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Research Article

Developing a Psychosomatic Symptoms Model based on Emotional Regulation, Defense Mechanisms, and Attachment Styles Mediated by Distress Level in psychosomatic Patients

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Abstract

Background: Considering the important role of anxiety in people with psychosomatic disorders, recognizing their defense mechanisms, emotion regulation techniques, and attachment styles can help support them against anxiety and stress. The aim of this study was to develop a psychosomatic symptoms model based on emotional regulation, defense mechanisms, and attachment styles mediated by distress level.

Methods: In this descriptive correlational study using path analysis, 540 patients diagnosed with psychosomatic disorder using the Physical Health Questionnaire (PHQ15), were selected through purposive sampling among all medical centers in Tehran, Iran, during 2019. Then, they completed the short form of Cognitive Emotion Regulation Questionnaire, Adult Attachment Styles Questionnaire, Defense Styles Questionnaire, and Kessler Psychological distress Assessment Scale (Kessler, 2002). AMOS.22 and SPSS.22 software was used for data analysis.

Results: The indirect effect of anxious attachment ($P<0.001$), ambivalent attachment ($P=0.048$), immature defense mechanism ($P<0.001$), and neurotic defense mechanism ($P<0.001$) were confirmed to psychosomatic symptoms mediated by low distress. Also, the indirect effect of anxious attachment ($P<0.001$), mature defense mechanism ($P=0.045$), immature ($P<0.001$), and neurotic ($P<0.001$) correlated with psychosomatic symptoms mediated by high distress.

Conclusion: Considering distress tolerance as a moderating mechanism, there was a relationship between ambivalent and anxious attachment styles, and neurotic and immature defense mechanisms with psychosomatic symptoms.

Keywords: Emotional regulation, Psychological distress, Somatoform disorders, Anxiety disorders.

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Background

In the early 20th century, the effect of psychological conditions on body functions and the psychological origin of some diseases led to the emergence of a newer type of disease known as psychosocial or psychosocial disorders (1). According to the fifth diagnostic and statistical manual of mental disorders, these disorders are identified with a major focus on physical concerns, and the first referral is essential in medical centers during primary mental health care (2). Although physical symptoms are mostly associated with psychological distress and psychological damage, some physical symptoms and related disorders can occur on their own, and their causes remain ambiguous (3). These diseases follow a simple equation: psychological pressures are caused by environmental factors, along with previous biological and genetic readiness (weakness or organ damage) leading to psychosomatic disorders (4).

Considering the important role of anxiety and stress in people with psychosomatic diseases, recognizing defense mechanisms that can support people against anxiety and stress as self-knowledge processes (5) is important and it seems that they can play a role in predicting psychosomatic symptoms. Although defense mechanisms have different characteristics, all of them distort or deny reality, and their activities are unconscious (6). Neurotic defense style, unnatural and inefficient exposure methods that include false altruism, conflicting reaction, idealization and annulment, and undeveloped defensive style, such as neurotic defense style, unnatural exposure methods. It is inefficient and inefficient, including reasoning, denial, dividing, displacement, separation, inspiring, autistic daydreaming, dividing, passive aggression (7).

Psychological distress is a term that describes individual general psychopathology with a set of symptoms including depression, anxiety, and perceived stress. It refers to the

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general concept of unnatural psychological functioning at the level of stressful life events (8). Therefore, it can be said that psychological distress is a unique and uncomfortable emotional situation for a person in response to a stressful factor or special need that leads to transient or permanent damage (9). In psychological distress, enthusiasm about life decreases, and feelings of heartbreak and hopelessness dominate. This condition provides a continuous and unsympathetic experience of feelings of worry and psychological pressure that affects one's overt and unreal behavior (10). Also, Oskis and colleagues found that attachment styles are effective in people with the alexithymia disorder (11). Another study showed that alexithymia and adult attachment were associated with the five-factor model of personality and perceived relationship adjustment (12).

Objectives

The aim of this study was to develop a psychosomatic symptoms model based on emotional regulation, defense mechanisms, and attachment styles mediated by distress level.

Methods

This was a descriptive correlational study using structural equation modeling. The statistical population of this study consisted of all people with psychosomatic disorders in Tehran, Iran, during 2019. By referring to all medical centers admitting patients with psychosomatic disorders in Tehran, the researcher selected 540 people with confirmed psychosocial disorder through the Physical Health Questionnaire (PHQ15) were selected using purposive sampling. In selecting the sample size, 20 people were needed for each observable variable, and based on the variables in the conceptual model shown in figure 1 (10 observable variables), 200 people were selected. The inclusion criteria were as follows: a diagnosis of the psychosomatic disorder based on medical records, age between 18 and 45 years, lack of personality disorders and psychosis (based on a clinical interview of a psychologist with a Ph.D. degree and at least 10 years of clinical work experience), and no substance abuse or addiction (based on blood test results). We excluded patients who did not complete the questionnaire. The data of 540 people were analyzed, which were divided into two groups with high and low distress levels (scores above 27 as high and less than 8 as low distress). The ethical considerations of the present study were as follows: all individuals received information about the research in writing and participated in the research if they wished. It was assured that all information was confidential and would be used for research matters. Participants' first and last names were not registered to respect their privacy.

Short Form of Cognitive Emotion Regulation Questionnaire (CERQ-S): This questionnaire was prepared by Gross and John in 2003. It has 36 items and two subscales of suppression and reappraisal. The scale scores range from 1 (almost never) to 5 (almost always). The maximum and minimum scores obtained in this questionnaire are 36 to 180, respectively. Obtaining higher scores means higher cognitive emotion regulation, and lower scores mean lower cognitive emotion regulation. Cronbach's alpha coefficient was 0.79 for reappraisal and was 0.73for suppression, and the re-test validity was 0.69 for the whole scale after three months. In Iran, the psychometric properties of this scale have been studied by Naderi and colleagues on students yielding Cronbach's alpha coefficients of 0.79, 0.52, and 0.70 for reappraisal, suppression, and the whole scale, respectively (13).

Adult Attachment Styles Questionnaire (AAQ): This questionnaire was developed by Hazan and Shaver in 1987. This questionnaire measures secure and insecure attachments. The questionnaire consists of two parts: in the first part (AAQ1), the subject responds to three paragraphs which were designed as descriptive sentences on a seven-point scale (completely disagreed = 1, to some extent disagreed = 2, I disagree a little = 3, I'm not sure = 4). (you say 7-point but you mention 4 points) In the second part (AAQ2), the same descriptions are re-designed, but this time the subject only expresses its similarity to one of those descriptions by marking one of the three described descriptions. The reliability of the questionnaire has been confirmed by the test-retest method in many studies. For example, in the case of category measurement (AAQ2), the test-retest reliability coefficient was 0.70, and in continuous scales or descriptive grading (AAQ1), reliability was 0.60 during 1-8 weeks (14).

Defense Styles Questionnaire (DSQ): This questionnaire was developed by Andrews and colleagues in 1993 with

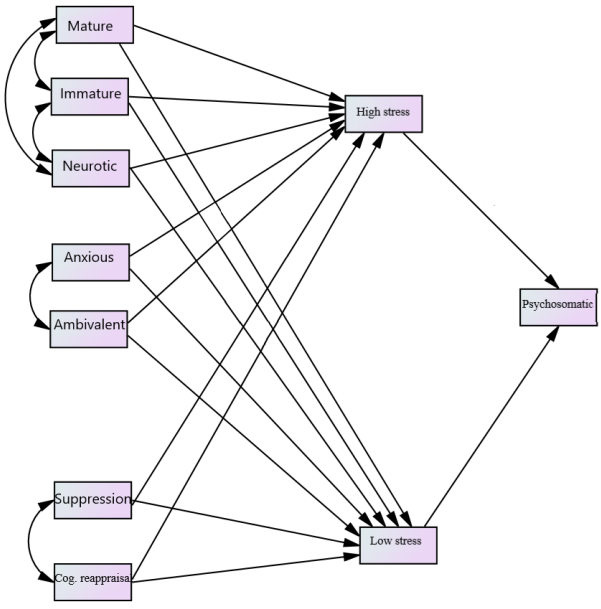


Figure 1. Conceptual Model of Research

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40 questions measuring 20 defense mechanisms in terms of three mature, neurotic, and immature defense styles. Andrews and his colleagues reported a correlation coefficient between 0.46 and 0.86 and reported Cronbach's alpha for soft and neurodevelopment and undeveloped growth styles, respectively. Also, the reliability of the Persian version of this questionnaire in Iran was reported to be 0.63, 0.69, and 0.77 by Cronbach's alpha for soft and undeveloped growth styles, respectively (15).

Kessler Psychological Persevering Scale (K10): This questionnaire was developed by Kessler and colleagues in 2002 as 10 items. The items are scored on a five-point scale from zero and four (always = 4, most of the time, = 3, sometimes = 2, rarely = 1, and never = 0). The minimum and maximum scores are zero and 40, respectively. Obtaining higher scores in this questionnaire indicates higher psychological distress. Cronbach's alpha coefficient was 0.95 (16). Cronbach's alpha coefficient in the Persian version of this questionnaire was 0.93, and Spearman-Brown's reliability coefficient was 0.91 (17).

The conceptual model of the study is shown in Figure 1. Descriptive statistics were used to categorize the individual characteristics of the participants to calculate frequency, percentage, mean and standard deviation. Kolmogorov-Smirnov test was used to detect normal data distribution. Inferential statistics such as Pearson's correlation coefficient, path analysis were used. chi-square index, comparative fit index (CFI), Goodness of fit index (GFI), adjusted goodness of fit index (AGFI), and the root mean square error of approximation (RMSEA). The bootstrap test was used to assess mediating relationships. The significance level in this study was considered to be 0.05. The above analyses were performed using SPSS 22 and AMOS 22 software. $P < 0.05$ was considered to be significant.

Results

The mean ± standard deviation (SD) age of the participants' was 46.06 ± 12.4 years. Kolmogorov-Smirnov test showed that it was not significant for all variables. The assumption of normality for the variables was not ruled out. Therefore, Pearson's correlation coefficient and path analysis model were used. Pearson's correlation coefficient was used to identify the relationship between the present variables in the model. Descriptive indicators of research variables are listed in Table 1.

Table 1 shows that the mean and Sd of the research variables in the two groups with high and low distress. Since the participants were grouped in terms of distress level in the present study, in Table 2, Amos and James Kasgin macro was used to compare the effect and role of adjustment.

As Table 2 showed, the mature defense mechanism had a negative and inverse effect on high distress and a positive and direct effect on low distress ($P < 0.001$). Also, the immature and neurotic defense mechanisms, and anxious and avoidant attachment styles had a positive and direct effect on high distress and a negative and inverse effect on low distress ($P < 0.001$). Suppression and cognitive reappraisal emotional regulation models had a positive and direct effect on high and low distress (P $P < 0.001$). In order to investigate the mediating role of high and low distress in the relationship between defense mechanism, attachment style, emotional regulation, and psychosomatic symptoms, bootstrap was used. The indirect effect of anxious attachment to psychosomatic symptoms ($P < 0.001$), avoidant attachment to psychosomatic symptoms ($P = 0.048$), immature defense mechanism to psychosomatic symptoms ($P < 0.001$), and neurotic defense mechanism with psychosomatic symptoms ($P < 0.001$) were confirmed. Also, the indirect effect of anxious attachment to psychosomatic symptoms ($P < 0.001$), and mature ($P = 0.045$), immature ($P < 0.001$), and neurotic ($P < 0.001$) defense mechanisms to psychosomatic symptoms were mediated by high distress. The relationships between attachment styles, emotion regulation strategies, and defense mechanisms with psychosomatic symptoms mediated by high and low distress were studied using path analysis (Figure 2). The goodness of fit indices showed that the model's grace to the collected data was optimal (Table 3).

Discussion

The aim of this study was to develop a psychotic symptoms model based on emotional regulation strategies, defense mechanisms, and attachment styles mediated by distress level. The results showed that regardless of the role of distress level, anxious attachment style, immature

Table 1. Descriptive Indicators of research variables by distress level

Variable	Group		M	SD
Psychosomatic symptoms	High distress	Psychosomatic	12.41	2.653
	Low distress		10.75	2.943
Emotion Regulation	High distress	suppression	18.07	2.272
		cognitive reappraisal	13.08	3.256
	Low distress	suppression	7.67	4.245
		cognitive reappraisal	17.06	1.531
Defensive mechanisms	High distress	Mature	13.58	9.141
		Neurotic	42.68	4.963
		Immature	74.00	8.201
	Low distress	Mature	19.26	7.497
		Neurotic	16.74	4.739
		Immature	31.90	7.060
Attachment styles	High distress	Anxious	20.64	2.237
		Avoidant	14.98	4.202
	Low distress	Anxious	6.71	2.400
		Avoidant	11.67	5.464

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Table 2. Estimates of direct effect coefficients of exogenous variables of emotion regulation, defense mechanisms, and attachment styles on psychological distress and psychosomatic symptoms

	Directions	B	B	Standard Error	Critical value
No moderating role in emotional distress	Anxious	-. 586	-. 208	.009	-62.899* * *
	Avoidant	-. 023	-. 006	.013	-1.702
	Mature defense	.019	.008	.008	2.467*
	Immature defense	-. 806	-. 540	.005	-163.351* * *
	Defensive mechanism	.749	.812	.003	245.347* * *
	suppression	-025	-. 008	.011	-2.286*
	cognitive reappraisal	.029	.005	.021	1.366
With the moderating role of low distress	Anxious	-. 319	-. 112	.040	-8.023* * *
	Avoidant	-. 040	-. 032	.017	-2.272*
	Mature defense	.002	.002	.013	.118
	Immature defense	-. 774	-. 536	.020	-38.495* * *
	Defensive mechanism	.779	.804	.013	57.695* * *
	suppression	-. 004	-. 003	.022	-. 187
	cognitive reappraisal	-. 109	-. 024	.062	-1.752
With the moderating role of high distress	Anxious	-. 855	-. 220	.032	-26.994* * *
	Avoidant	.021	.010	.017	1.258
	Mature defense	.027	.029	.008	3.501* *
	Immature defense	-. 923	-. 527	.014	-64.656* * *
	Defensive mechanism	.859	.809	.009	99.350* * *
	suppression	.028	.007	.031	.898
	cognitive reappraisal	.026	.010	.022	1.204

defense mechanism, and neurotic defense mechanism significantly predicted psychosomatic symptoms. The most important effects were related to neurotic and immature defense mechanisms, and anxious attachment, respectively.

The findings showed that the anxious attachment style was effective on psychosomatic symptoms. The results were in line with a study (11) on the role of attachment styles in people with alexithymia disorder and another study (12) on the relationship between alexithymia and adult attachment with the five-factor model of personality and perceived relationship adjustment. Also, this finding was in line with the results of another study (18) showing a significant relationship between attachment styles, defense mechanisms, and cognitive emotion regulation with psychological distress. In explaining the above-mentioned findings, it should be noted that psychosomatic disease characteristics are related to insecure and anxious attachment styles. According to McLachlan and Gale, as a model of focus on others, the role of anxiety in attachment refers to a level of concern that focuses on the inexhaustibleness of others for him or fear of abandoning and abandoning, which as a damaging factor to people's mental health can be effective in the occurrence of psychological stresses related to physical health. Such a view of attachment as an effective factor in psychological performance can explain the strength of attachment, especially for predicting psychosomatic symptoms (10).

The findings showed that suppression and cognitive reappraisal emotional regulation strategies were effective on high and low distress. This finding was consistent with the results of Wardrope and co-workers' study on the effect of attachment styles and relationship quality on quality of life and psychological distress (19) and Van Eck and colleagues' research on the relationship between emotion regulation and distress tolerance (20). Emotion plays a central role in determining normal and morbid reactions, especially in biological reactions (11). Also, due to the role of emotional factors in the onset, progression, and exacerbation of psychosomatic diseases, the high prevalence of psychological and emotional distress in these patients and inappropriate emotional responses lead to the development of various forms of pathology (especially depression, anxiety, and stress) and reducing stress and psychological distress can improve

Table 3. Goodness of fit indices in the path analysis model

The goodness of fit indices	χ2/df	RMSEA	AGFI	GFI	CFI
	1.90	0.067	0.98	0.98	0.95

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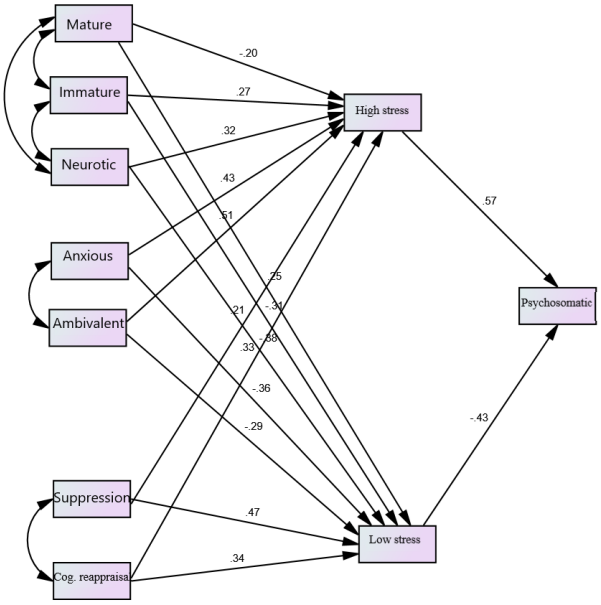


Figure 2. Path model of the relationship between emotional regulation, defense mechanisms and attachment styles in predicting psychosomatic symptoms with moderating of distress level

psychosomatic symptoms (5).

In explaining this finding, it can be said that people who try to suppress their emotions actually increase physiological suppression and negative emotional experience and instead reduce their chance positive emotional experience. On the other hand, suppression of emotion can lead to inability to differentiate emotions, and this in turn, leads to the experience of ambiguous emotions. Such dual emotions can cause physical problems in dealing with stressful life events with ambiguity and anxiety. Secondly, such unsympathetic emotions are usually associated with physiological arousal, which remains active because of difficulty in regulating emotions and can manifest as psychosomatic symptoms (4).

One of the limitations of this study is that the sample group included women referred to Tehran's psychosomatic centers, which makes it difficult to generalize the results to other groups and communities. Therefore, it is suggested that more studies be conducted on other samples to generalize the results. Therefore, in order to help patients with psychosomatic symptoms, it is suggested that interventions be made by health professionals to reduce the negative effects of anxious attachment style and immature defense mechanisms on psychosomatic symptoms.

Conclusion

We found a significant relationship between avoidant and anxious attachment styles and neurotic, and immature defense mechanisms with psychosomatic symptoms while considering distress tolerance as a moderating mechanism.

Ethical Considerations

This study has an Ethics Committee code of IR.IAU.TMU.REC.1399.294 from Tehran Islamic Azad University of Medical Sciences. All ethical principles were considered in this research. The participants were informed about the purpose of the research and its stages. Informed consent was obtained from the subjects. They were also assured of the confidentiality of their information. Moreover, the subjects were free to withdraw from the study if desired. They were also informed that they would be provided with the results of the research.

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Authors' contributions

Conceptualization [Asghar Badaye]; Methodology [Shahram Vaziri]; Investigation [Farah Lotfi Kashani]; Writing the Original Draft [Asghar Badaye]; Writing – Review & Editing, Author names [all author]; Funding Acquisition, [all author]; Resources, [all author]; Supervision, [Shahram Vaziri].

Conflict of interest

The authors declare that they have no conflict of interests.

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