealing differential predictive capacities among distinct reappraisal facets.

4.1. The Role of Compassionate and Positive Reappraisal

The most robust and consistent finding was the strong inverse association between compassionate reappraisal—particularly the kindness-mindfulness component—and both anxiety and depression. This aligns with an extensive body of research on self-compassion, which conceptualizes relating to oneself with kindness, understanding, and non-judgmental awareness as a significant buffer against psychopathology (23, 24, 29). By adopting a compassionate perspective during stressful events, individuals may reduce self-criticism, shame, and rumination—processes that are central to both depression and anxiety (30). This finding has important clinical implications, suggesting that interventions designed to cultivate self-compassion, such as Compassion-Focused Therapy (CFT), could be particularly beneficial for high-stress student populations.

Positive reappraisal also demonstrated significant inverse relationships with anxiety and depression and was a substantial predictor in regression models. This is consistent with the stress-and-coping literature, which identifies meaning-making and benefit-finding as key protective resources (15). For medical

students facing relentless academic pressure, the capacity to reinterpret challenges as opportunities for growth or to identify silver linings may serve to mitigate the emotional burden of chronic stress (25).

4.2. The Role of Religious/Spiritual Reappraisal

A noteworthy and somewhat unexpected finding concerned religious/spiritual reappraisal. This dimension was significantly correlated with lower depression ($r = -0.406$) but only weakly with lower anxiety ($r = -0.193$), and in the regression model for anxiety, its beta coefficient was positive and marginally significant ($\beta = 0.118$). This suggests that while religious/spiritual frameworks may provide meaning and reduce depressive rumination, certain forms of religious coping could paradoxically exacerbate anxiety. Previous research has identified that negative religious coping—such as feeling abandoned by God or perceiving stressful events as divine punishment—is associated with poorer mental health outcomes (18, 19). The measure used (FFRQ) may not have fully captured this distinction, indicating a need for future research employing more nuanced instruments that differentiate between positive and negative religious coping.

4.3. The Role of Logical/Rational Reappraisal

Logical or rational reappraisal demonstrated the weakest correlations with both depression and anxiety and, crucially, did not emerge as a significant predictor in the final regression models. This finding suggests that, within this specific student sample, employing a purely rational, analytical approach to stressful situations is less protective than strategies infused with compassion or meaning-making. Purely cognitive detachment may lack the emotional resonance necessary to effectively down-regulate negative affect, and may even feel invalidating to individuals in states of high distress (20, 31). This underscores the importance of integrating emotional engagement—as seen in compassionate reappraisal—alongside cognitive restructuring.

4.4. Practical Implications

These findings have significant implications for university mental health services. Interventions aimed at preventing or reducing anxiety and depression in students should prioritize the cultivation of adaptive reappraisal skills, particularly compassionate reappraisal. Psychoeducational programs could teach students to:

1. Recognize their self-critical inner voice.
2. Actively reframe stressful situations with self-kindness and acknowledgment of shared humanity.
3. Practice mindful awareness of difficult emotions without being overwhelmed.

Furthermore, the study suggests that cognitive restructuring focused solely on logic may be less effective, and interventions should incorporate an affective component, such as compassion or positive meaning-making.

4.5. Limitations and Future Directions

Several limitations should be considered when interpreting these findings. First, the cross-sectional design precludes causal inferences; we cannot determine whether reappraisal protects against mental health issues or whether lower anxiety/depression facilitates more adaptive reappraisal. Future longitudinal studies are needed to establish temporal precedence. Second, the use of self-report questionnaires is subject to response biases, including social desirability. Third, the convenience sampling method may limit generalizability to the broader student population or to other cultural contexts. Fourth, the relatively modest R^2 values indicate that while reappraisal is a significant predictor, other factors—such as genetics, personality, and social support—also play crucial roles. Finally, future research should investigate the relationship between religious/spiritual reappraisal and anxiety using more finely grained measures that distinguish positive from negative religious coping, and should explore the potential moderating role of cultural and religious context.

5. Conclusion

This study demonstrates that dimensions of reappraisal are significantly and inversely associated with anxiety and depression in university students. Compassionate reappraisal—characterized by self-kindness and mindfulness—emerges as the most powerful predictor of lower depressive and anxious symptoms, even surpassing the well-established positive reappraisal. Conversely, a purely logical/rational reappraisal was not a significant predictor, and the role of religious/spiritual reappraisal in anxiety appears complex and ambiguous. These findings highlight the need for university-based mental health programs to move beyond simple cognitive restructuring and incorporate emotion-focused and compassion-based strategies to effectively promote student well-being.

Declarations

Ethics Statement

The studies involving human participants were reviewed and approved by the Ethics Committee of Kermanshah University of Medical Sciences. The participants provided their written informed consent to participate in this study.

Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Author Contribution

OP: Conceptualization, Data curation, Investigation, Writing – original draft.Dr. AP (Corresponding Author): Supervision, Methodology, Validation, Writing – review & editing.Dr. AF: Formal analysis, Methodology, Writing – review & editing.PD: , Data curation, Investigation, Writing – original draft.All authors have read and approved the final manuscript and agree to its submission to BMC Psychology.

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Data Availability Statement

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

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