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Original Article

Emotional Schemas and Psychological Distress: Mediating Role of Resilience and Cognitive Flexibility

Shahram Mohammadkhani*, Armita Foroutan, Mehdi Akbari, Maede Shahbahrami

Abstract

Objective: This study aimed to explore the structural relation of emotional schemas with psychological distress and evaluate the mediating role of resilience and cognitive flexibility in this relationship.
Method: Participants were 300 students that voluntarily completed a questionnaire package that included the Leahy Emotional Schema Scale (LESS-P), Connor-Davidson Resilience Scale (CD-RISC), Cognitive Flexibility Inventory (CFI), and Depression Anxiety Stress Scale (DASS-21). Then, we utilized the LISREL software for structural equation modeling.
Results: Structural equation modeling and path analysis revealed the direct effects of adaptive and maladaptive emotional schemas on psychological distress. The results indicated that maladaptive emotional schemas indirectly affected psychological distress via resilience and cognitive flexibility ($P < 0.01$). In contrast, adaptive emotional schemas indirectly affected psychological distress via cognitive flexibility rather than resilience ($P < 0.05$). Evaluation of the proposed structural model revealed an acceptable fit.
Conclusion: The present research findings show the effect of emotional schemas on psychological distress via resilience and cognitive flexibility. Furthermore, the results suggest that resilience partially mediates the relationship between emotional schemas and psychological distress. At the same time, cognitive flexibility mediated this relationship.

Key words: *Psychological Distress; Resilience; Structural Model*

Department of Clinical Psychology, Faculty of Psychology and Education, Kharazmi University, Tehran, Iran.

***Corresponding Author:**
Address: Department of Clinical Psychology, Faculty of Psychology and Education, Kharazmi University, Tehran, Iran, Postal Code: 1571914911.
Tel: 98-21 86072738, Fax: 98-21 86072738, Email: mohammadkhani@khu.ac.ir

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Psychological distress (PD) is the most common mental health problem in describing a wide range of symptoms and experiences of one's inner life (1, 2). PD is emotional distress associated with symptoms of depression (loss of interest, frustration, and sadness), anxiety (restlessness), and acute psychological stress (3-5) that potentially results in change in a person's behavior and feelings in a negative way (6). It has adverse effects, even in interpersonal relationships (7). Psychological distress can also lead to physical symptoms (insomnia, headaches) and physical complaints (8, 9), which can be caused by exposure to stressful events that affect physical or mental health (1). According to researchers, PD is eliminated by eradicating the stressor and coping with it, and when active coping strategies are lacking, emotional suppression leads to more PD (10, 11). Results of studies have shown that people with higher PD under stressful conditions show avoidant behaviors or do not express their feelings and continue their avoidant behaviors in the form of physical experiences, thoughts, and memories to reduce their anxiety quickly (12).

Recent research in emotion theory shows that emotional schemas (conceptualization and individual beliefs about emotions) play a crucial role in directing emotional processes (16). Emotional schema theories are a social cognitive model that show core beliefs about emotions and emotional processes and guide the nature of one's responses to emotional experiences (17). Everyone is exposed to many problematic emotions, but not everyone develops a psychiatric disorder (18). According to this model, people are different in their conceptualization, evaluations of emotions, and strategies for emotion regulation (18-21). Leahy (22) suggests that these psychological theories create a problematic approach for dealing with emotions: rumination, blaming, repression, and avoidance. A model of emotional schemas recognizes a series of interpretative processes and strategies activated when an unpleasant feeling is experienced (20). Also, emotional processing problems may be related to impaired regulation of psychological needs due to activation of early maladaptive schemas (9, 15). These schemas, including emotions, cognitions, memories, and bodily feelings are associated with oneself or relationships with other people in one's lifetime (23, 24). Also, many studies showed that emotional schemas are associated with anxiety, depression, post-traumatic stress disorder, personality disorders, alcohol abuse, metacognitive aspects of worry, and marital discord (18, 20, 25).

Several studies suggest moderating and mediating factors between stressful events and psychological disorders, which affect individuals in different ways (26, 27). One of these features is resilience, which plays a significant role in most psychological disorders (28-30) and is defined as individuals' capacity to adjust efficiently, cope with, or overcome adversity or stress and potential disruptions (31, 32). This protective factor makes a person more resilient against adverse events, leading to positive results (33). Resilience means that a person can effectively adjust to change, resist the negative effects of stressors, and avoid psychological disorders (33, 37). Earlier studies have reported that people with high levels of resilience show low levels of vulnerability and disease risk (33, 37). However, when people with low resilience face adversity, they are vulnerable to depression, anxiety, stress, and interpersonal problems. They're more likely to engage in health-risking habits and suffer from somatic complaints and poor physical health (38-40). Researchers believe that people can improve their health by boosting resilience, which increases their cognitive flexibility (37). Research findings show that resilience is associated with positive and negative emotions (41, 42), with positive emotions reducing vulnerability compared with negative emotions during stressful times. Therefore, individuals with a steady amount of positive emotion have a more remarkable ability to build their resistance to stressful situations and thus are more resilient than those who experience less positive emotions (43).

Cognitive flexibility, an important aspect and foundation of flexible behavior, has attracted much attention over the last few decades. Cognitive flexibility, as a critical element of cognitive control, refers to accurately adapting thoughts and behaviors to the altered environmental and internal conditions (44, 45). Cognitive flexibility is probably necessary for a threatening situation to activate different cognitive processes to prevent interference and facilitate the resources needed to cope with difficult situations (46, 47). Also, research has indicated that individuals who have higher cognitive flexibility can successfully cope with stressful life events since they are more able to generate and adequately change approaches appropriate to the situation (48). Accumulating evidence has suggested that cognitive flexibility is positively related to mental health and psychological well-being and is inversely associated with a broad range of psychological problems and distress such as depression (49, 50), anxiety (51-53), and related disorders (54, 55). Furthermore, results show that structures including resilience and cognitive flexibility are strategies for regulating adaptive emotions (47).

Based on literature review, specific dimensions of emotional schemas play a significant role in developing and preserving PD (i.e., depression and anxiety). Moreover, in the present research, we found previous studies supported the association between resilience/cognitive flexibility and depression/anxiety and also the relationship between emotional schemas and resilience (47, 56). However, to the best of our knowledge, up until now, it seems as though no research has tested the possible mediating role of resilience and cognitive flexibility in relation to emotional schemas and PD. Also, expanding the concept of emotional schemas

can be crucial in preventing psychological distress because emotional processing problems are associated with several psychological disorders. In addition, exploring role of resilience and cognitive flexibility in this relationship might contribute to understanding the psychopathology of depression and anxiety and may provide valuable information for prevention and intervention of psychological distress. As a result, the current study aimed to explore associations among emotional schemas, resilience, and cognitive flexibility to evaluate their relative contribution to psychological distress and examine the effects of resilience and cognitive flexibility as intervening variables in the relation between emotional schemas and psychological distress. The conceptual model of the present research is illustrated in Figure 1.

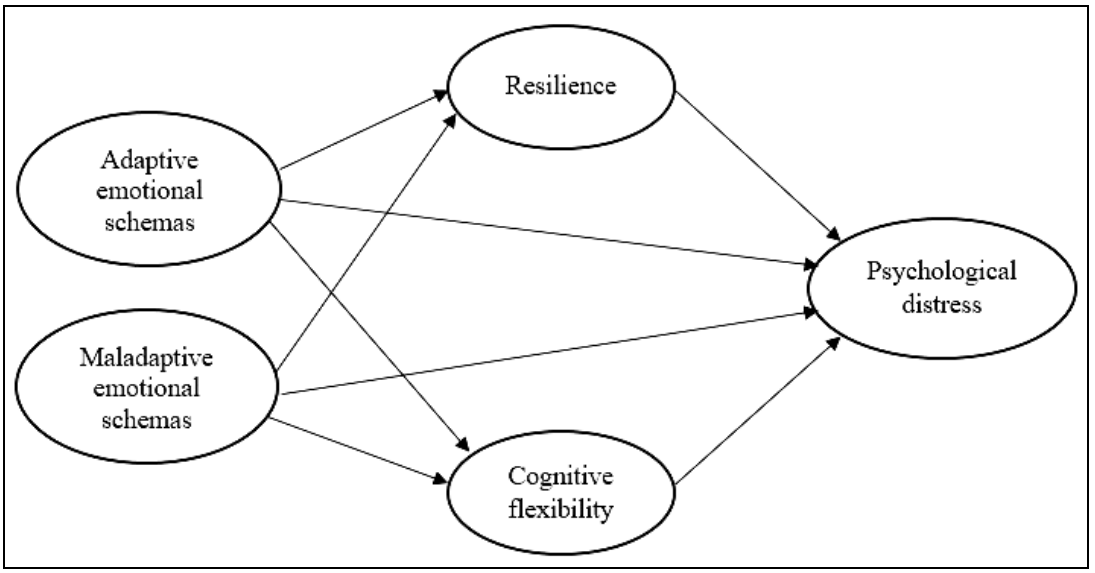

Figure 1. The Conceptual Model of the Research

Materials and Methods

Participants and procedure

Participants were 300 undergraduate and postgraduate students from University of Tehran, Kharazmi University, and Allameh Tabataba'i University in Tehran, Iran. A convenience sampling selected the students in the spring of 2019. The age of participants varies from 18 to 35. Considering that the study's target population was the general population and was not interventional research, the inclusion criteria consisted of (1) age between 18 and 35 years; (2) undergraduate and postgraduate students; (3) students at Tehran's universities; (4) interest in following the study procedures; (5) signed written informed consent form; Exclusion criteria also included (1) age older or younger than 18-35 years; (2) Ph.D. students; (3) lack of interest in participating in the study. First, the present study aims were explained to the participants, and they signed an informed consent form. Then, all the participants completed a series of self-report questionnaires, such as the Leahy Emotional Schema Scale (LESS-P), Connor-Davidson Resilience Scale (CD-RISC), Cognitive Flexibility Inventory (CFI), and Depression Anxiety Stress Scale (DASS-21). The Ethics Committee approved this research of Kharazmi University.

Measures

Leahy Emotional Schema Scale (LESS): LESS is a 50-item self-report questionnaire comprised of 14 subscales that measure 14 dimensions of the emotional schemas of the LESS. The emotional schemas represent concepts, evaluations, attributes of emotions, and strategies for emotion regulation (Leahy, 2002). The findings of the factor analysis for the Persian version of LESS demonstrated 13 subscales, including 1) Emotional self-awareness, 2) Validation by others, 3) Comprehensibility, 4) Controllability, 5) Simplistic view of emotions, 6) Higher values, 7) Guilt, 8) Demands rationality, 9) Consensus, 10) Acceptance of feelings, 11) Rumination, 12) Expression of feeling, and 13) Blame. The LESS has shown acceptable validity and reliability (19). Using Cronbach's alpha methods, the reliability of the Persian translated version of LESS was between 0.59 and 0.73, and test-retest reliability was 0.78 for the total scale and varied from 0.56 to 0.71 for subscales. Moreover, construct validity has been confirmed in an Iranian sample (57). In this study, Cronbach's alpha was 0.82 for the adaptive emotional schemas and 0.70 for the maladaptive emotional schemas.

Connor–Davidson Resilience Scale (CD-RISC): The CD-RISC is a 25-item questionnaire that assesses the individual's ability to cope with stress and adversity. Items are rated on a 5-point Likert scale ranging from 0 (''not true at all'') to 4 (''true nearly all the time''). Preliminary research on the CD-RISC's psychometric properties in the general population and clinical samples revealed sufficient internal consistency, convergent and

divergent validity, and test-retest reliability (58). According to exploratory factor analysis, the CD-RISC might be multidimensional, with factors matching personal competence/tenacity, positive acceptance of change/secure relationships, trust in one's instincts/tolerance of negative affect, spirituality, and control. We used CD-RISC total scores in the present study. In Iranian populations, validity coefficient of the scale has been reported between 0.41 and 0.64. Also, the reliability was acquired to be 0.89 using Cronbach's alpha (59). In this research, the coefficient alpha obtained was 0.91 for the total score of CD-RISC.

Cognitive Flexibility Inventory (CFI): The CFI is a 20-item self-report questionnaire developed for aspects of cognitive flexibility that enable people to challenge and replace maladaptive thoughts with more adaptive ones. Items are rated on a 7-point Likert-type scale to define the respondent's approach to challenging situations accurately. We used CFI to assess three features of cognitive flexibility: 1) the person's tendency to identify problematic situations as controllable; 2) the ability to comprehend multiple alternative explanations for life events and human behaviors; and 3) the ability to produce multiple alternative solutions to difficult situations (48). Dennis and Vander Wal (48) reported that CFI had good to excellent internal consistency, and also test-retest reliability was high for the total CFI score and its subscales. The Iranian version of the CFI has desirable levels of reliability and validity. In this version, the result of factor analysis indicated three factors revealed 56.02% of the variance: Control, Alternatives, and Alternatives for Human Behaviors. The test-retest and Cronbach's alpha coefficients for the CFI reliability were 0.71 and 0.90, respectively (60). In this study, coefficient alpha was calculated to be 0.90 for the total score of CFI.

Depression Anxiety Stress Scales (DASS-21): DASS-21 includes 21 items that measure three subscales of depression, anxiety, and stress symptoms. Each subscale consists of seven items rated on a 4-point Likert-type scale varying from 0 (not at all) to 3 (very much). In the current research, we used the depression and anxiety subscales. DASS-21 is one of the most valid and reliable tests used to evaluate negative affect symptoms (61, 62). The validity and reliability of the DASS-21 for an Iranian population demonstrated acceptable internal consistency for the test and its subscales and confirmed the concurrent, convergent, and divergent validity of DASS-21 (63). In this research, the Cronbach's alphas were obtained to be 0.89 for total score of DASS-21, 0.77 for anxiety, and 0.81 for Depression subscales.

Ethics

All procedures adopted in this research involving human participants were based on the ethical standards of Kharazmi University's ethics committee. Each participant in the study completed an informed consent.

Data analysis

The hypothesized structural model in the present study was analyzed by structural equation modeling (SEM) with LISREL software (Version 10). We used SEM and path analysis to investigate the direct and indirect effects of emotional schemas as independent variables on resilience and cognitive flexibility as mediator variables and psychological distress as a dependent variable. The overall fitness of the model was determined using standard indices. Namely, the normed fit index (NFI), the comparative fit index (CFI), the goodness of fit index (GFI), the incremental fit index (IFI), the relative fit index (RFI), the standardized root mean square residual (SRMR), and the Root Mean Square Error of Approximation (RMSEA). The criteria for an acceptable model fit was in a range of CFI $\geq$ 0.90, NFI $\geq$ 0.90, GFI $\geq$ 0.90, IFI $\geq$ 0.90, RFI $\geq$ 0.90, SRMR $\leq$ 0.08, and RMSEA $\leq$ 0.08 (64).

Results

Table 1 demonstrates the descriptive statistics (i.e., mean, standard deviation) and correlations among variables. The mean score of psychological distress in the present sample was 10.97. The correlations between psychological distress and other variables, such as adaptive and maladaptive emotional schemas, resilience, and cognitive flexibility, were significant ($P < 0.01$) (Table 1). As can be seen, adaptive emotional schemas were significantly positively correlated with resilience and cognitive flexibility and negatively with psychological distress. Conversely, as expected, maladaptive emotional schemas were significantly negatively associated with resilience and cognitive flexibility and positively with psychological distress.

Structural equation modeling

Table 2 presented Standardized beta coefficients and the significance status of direct and indirect effects of variables. Based on this information, all relationships (except the indirect impact of adaptive emotional schemas via resilience on psychological distress) among variables were significant.

Direct effect analysis

The results of structural equation modeling revealed that adaptive emotional schemas had a direct effect ($\beta = -0.43$; $P < 0.01$) on psychological distress. Moreover, the direct effect of maladaptive emotional schemas on psychological distress was significant ($\beta = 0.35$; $P < 0.01$). The findings of SEM also revealed that both resilience ($\beta = -0.22$; $P < 0.05$) and cognitive flexibility ($\beta = -0.20$; $P < 0.05$) had direct effects on psychological distress.

Mediation analysis

The findings of path analysis reported in Table 2 showed that maladaptive emotional schemas had an indirect effect via resilience ($\beta = 0.10$; SE = 0.07) and cognitive flexibility ($\beta = 0.10$; SE = 0.10) on psychological distress. Whereas adaptive emotional schemas had an indirect effect only by cognitive flexibility ($\beta = -0.08$;

SE = 0.05) on psychological distress. Resilience did not mediate any association between adaptive emotional schemas and psychological distress. SEM findings suggested that cognitive flexibility mediates the effects of the independent variables (adaptive and maladaptive emotional schemas) on psychological distress. However, resilience only mediates the role of maladaptive emotional schemas on psychological distress.

Figure 2 depicts the hypothesized structural model of psychological distress and shows the relationships among variables and beta coefficients.

Measurement Model

Table 3 shows the fit indices for the model. The analysis of the structural model of psychological distress resulted in a good index of fitness that confirmed the conceptual model of the present study.

Table 1. Means, Standard Deviations, and Correlation Matrix of Emotional Schemas, Resilience, Cognitive Flexibility, and Psychological Distress

		M	SD	1	2	3	4	5
1	Psychological distress	10.97	7.56	1				
2	Adaptive emotional schemas	53.05	12.30	-0.45**	1			
3	Maladaptive emotional schemas	15.62	5.81	0.56**	-0.57**	1		
4	Resilience	53.90	13.38	-0.51**	0.43**	-0.40**	1	
5	Cognitive flexibility	98.72	18.65	-0.53**	0.46**	-0.45**	0.58**	1

** P < 0.01.

Table 2. The Results of Structural Equation Modeling for the Direct and Indirect Effects of Emotional Schemas, Resilience, Cognitive Flexibility, and Psychological Distress

	β	SE	T	P
Direct effect				
Adaptive emotional schemas on psychological distress	-0.43	0.77	-4.74	0.01
Adaptive emotional schemas on resilience	0.37	0.62	5.16	0.01
Adaptive emotional schemas on cognitive flexibility	0.42	0.14	5.62	0.01
Maladaptive emotional schemas on psychological distress	0.35	1.06	3.17	0.01
Maladaptive emotional schemas on resilience	-0.48	0.63	-6.08	0.01
Maladaptive emotional schemas on cognitive flexibility	-0.51	0.68	-6.04	0.01
Resilience on psychological distress	-0.22	0.38	-2.29	0.05
Cognitive flexibility on psychological distress	-0.20	0.57	-2.06	0.05
Indirect effect				
Adaptive emotional schemas via resilience	-0.08	0.06		0.05
Adaptive emotional schemas via cognitive flexibility	-0.08	0.05		0.05
Maladaptive emotional schemas via resilience	0.10	0.07		0.05
Maladaptive emotional schemas via cognitive flexibility	0.10	0.10		0.05

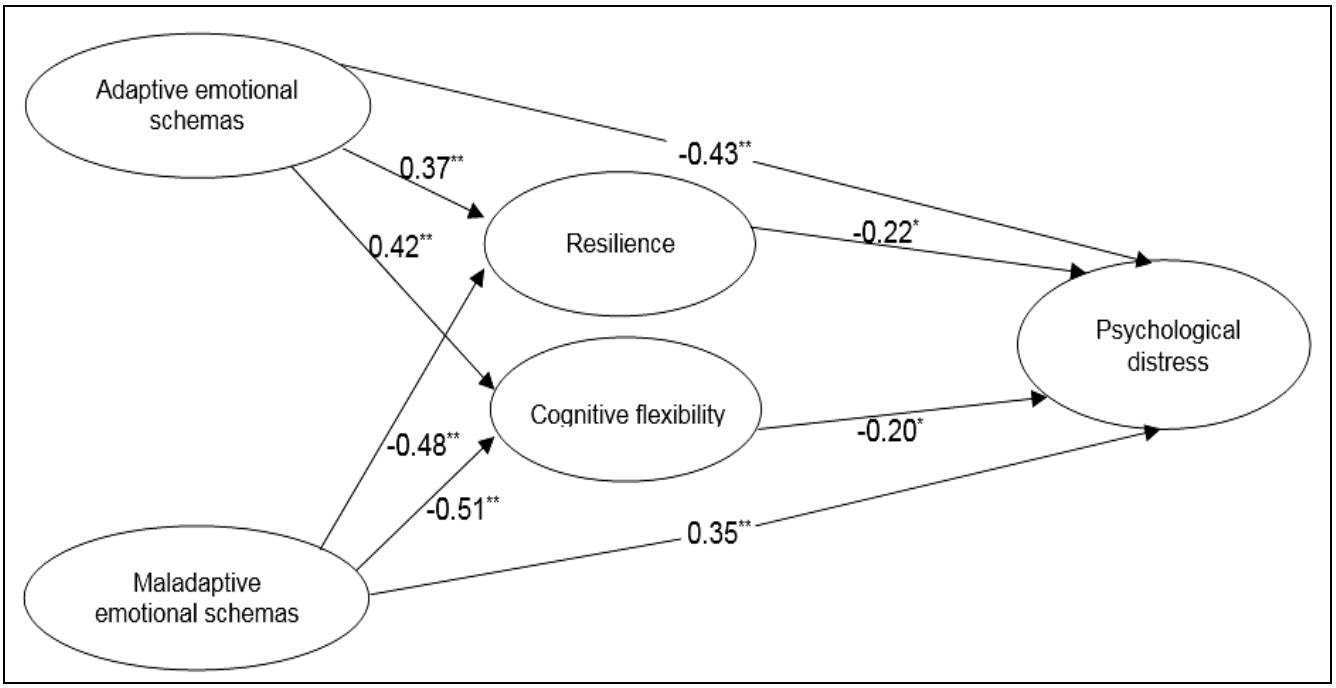

Figure 2. Structural Equation Modeling Analysis of the Direct and Indirect Effects of Adaptive and Maladaptive Emotional Schemas and the Mediating Role of Resilience and Cognitive Flexibility on Psychological Distress. * P < 0.05; ** P < 0.01.

Table 3. Model Fit Indices for the Structural Model of Psychological Distress

χ^2/df	GFI	CFI	NFI	IFI	RFI	SRMR	RMSEA
2/88	0.91	0.93	0.91	0.93	0.90	0.06	0.07

Discussion

The present research investigated the direct effects of adaptive and maladaptive emotional schemas on psychological distress and the mediator effects of resilience and cognitive flexibility on the associations between emotional schemas and psychological distress. This study showed that psychological distress negatively correlated with adaptive emotional schemas, resilience, and cognitive flexibility and positively related to maladaptive emotional schemas. These findings are in accordance with previous research supporting relationships between psychological distress and emotional schemas, resilience, and cognitive flexibility (15, 18-21, 25, 50, 52, 57, 65, 66).

Further investigations revealed adaptive emotional schemas, including emotional self-awareness, comprehensibility, and acceptance of feelings, were negatively associated with psychological distress. In contrast, those dimensions that reflect maladaptive emotional schemas, consisting of rumination, guilt, and blame, were positively related to psychological distress. Also, activation of early maladaptive schemas leads to emotional processing problems and impaired regulation of psychological needs .

This finding has demonstrated the effect of specific dimensions of emotional schemas on depression and anxiety and significantly predicted them (18, 38, 57). According to these findings, individuals who have a less simplistic view of emotion view one's emotions as more understandable, more accepting of feelings, view emotions as more controllable, have more emotional self-awareness, have a consensus with others, have a higher value, have more expression of emotion, and have more demands for rationality and validation and report less psychological distress (such as depression or anxiety). In comparison, individuals who feel guilty about their emotions more significantly have more rumination and blame others and experience more depression and anxiety. Suppose people show these emotions as usual and can tolerate unpleasant and conflicting emotions. In that case, they recognize that these emotions are short-term and not dangerous, therefore, they are unlikely to have long-term emotional problems. Conversely, if people believe that these emotions are abnormal, they will endure indefinitely and get out of control. They may engage in rumination, become isolated, and addicted to drugs (18). Increasing adaptive and positive emotions in individuals reduce

psychological distress and lead to increased resilience (37).

According to the path analysis, resilience played a partial mediating role between emotional schemas and psychological distress. Resilience only functioned as a mediator in the association between maladaptive emotional schemas and psychological distress. Moreover, individuals who have maladaptive emotional schemas reported lower levels of resilience than those who have adaptive emotional schemas, which is predictive of higher levels of psychological distress. Babić et al. (37) determined that resilient people can easily cope with problems, overcome challenging situations, be cognitively flexible, and have specific characteristics. Here, we emphasized two main factors. The first is to eliminate stressful situations and quickly manage and overcome stress to regain a healthy state. The second factor refers to stability, which is maintaining healthy responses in other stressful life events. Also, Foster et al. (35) state that resilience is the process of proper adaptation to problems, injuries, tragedies, threats, or even significant sources of stress. On the other hand, getting rid of stressful events and having stability requires adaptive emotions, resilience, and cognitive flexibility (39, 67).

Based on other results of the present study, effect of emotional schemas on psychological distress was mediated entirely by cognitive flexibility. Notably, the current data indicated that adaptive emotional schemas increased cognitive flexibility, which reduces psychological distress while maladaptive emotional schemas decreased cognitive flexibility that enhanced psychological distress. The results show that cognitive flexibility in threatening situations is essential to cope with difficult situations to avoid interference. Furthermore, resilient people do not usually despair during stressful events and negative emotions. Instead, they can recover quickly, become even more potent, and overcome problems and adverse environmental conditions. In this case, resilience is formed in the individual due to the interaction of protective factors related to healthy adaptation and aiding the adaptation process in existing risk factors. It can also be effective in positive adjustment and adaptation to adversity to maintain mental health. Suppression of positive emotions and lack of active coping strategies lead to psychological distress. People turn to avoidance behaviors in stressful situations, which indicates a decrease in resilience and cognitive flexibility (18, 33, 35, 36, 45, 47).

Limitation

The first limitation of this research was the self-report format of the measures used, limiting the reliability of the data collected due to the possibility of over or under-reporting of symptoms and characteristics. Second, restriction of participants with a subclinical sample limits the model's generalizability for a clinical population such as major depressive disorder and generalized anxiety disorder. Third, this research had a cross-sectional design, with correlation and mediation analyses on data collected simultaneously. Therefore, the obtained results indicated associations and predictions. Future studies could use other methodological considerations and examine the proposed model in the clinical population to overcome these limitations. Also, longitudinal studies are needed to determine causal connections. We suggest evaluation of psychological distress moderation and other mediating factors in future studies.

Conclusion

Although findings of previous studies, as mentioned before, support the relationships between emotional schemas, resilience, and cognitive flexibility with depression and anxiety, the current research is the first to examine the mediating role of resilience and cognitive flexibility in relation to emotional schemas and psychological distress. To conclude, this study has shed light on the associations between emotional schemas, resilience, cognitive flexibility, and psychological distress. Maladaptive emotional schemas lower resilience and cognitive flexibility, thus, negatively impacting psychological distress. On the contrary, adaptive emotional schemas act as a protective factor by improving cognitive flexibility, which benefits psychological distress. Additionally, people with maladaptive emotional schemas (e.g., unreliable and uncontrollable emotions) show poorer emotional processing, higher emotional avoidance, and more emotional and behavioral disorders than people with adaptive emotional schemas. Also, emotion processing problems are related to activation of maladaptive schemas that disrupt regulation of psychological needs (resilience and cognitive flexibility), leading to psychological distress. Thus, to relieve individuals' psychological distress, we should primarily adopt interventions to improve their resilience and cognitive flexibility and provide appropriate problem-solving strategies to help people in stressful situations. The results of this study could be helpful for clinicians and researchers to develop prevention and intervention programs for students with psychological distress. Furthermore, according to the significant role of resilience and cognitive flexibility in psychological distress, it is recommended that Emotional schema therapy consider resilience and cognitive flexibility in the therapeutic protocol. Also, it may be helpful to make interventions that consider how both resilience and cognitive flexibility may result in decreased psychological distress.

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Conflict of Interest

None.

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