IJBS
10.30491/IJBS.2025.511310.2207
International Journal of Behavioral Sciences
Original Paper

Investigating the Effect of Attachment Styles on the Level of Perceived Anxiety and Stress in Women with Polycystic Ovary Syndrome with the Moderating Role of Defense Mechanisms

Fatemeh Tadayonghotbabadi[1] (MSc), Narges Argha[2] (MSc), Maryam Ilati[3] (MSc), Zahra Khorasani[4] (MSc), Seyyedeh-Sara Hosseini[5] (MSc)

1. Department of Psychology, Faculty of Medicine, Shiraz Branch, Islamic Azad University, Shiraz, Fars, Iran
2. Department of Psychology, Mohaghegh Ardebili University, Ardebil, Iran
3. Training and Counseling Department, Central Tehran Branch, Islamic Azad University, Tehran, Iran
4. Department of Psychology, Exceptional Children Education, University of Tehran, Tehran, Iran
5. Department of Psychology, Quchan Branch, Islamic Azad University, Quchan, Iran

Corresponding Author:
Seyyedeh-Sara, Hosseini,
Department of Psychology,
Quchan Branch,
Islamic Azad University, Quchan,
Iran
E-mail: hoseinisara278@gmail.com

Submitted: 21 May 2025
Accepted: 23 July 2025

Int J Behav Sci. 2025; 19(2): 124-131

Abstract

Introduction: This study investigates the influence of attachment styles on perceived anxiety and stress levels in women with Polycystic Ovary Syndrome (PCOS), considering the moderating effect of defense mechanisms. PCOS, a hormonal imbalance, can cause physical changes and other complications, potentially affecting the mental health of women.

Method: This cross-sectional, descriptive-correlational study used structural equation modeling and path analysis to examine female patients with PCOS attending women's treatment clinics in Tehran in 2022. A sample of 152 women was selected using purposive sampling. Research instruments included the Revised Adult Attachment Scale (RAAS), Beck Anxiety Inventory (BAI), Perceived Stress Questionnaire (PSQ), and Defense Style Questionnaire (DSQ-40). Descriptive statistics and moderation analysis were carried out with Jamovi software version 2.4, while SmartPLS software version 4 was used for path analysis. The p-value of 0.05 was established for this study.

Results: Findings revealed that avoidant attachment style significantly reduced stress (β=0.19, P=0.012) but not anxiety (β=0.18, P=0.057). Immature defensive style significantly reduced stress (β=0.50, P=0.0001) and moderated the relationship between both avoidant (β=0.32, P=0.013) and secure (β=-0.25, P=0.036) attachment styles and anxiety.

Conclusion: This research suggests that women with PCOS experience higher stress levels when displaying avoidant attachment and immature defense mechanisms. Conversely, secure attachment can mitigate anxiety, even with inadequate defense mechanisms. These findings may inform the development of psychological interventions to reduce stress and anxiety in this population.

Keywords: Attachment Styles, Anxiety, Perceived Stress, Women with Polycystic Ovary Syndrome, Defense Mechanisms

Introduction

Polycystic Ovary Syndrome (PCOS), also known as hyper androgenic anovulation, is a common endocrine disease among women of reproductive age that presents with symptoms such as menstrual irregularities, infertility, hirsutism, acne, and obesity [1]. This syndrome affects a significant percentage of women and is a lifelong reproductive, metabolic, and psychological disorder. The causes of PCOS include genetic factors, dysfunction in the hypothalamus and ovaries, elevated androgens, insulin resistance, and mechanisms related to obesity [2]. Studies have reported varying prevalence rates of PCOS,

ranging from 6% to 18% based on the Rotterdam criteria, with rates in Iran ranging from 7% to 19.4% [3]. Systematic reviews and meta-analyses indicate that women with PCOS commonly experience depression, anxiety, and reduced quality of life [4, 5]. The combination of fertility issues, concerns about pregnancy, hormonal fluctuations, and metabolic challenges can have a significant impact on the mental well-being of these individuals. Consequently, women with PCOS have a higher likelihood of experiencing mental health conditions, particularly depression (28-64%) and anxiety (34-57%) [6]. Research shows that women with PCOS are 2-3 times more likely to exhibit symptoms of anxiety and depression compared to those without the condition [7]. Additionally, studies have shown that young women and adolescents with PCOS experience higher rates of anxiety and depression than their peers without the syndrome [8].

PCOS in women can lead to both physical and psychological concerns due to the anticipation of threats and frequent anxious thoughts. These worries can increase stress levels and impact the ability to cope with the challenges of the condition [9]. The presence of heightened androgens and hormonal imbalances often contribute to the development of psychological symptoms, including issues like acne, hair loss, and weight gain, which can further exacerbate the stress experienced by these individuals [8]. In this context, research has identified infertility-related concerns and body image dissatisfaction as key stressors [10], and individuals with PCOS have been found to experience significantly higher levels of perceived stress and anxiety compared to those without the condition [11].

Anxiety and stress experienced by women with PCOS, as well as how they handle emotional challenges and daily stresses, are closely correlated to the emotional attachment patterns and styles developed in their early relationships [12]. The bond formed with caregivers during childhood shapes an individual's thoughts, feelings, and behaviors in close relationships. Healthy attachment fosters cognitive, social, and emotional growth, while disruptions in attachment from inadequate caregiving or abuse can result in insecure attachment styles [13]. Research shows that insecure attachment, particularly anxious attachment, is correlated to higher levels of stress [14]. Conversely, secure attachment styles are associated with lower stress levels and improved coping mechanisms, whereas insecure attachment styles, such as anxious and avoidant, are connected to higher stress levels and poorer coping skills [15]. A study also suggests that individuals with secure attachment exhibit normal levels of anxiety, while those with other attachment styles experience elevated anxiety levels [16].

Women with PCOS may unknowingly utilize psychological defense mechanisms to manage feelings of anxiety, stress, and negative emotions [17-19]. These defense mechanisms impact behavior, emotional regulation, and social interactions, and are crucial for maintaining mental well-being [17]. These mechanisms are categorized into three styles: mature, immature, and neurotic, with mature mechanisms being adaptive, while immature and neurotic mechanisms are considered dysfunctional [18]. Research has indicated that individuals who exhibit mature defense mechanisms tend to show resilience and achieve personal success, whereas those who rely on neurotic and immature defenses are more likely to experience perceived stress and depression [19]. Additionally, a study found that a secure attachment style can predict a patient's level of perceived stress by influencing the use of immature defense mechanisms [18]. Another research indicated that mature defense mechanisms may safeguard against negative attachment patterns and psychological issues [20].

The PCOS, a common hormonal disorder in women, can negatively affect mental health, increasing anxiety and stress. These psychological effects warrant specific attention due to their impact on overall well-being. This study investigates the relationships between attachment styles, perceived anxiety, and stress in women with PCOS while also examining the moderating role of defense mechanisms. Addressing a gap in the literature, this research analyzes how attachment styles influence anxiety and stress in this population and how defense mechanisms moderate these relationships. The goal is to inform psychological support strategies for women with PCOS. The study's conceptual model is presented in Figure 1.

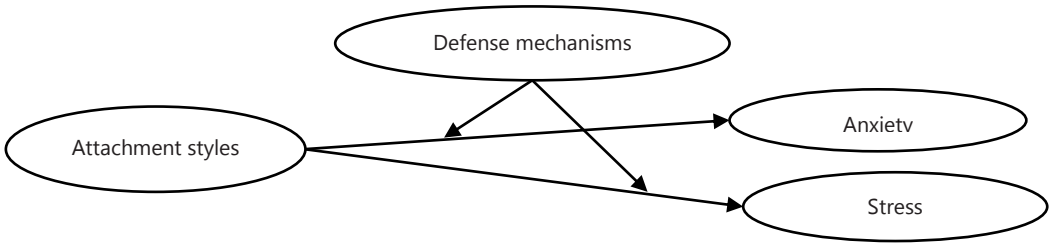

Figure 1. Conceptual framework of the study.

Method

The study used a descriptive-correlational design with a cross-sectional approach and employed structural modeling and path analysis techniques to examine the impact of a moderating variable. The women diagnosed with PCOS who were seeking treatment at women's clinics in Tehran in 2022. A purposive sample of 152 women with PCOS was selected. Sample size adequacy was determined using Cohen's formula for SEM in 2013, taking into account observed and latent variables, effect size, probability levels, and statistical power [21]. With an anticipated effect size of 0.3, a statistical power level of

0.8, 5 latent variables, 95 observed variables, and a probability level of 0.01, the estimated sample size was 177 participants. To address potential attrition, the researcher increased the targeted sample size to 180 participants.

The criteria for inclusion in the study required women to have PCOS, be at least 20 years old, be in good physical health, have an educational level of a diploma, provide informed consent to participate, and have a medical record at medical centers. The exclusion criteria involved non-response to more than eight questionnaire items, leading to withdrawal from the study. The research started by gaining approval from the university and reaching out to three specific medical centers that cater to women's health. An online announcement was made on the medical centers' social networks, and eligible women who expressed interest were purposefully chosen based on meeting the initial requirements. During the initial virtual interview, the researchers explained the research goals and ethical principles to the women and addressed any questions they may have had. The participants were informed that the research documents did not include personal details and that they were free to leave the study whenever they chose. It took four months to conduct the research and complete the questionnaires virtually due to limited cooperation from the individuals. The study utilized 152 out of 180 completed questionnaires, with 48 questionnaires being excluded due to incompleteness or intentional errors. The participants self-administered the questionnaires as self-reports. In order to comply with ethical principles, before administering the questionnaires, the subjects were asked to fill out an online consent form and were told that there was no obligation to participate in the study and continue. They were also explained that these tests do not contain any identifying information.

The tools used in this study were as follows:

Revised Adult Attachment Scale (RAAS): Collins created a questionnaire to analyze attachment styles in adults, consisting of 18 items [22]. Each question is rated on a Likert scale, from strongly disagree (1) to strongly agree (5). The questionnaire identifies three attachment styles: secure (questions 1, 8, 9, 10, 14, and 17), avoidant (questions 3, 4, 7, 15, 16, 18), and anxious attachment (questions 2, 5, 6, 11, 12, 13). The range of scores for each dimension varies from 6 to 30. In Iran, a study assessed the reliability of the questionnaire using Cronbach's alpha, yielding a score of 0.683 [23]. In the current study, Cronbach's alpha coefficients were 0.701 for secure attachment, 0.755 for avoidant attachment, and 0.735 for anxious attachment. Using the Composite Reliability method, the researcher found values of 0.732 for secure attachment, 0.844 for avoidant attachment, and 0.834 for anxious attachment. Additionally, the internal validity of the scale was examined through the average variance extracted method, resulting in scores of 0.51 for secure, 0.57 for avoidant, and 0.55 for anxious attachment.

Beck Anxiety Inventory (BAI): Beck et al. developed a questionnaire to assess anxiety symptoms in individuals, and they confirmed its reliability through internal consistency [24]. The BAI consists of 21 items where the subject rates the severity of their anxiety symptoms over the past week. Responses are on a four-point Likert scale ranging from not at all to severe. Scores range from 0 to 3 for each question, with a total score between 0 and 63 indicating the level of anxiety: 0-7 (lowest), 8-15 (mild), 16-25 (moderate), and 26-63 (severe). Higher scores suggest higher anxiety levels. In Iran, the Cronbach's alpha was 0.92 [25], while in this study it was 0.645, with a Composite Reliability of 0.788. Internal validity was assessed using the average variance extracted method, resulting in a value of 0.78.

Perceived Stress Questionnaire (PSQ): In 1983, Cohen et al. created and tested a self-reported survey to measure stress levels [26]. The questionnaire consists of 16 items rated on a 5-point Likert scale ranging from always to never, with a total score ranging from 16 to 80. Questions include inquiries about feeling tense, uncomfortable, and ineffective in daily life, struggling to cope with mounting problems, and being distressed by uncontrollable issues. The PSQ is scored on a 5-point Likert scale (from 1 = always to 5 = never). The total score ranges from 16 (low stress) to 80 (high stress); higher scores indicate higher levels of perceived stress. The questionnaire demonstrated good internal consistency with a Cronbach's alpha value of 0.87. In Iran, the questionnaire showed a reliability of 0.72 based on Cronbach's alpha [27]. The research discovered that the Cronbach's alpha coefficient was 0.695, while the Composite Reliability value was 0.760. The AVE score for convergent validity was determined to be 0.77.

Defense Style Questionnaire (DSQ-40): In 1993, Andrews et al. developed a survey to assess people's defensive tendencies, with its accuracy and consistency validated by experts in the field [28]. The questionnaire examines 20 defense mechanisms divided into three categories: mature, immature, and neurotic. Mature defense mechanisms include sublimation, anticipation, humor, and suppression. Immature defense mechanisms consist of rationalization, acting, denial, autistic fantasy, idealization, passive aggression, rationalization, splitting, and somatization. Neurotic defense mechanisms encompass isolation, reaction formation, pseudo-altruism, and undoing. The questionnaire consists of 40 questions, each rated on a nine-point Likert scale. The scores for each category are totaled to determine an individual's overall defense style. A higher score indicates a stronger defense style in the individual. The DSQ-40 is scored on a 9-point Likert scale (from 1 = always to 5 = never). The total score ranges from 16 (low stress) to 80 (high stress); higher scores indicate higher levels of perceived stress. Mature Defense Style: Questions related to this style are 25, 26, 35, 38, 2, 3, 5, and 30. Immature Defense Style: Questions related to this style include 4, 16, 6, 29, 8, 18, 9, 15, 10, 13, 11, 20, 12, 27, 14, 17, 19, 22, 23, 36, 31, 33, 34, 37. Neurotic Defense Style includes questions 1, 39, 7, 28, 21, 24, 32, 40. The individual obtains a score between 2 and 18 in each of the defense mechanisms. In each of the defense mechanisms, if the individual's score exceeds 10, it means that the individual

uses that mechanism, and in general styles, the sum of the individual's scores in each style is determined. This scale's reliability in Iran was tested using Cronbach's alpha, with values ranging between 0.83 and 0.94 for the mature style component, 0.81 and 0.92 for the immature component, and 0.79 and 0.91 for the neurotic component. Test-retest reliability was also assessed over a two to six-week interval, resulting in values between 0.73 and 0.87 for the mature style component, 0.71 and 0.84 for the immature component, and 0.69 and 0.78 for the neurotic component [29]. In this study, Cronbach's alpha values for the immature, mature, and neurotic defensive style were 0.782, 0.749, and 0.631, respectively, with composite reliability values of 0.847, 0.833, and 0.802. Furthermore, the components exhibited AVE values of 0.75, 0.88, and 0.51 for convergent validity.

Analysis of descriptive statistics and examination of the moderating variable were conducted using Jamovi version 2.4 software, while the path between variables was analyzed using SmartPLS version 4 software. The Shapiro-Wilk test was employed to assess the normality of the distribution of the research variables. Significant results were obtained from the test conducted on the research variables, indicating that they did not follow a normal distribution. Therefore, SmartPLS was used for analysis. The study established a p-value of 0.05.

Results

At first, the researcher analyzed the descriptive statistics of the study variables. The 152 participants were categorized into three education groups: Bachelor's degree (23.7%), Master's degree (25.7%), and Diploma degree (50.7%). The participants were categorized into three age groups: 20 to 23 years (59.2%), 24 to 25 years (15.1%), and over 25 years (25.7%). Table 2 displays the mean and standard deviation of the study variables.

Table 3 displays the relationship between the research variables using Pearson's correlation coefficient.

According to Table 3, a secure attachment style showed a significant negative correlation with avoidant attachment style, anxious attachment style, anxiety, stress, immature defensive style, and neurotic defensive style ($p<0.001$). However, it had a significant positive relationship with the mature defensive style ($p<0.001$). Avoidant and anxious attachment styles were also positively correlated with anxiety, stress, immature defensive style, and neurotic defensive style ($p<0.001$), but they had a negative and significant relationship with mature defensive style ($p<0.001$). The researcher also assessed the assumptions of the test. The Shapiro-Wilk test was employed to check the normality of the distribution of the variables, and as this test yielded significant results for the variables, it was determined that the variables did not have a normal distribution. As a result, the model was carried out using the SmartPLS software. Following the model execution, the researcher examined the path coefficients and p-value between the variables as presented in Table 4. To ensure the reliability of the study findings, the researcher set the bootstrap value to 5000.

According to the results shown in Table 4 and Figure 2, the avoidant attachment style had a positive and significant influence on stress ($\beta=0.19$, $P=0.012$) but did not have a statistically significant impact on anxiety ($\beta=0.18$, $P=0.057$). Similarly, the anxious attachment style variable did not show a meaningful impact on stress and anxiety ($P>0.05$). Concurrently, the secure attachment style variable revealed an adverse and notable effect on anxiety ($\beta= -0.41$, $P= 0.0001$) while not showing a significant efficacy on stress ($\beta= -0.15$, $P= 0.081$). Furthermore, the immature defensive style variable had a beneficial and noteworthy impact on stress ($\beta= 0.50$, $P= 0.0001$). Simultaneously, an immature defensive style influenced the connection between an avoidant attachment style and anxiety, resulting in a significant impact ($\beta= 0.32$, $P= 0.013$). This discovery indicates that as the level of immature defensive style increases in individuals, an avoidant attachment style can lead to anxiety in women. Additionally, an immature defensive style influenced the relationship between a secure attachment style and anxiety, with a significant impact found ($\beta= -0.25$, $P= 0.036$). This finding suggests that as the level of immature defensive style increases in women, a secure attachment style is less likely to alleviate anxiety in women due to a decrease in the effect coefficient of the secure attachment style. Similarly, a neurotic defensive style moderated the connection between an avoidant attachment style and anxiety, resulting in a significant impact ($\beta= -0.49$, $P= 0.007$). This result demonstrates that as the level of neurotic defensive style increases in individuals, an avoidant attachment style can lead to anxiety in women. The researcher then explored how the predictive effects of avoidant attachment style and secure attachment style on the anxiety variable varied at different levels of the moderating variable.

Table 2. Description of the Main Research Variables

Variables	M	SD	Max	Min	N	Skewness	Kurtosis	Shapiro-Wilk	P
Secure Attachment Style	16.7	3.14	25.0	10.0	152	0.01	-0.52	0.96	< .001
Avoidant Attachment Style	14.2	3.20	25.0	10.0	152	1.56	2.48	0.83	< .001
Anxious Attachment Style	14.4	3.50	25.0	10.0	152	1.32	1.31	0.85	< .001
Anxiety	19.4	3.08	28.0	15.0	152	1.13	1.06	0.89	< .001
Stress	44.0	5.32	54.0	36.0	152	0.46	-0.84	0.92	< .001
Immature Defensive Style	25.3	7.83	42.0	14.0	152	0.61	-0.66	0.91	< .001
Mature Defensive Style	133.4	18.80	157.0	98.0	152	-0.44	-1.21	0.88	< .001
Neurotic Defensive Style	32.8	11.13	50.0	17.0	152	-0.01	-1.46	0.89	< .001

Table 3. Correlation between Variables

Variable	1	2	3	4	5	6	7	8
1. Secure Attachment Style	—							
2. Avoidant Attachment Style	-0.45***	—						
3. Anxious Attachment Style	-0.66***	0.71***	—					
4. Anxiety	-0.65***	0.60***	0.74***	—				
5. Stress	-0.62***	0.53***	0.65***	0.63***	—			
6. Immature Defensive Style	-0.63***	0.52***	0.67***	0.62***	0.80***	—		
7. Mature Defensive Style	0.58***	-0.54***	-0.68***	-0.58***	-0.53***	-0.64***	—	
8. Neurotic Defensive Style	-0.65***	0.41***	0.55***	0.50***	0.61***	0.65***	-0.57***	—

* P < .05, ** P < .01, *** p < .001

Table 4. Standard Research Coefficients in General

Result of the Hypothesis	Path	STDEV	P	T-value	Result
Anxious Attachment Style -> Anxiety	0.16	0.11	0.156	1.41	rejection
Anxious Attachment Style -> Stress	0.05	0.10	0.603	0.52	rejection
Avoidant Attachment Style -> Anxiety	0.18	0.09	0.057	1.90	rejection
Avoidant Attachment Style -> Stress	0.19	0.07	0.012	2.51	confirmation
Mature Defensive Style -> Anxiety	-0.11	0.08	0.144	1.46	rejection
Mature Defensive Style -> Stress	0.08	0.09	0.331	0.97	rejection
Neurotic Defensive Style -> Anxiety	0.09	0.10	0.383	0.87	rejection
Neurotic Defensive Style -> Stress	0.08	0.07	0.307	1.02	rejection
Secure Attachment Style -> Anxiety	-0.41	0.09	0.000	4.50	confirmation
Secure Attachment Style -> Stress	-0.15	0.08	0.081	1.74	rejection
Immature Defensive Style -> Anxiety	-0.17	0.11	0.128	1.52	rejection
Immature Defensive Style -> Stress	0.50	0.09	0.0001	5.40	confirmation
Immature Defensive Style x Anxious Attachment Style -> Anxiety	0.03	0.18	0.870	0.16	rejection
Immature Defensive Style x Anxious Attachment Style -> Stress	0.18	0.16	0.251	1.14	rejection
Immature Defensive Style x Avoidant Attachment Style -> Anxiety	0.32	0.13	0.013	2.47	confirmation
Immature Defensive Style x Avoidant Attachment Style -> Stress	-0.16	0.13	0.224	1.21	rejection
Immature Defensive Style x Secure Attachment Style -> Anxiety	-0.25	0.12	0.036	2.09	confirmation
Immature Defensive Style x Secure Attachment Style -> Stress	-0.22	0.13	0.090	1.69	rejection
Mature Defensive Style x Anxious Attachment Style -> Anxiety	0.17	0.19	0.363	0.90	rejection
Mature Defensive Style x Anxious Attachment Style -> Stress	-0.03	0.18	0.841	0.20	rejection
Mature Defensive Style x Avoidant Attachment Style -> Anxiety	-0.02	0.15	0.851	0.18	rejection
Mature Defensive Style x Avoidant Attachment Style -> Stress	-0.00	0.14	0.952	0.06	rejection
Mature Defensive Style x Secure Attachment Style -> Anxiety	0.04	0.10	0.647	0.45	rejection
Mature Defensive Style x Secure Attachment Style -> Stress	-0.15	0.12	0.212	1.24	rejection
Neurotic Defensive Style x Anxious Attachment Style -> Anxiety	0.28	0.18	0.127	1.52	rejection
Neurotic Defensive Style x Anxious Attachment Style -> Stress	-0.20	0.17	0.241	1.17	rejection
Neurotic Defensive Style x Avoidant Attachment Style -> Anxiety	-0.49	0.18	0.007	2.70	confirmation
Neurotic Defensive Style x Avoidant Attachment Style -> Stress	0.08	0.15	0.574	0.56	rejection
Neurotic Defensive Style x Secure Attachment Style -> Anxiety	0.11	0.10	0.250	1.15	rejection
Neurotic Defensive Style x Secure Attachment Style -> Stress	0.06	0.11	0.563	0.57	rejection

Discussion

The current study aimed to investigate how attachment styles influence anxiety and perceived stress in women with PCOS, with defense mechanisms serving as moderators. The findings suggest a complex interplay: while avoidant attachment and immature defense styles were linked to elevated stress levels, avoidant attachment was not significantly associated with anxiety. Interestingly, secure attachment appeared to buffer against anxiety, even when immature defenses were present, whereas anxious attachment had no notable predictive power. These patterns imply that both attachment and defense mechanisms shape emotional responses in PCOS, albeit in distinct ways.

The current study's results indicated that the avoidant attachment style and immature defensive style increase stress, while the secure attachment style reduces anxiety, which aligns with previous research [14, 16, 19]. Previous research has also shown that insecure attachment, particularly anxious attachment, is connected to higher levels of stress [14]. Additionally, research has shown that only individuals with secure attachment exhibit normal anxiety, while those with other attachment styles experience elevated anxiety [16]. Moreover, a study found that mature defensive strategies are correlated to resilience and personal success, while neurotic and immature defenses are associated with perceived stress and burnout [19]. In contrast to a body of prior research, the present study found that avoidant attachment was not significantly associated with anxiety, secure attachment did not predict stress levels, and anxious attachment was unrelated to both stress and anxiety [15, 30]. While previous studies have consistently linked secure attachment to lower stress and better coping, and insecure styles-especially anxious and avoidant-to heightened stress and poor coping [15], these patterns

were not fully replicated here. Similarly, although earlier research identified secure attachment as a negative predictor of anxiety and insecure (avoidant and ambivalent) styles as positive predictors [30], and found positive associations between anxious attachment and stress [14], the current findings diverge, suggesting that contextual or sample-specific factors may be moderating these relationships.

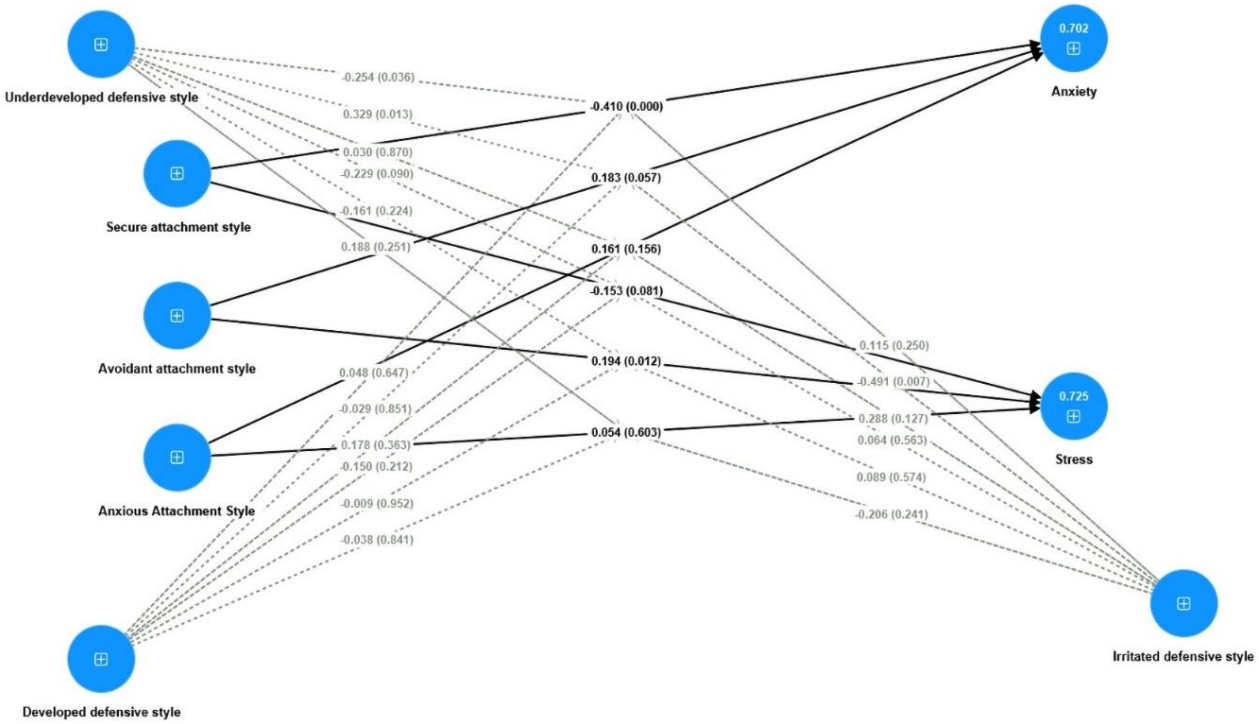

Figure 2. Path coefficients between variables and P-value.

The inconsistency between the present findings and those of Gallistl et al. (2024) [15] can be attributed to important contextual differences. Gallistl et al. studied acute psychosocial stress in the presence of romantic partners, where partner support likely moderated the effects of attachment on stress. In contrast, the current study did not consider partner presence and focused on perceived stress, which reflects more chronic stress and may be influenced by different mechanisms. Regarding Khorrami et al. (2022) [30], their sample included individuals with substance use, whose altered emotional regulation and interpersonal dynamics may lead to different attachment patterns, limiting the generalizability of their findings to the general population. Additionally, demographic variables such as age, gender, and socioeconomic status may contribute to the discrepancies. Variations in study design and stress measurement across these studies further complicate direct comparisons.

The lack of a significant relationship between avoidant attachment and anxiety may be attributed to emotional suppression strategies commonly used by avoidantly attached individuals. These individuals tend to inhibit emotional expression and avoid reliance on others, which may mask or minimize the experience of anxiety in self-report assessments [13]. Although they may experience internal tension, their coping style can result in underreporting of symptoms. Similarly, the non-significant link between anxious attachment and stress or anxiety may reflect the influence of contextual or cultural buffering factors. Anxious individuals may rely heavily on interpersonal reassurance, and in supportive environments—such as those with strong family ties—this dependence may temporarily reduce emotional distress [12]. These findings highlight the importance of considering both individual attachment patterns and environmental context when interpreting psychological outcomes in women with PCOS. Conversely, individuals with a secure attachment style play a positive role in regulating emotions and aiding in anxiety management. Those securely attached are better equipped to handle psychological challenges due to their trust in others and ability to cultivate supportive relationships. However, the secure attachment style did not demonstrate an impact on stress levels, possibly because stress is multifaceted and influenced by various factors that extend beyond attachment style alone [31].

According to another discovery in the current study, individuals with an avoidant attachment style tend to have higher levels of anxiety when using an immature or provoked defense style, while those with a secure attachment style experience less anxiety even with an immature defense style. Even though there were no studies dedicated to this topic in the literature, this result aligns with earlier studies conducted [18, 20, 32]. Previous research indicated that avoidant and anxious attachment styles have a direct impact on stress response, while secure and anxious attachments indirectly influence it through early maladaptive schemas. Moreover, an immature defense system can impact the stress response in both direct and indirect ways [32]. Another study found

that a secure attachment style can predict the perceived stress level in individuals through the influence of immature defense mechanisms [18]. Studies have also suggested that well-mature defense mechanisms can serve as a protective barrier against emotional disorders in individuals with traumatic attachment styles [20].

This discovery can be explained by the fact that the avoidant attachment style, which involves keeping emotional relationships at a distance, when combined with an immature defense style, can lead to ineffective coping mechanisms such as suppressing emotions and avoiding stress. This lack of effective coping strategies deprives the individual of supportive relationships and resources, resulting in increased anxiety and an inability to deal with psychological challenges [17]. In women with PCOS, those with an avoidant attachment style tend to rely heavily on themselves and limit their dependence on others. While this self-reliance might be helpful in some cases, when combined with immature defense mechanisms, it can lead to increased anxiety and stress. Immature defenses often worsen stress by failing to address the underlying issues effectively [18] .

On the other hand, a secure attachment style provides a strong protective effect for women with PCOS. By promoting trust and confidence in close relationships, it helps these women access social support during stressful periods related to their condition. Additionally, securely attached individuals usually have better emotion regulation skills, which aid in managing anxiety even in challenging situations or when immature defense mechanisms are present. This suggests that secure attachment can help buffer the negative psychological impacts of immature defenses in this population [16, 19].

This study faced some limitations that should be considered. External factors such as economic status, family dynamics, and ongoing medical treatments might have influenced the results, and were not controlled for in this research. Future studies should consider controlling or adjusting for these variables in order to improve the validity of findings. Additionally, since data were collected through self-report questionnaires, there is a possibility of response bias, especially social desirability bias, where participants might respond in a way that they think is more acceptable. To minimize this limitation, it is recommended that future research incorporate measures specifically designed to detect or control for such biases, such as social desirability scales or validity checks. Cultural factors influence attachment styles and defense mechanisms by shaping people's values and ways of coping. For example, collectivist cultures may promote secure attachments through strong family ties, while individualistic cultures might encourage more independence. Therefore, conducting similar studies in different cultural settings can clarify how culture affects these psychological patterns and help make findings more applicable worldwide. The psychological aspects could have been affected by hormonal fluctuations correlated to PCOS. To conduct a more comprehensive examination, gathering data at different points in the hormonal cycle is recommended. Additionally, limited access to samples due to geographic dispersion could have been a factor. Therefore, utilizing online methods or sampling from different treatment facilities is advised. Another limitation of the study is the potential impact of genetic factors on anxiety and stress. Analyzing the genetics of certain participants may provide more precise insights into this influence.

Conclusion

The findings of the present study demonstrate that women with PCOS may experience increased stress when they have an avoidant attachment style and use immature defense mechanisms. Conversely, having a secure attachment style can help reduce anxiety, even when inappropriate defense mechanisms are present. Furthermore, the study emphasizes the impact of defense mechanisms; indicating that individuals with avoidant attachment and immature defense mechanisms often experience heightened anxiety, while those with secure attachment tend to have lower anxiety levels even in challenging situations. These results could assist mental health professionals in creating more effective treatment plans for managing anxiety and stress in women with PCOS by focusing on addressing attachment styles and improving defense mechanisms. Additionally, this study could be utilized in educational and counseling programs to raise awareness among women with PCOS and their families about the significance of psychological factors in symptom management.

Conflict of Interest

The authors declare no conflicts of interest.

Ethical Approval

The research followed the ethical principles for human experimentation outlined in the Declaration of Helsinki, which included informed consent, approval from the hospital administration, and ensuring privacy and confidentiality.

Declaration of Generative AI and AI-Assisted Technologies

During the preparation of this work the authors did not use any AI tools.

Acknowledgement

The researchers wish to thank all the individuals who participated in the study.

References

1. Mondal, S., A. Chakraborty, and K. Pramanick, Natural Compounds and Biogenic Nanoparticles in Treatment of Polycystic Ovarian Syndrome, in Plant Derived Bioactive Compounds in Human Health and Disease. 2025, CRC Press. p. 206-222.
2. Joham, A.E., et al., Polycystic ovary syndrome. The lancet Diabetes & endocrinology, 2022. 10(9): 668-680. 10.1016/S2213-8587(22)00163-2.
3. Hadipour, S., et al., The Effects of Cinnamon on Metabolic and Hormonal Status of Women With Polycystic Ovary Syndrome: A Randomized Controlled Trial. Journal of Client-Centered Nursing Care, 2025. 11(1): 55-66. https://doi.org/10.32598/JCCNC.11.1.626.

4. Yadav, S., et al., Direct economic burden of mental health disorders associated with polycystic ovary syndrome: Systematic review and meta-analysis. Elife, 2023. 12: e85338. https://doi.org/10.7554/eLife.85338.
5. Ott, J. and M. Hager, Scientific Progress in Polycystic Ovary Syndrome: Little by Little. 2025, MDPI. 200. https://doi.org/10.3390/jcm14010200.
6. Floyd, R., et al., A prospective study of antenatal anxiety and depression in pregnant women with polycystic ovary syndrome. Irish Journal of Psychological Medicine, 2024: 1-5. https://doi.org/10.1017/ipm.2024.56.
7. Lin, H., et al., The prevalence and factors associated with anxiety-like and depression-like behaviors in women with polycystic ovary syndrome. Frontiers in psychiatry, 2021. 12: 709674. https://doi.org/10.3389/fpsyt.2021.709674.
8. Nasiri-Amiri, F., et al., Depression and anxiety in adolescents and young women with polycystic ovary syndrome: a systematic review and meta-analysis. International Journal of Adolescent Medicine and Health, 2023. 35(3): 233-242. https://doi.org/10.1515/ijamh-2022-0065.
9. Salajegheh, Z., et al., Mindfulness-based stress reduction (MBSR) effects on the worries of women with poly cystic ovary syndrome (PCOS). BMC psychiatry, 2023. 23(1): 185. https://doi.org/10.1186/s12888-023-04671-6.
10. Balikci, A., et al., Depression, anxiety, and anger in patients with polycystic ovary syndrome. Nöro Psikiyatri Arşivi, 2014. 51(4). 328. 10.5152/npa.2014.6898.
11. Solskyy, V., et al., SPECIFICS OF AUTONOMIC REGULATION, PERCEIVED STRESS, AND ANXIETY IN INTERNALLY DISPLACED WOMEN WITH POLYCYSTIC OVARY SYNDROME (PCOS) WITHOUT OBESITY. Fertility and Sterility, 2023. 120(4): e80. https://www.fertstert.org/article/S0015-0282(23)01512-1/fulltext.
12. Simon, S., et al., Psychological distress in women with polycystic ovary syndrome: The role of attachment and coping. Psychology, health & medicine, 2021. 26(6): 735-744. https://doi.org/10.1080/13548506.2020.1754436.
13. Blake, J.A., et al., Does attachment anxiety mediate the persistence of anxiety and depressive symptoms from adolescence to early adulthood? Social psychiatry and psychiatric epidemiology, 2025. 60(2): 453-461. https://doi.org/10.1007/s00127-024-02737-8.
14. Nickol, L., Ambulatory Measurements of the Relation between Insecure Attachment Style and Stress: A Systematic Literature Review. 2024: . http://gmwpublic.studenttheses.ub.rug.nl/id/eprint/4385.
15. Gallistl, M., et al., Relationship as resource or burden? Associations of attachment style, relationship quality and dyadic coping with acute psychosocial stress in the presence of the romantic partner. bioRxiv, 2024: 2024-10. https://doi.org/10.1101/2024.10.21.618832.
16. Shikanai, N., The Relationships between Adolescent Attachment Style, Anxiety, and Psychological Competitive Ability in Japanese Ballet Students. Anxiety, and Psychological Competitive Ability in Japanese Ballet Students, 2024: http://dx.doi.org/10.2139/ssrn.5042723.
17. Tang, Q. and J. Peng, Research on the Influence of Different Psychological Defense Mechanisms on the Psychology of Students. Journal of Contemporary Educational Research, 2022. 6(5): p. 14-20. 10.26689/jcer.v6i5.3902.
18. Mirmabini, S.B., et al., Relationship between Attachment Styles in Childhood and Emotional Disorders in Adolescence: A Structural Model for the Mediating Role of Identity and Defense Mechanisms. Journal of health research in community, 2021. 7(3): p. 65-77. http://jhc.mazums.ac.ir/article-1-588-fa.html.
19. Di Giuseppe, M., et al., Stress, burnout, and resilience among healthcare workers during the COVID-19 emergency: the role of defense mechanisms. International journal of environmental research and public health, 2021. 18(10): 5258. https://doi.org/10.3390/ijerph18105258.
20. Mohammadi, M., S. Sodagar, and M. Bahrami Hidchi, The mediating role of defense mechanisms in predicting perceived stress based on attachment styles in patients with COVID-19. Journal of Psychological Studies, 2022. 18(1): 69-81. 10.22051/PSY.2022.36951.2486.
21. Cohen, J., Statistical power analysis for the behavioral sciences. 2013: routledge.
22. Collins, N.L., Revised adult attachment scale. Behavior therapy, 1996: p. https://psycnet.apa.org/doi/10.1037/t19162-000.
23. Mehmannavazan, A., M. Aliakbaridehkordi, and A. Kakojoybari, Impact of attachment styles, family cohesion and adaptability on the level of resiliency as it relates to the feeling of homesickness among freshman students living in dormitories of alZahra university. Women's Studies Sociological and Psychological, 2015. 12(4): 173-204. https://doi.org/10.22051/jwsps.2015.1499.
24. Beck, A.T., G.K. Brown, and R.A. Steer, Psychometric characteristics of the Scale for Suicide Ideation with psychiatric outpatients. Behaviour research and therapy, 1997. 35(11): 1039-1046. https://doi.org/10.1016/S0005-7967(97)00073-9.
25. Balouch, V., et al., Stress, Anxiety and Depression Status in the Population of Southern Sistan and Baluchestan Province (Coastal Area) in the COVID-19 Epidemic in. Journal of Marine Medicine, 2021. 2(4): 226-36. https://sid.ir/paper/383402/fa.
26. Cohen, S., T. Kamarck, and R. Mermelstein, A global measure of perceived stress. Journal of health and social behavior, 1983: p. 385-396. https://www.jstor.org/stable/2136404.
27. Khalili, R., et al., Validity and reliability of the Cohen 10-item Perceived Stress Scale in patients with chronic headache: Persian version. Asian journal of psychiatry, 2017. 26: 136-140. https://doi.org/10.1016/j.ajp.2017.01.010.
28. Andrews, G., M. Singh, and M. Bond, Defense Style Questionnaire--40. Journal of Nervous and Mental Disease, 1993: https://doi.org/10.1037/t20765-000.
29. Bita, M. and R. Jafariharandi, Predicting of life satisfaction in terms of personality traits and defense mechanisms. Women's Studies Sociological and Psychological, 2018. 16(1): 111-150. https://doi.org/10.22051/jwsps.2018.20570.1752.
30. Khorrami, M., et al., Prediction of Coronavirus anxiety based on attachment styles, resilience, and life expectancy in drug users. Modern Care J, 2022. 19(1): https://doi.org/10.5812/modernc-121174.
31. El-Ashry, A.M., N.K. Abd El Fatah, and E.A. Abdelhamid, Harmony found: Serenity's crucial role in alleviating death anxiety through attachment styles among community-dwelling older adults. Geriatric Nursing, 2024. 58: 247-254. https://doi.org/10.1016/j.gerinurse.2024.05.035.
32. Khakpoor S, K.K.A., Hassanzadeh R, Asadi J. , The mediating role of early maladaptive schemas in the relationship between attachment styles and defense mechanisms with a positive response to stress in flooded married women in Aq Qala. psychological science, 2023. 21(119): 2249-68. 10.52547/JPS.21.119.2249.