

The relationship between neuroticism and suicidal thoughts among medical students: Moderating role of attachment styles

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ABSTRACT

Aim: The present study strives to find an experimental response to these questions: “Is the relationship between neuroticism and suicidal thoughts a simple relationship? Or are there other psychopathological variables such as attachment styles that also affect it?” **Subjects and Methods:** In this cross-sectional study, 376 medical students were selected from the three major cities of Iran using multi-stage sampling method from July 2018 to September 2018 and were evaluated using the demographic information questionnaire, Beck Scale for Suicidal Ideation (BSSI), the Revised NEO Personality Inventory (NEO-FFI), and the Adult Attachment Questionnaire (AAQ). **Results:** The overall prevalence of having suicidal thoughts among Iranian medical students was 17%. Moreover, the prevalence of suicide among the female, widowed, separated, and divorced students was higher than others. There was also a significant correlation between suicidal thoughts, gender, relational status, neuroticism, avoidant insecure attachment style, secure attachment style, and anxious/ambivalent insecure attachment style. Additionally, the attachment styles have a moderating role in the relationship between neuroticism and suicidal thoughts. **Conclusion:** Based on the current study, it is concluded that despite the presence of neuroticism in medical students, the attachment styles can reduce the risk of suicide as moderator variables. Hence, attachment styles can be considered a potential treatment goal in the prevention of suicide.

Keywords: Attachment styles, medical students, neuroticism, suicidal thoughts

Introduction

Suicide is a psychological issue defined as the deliberate infliction of damage on oneself with the aim of killing oneself.^[1] Today, the risk of psychological problems and suicidal thoughts among medical students is increasing. According to a recent meta-analysis of 122,356 medical students in 43 countries, the prevalence of suicidal thoughts

among the medical students is 11.1%.^[2] In Iran, the prevalence of suicide among the medical students is slightly higher than the global average rate (24.4% versus 11.1%).^[2,3] This difference could be attributed to various biological, social, and psychological factors. In the studies on the suicide risk factors in medical students, contradictory results were obtained regarding the effect of the demographic factors (including age, gender, Relational status, and other characteristics) on suicidal thoughts.^[4,5] As regards the other suicide risk factors in this social group, the attachment styles and personality traits were substantially important.^[6-10] However, the role of the attachment styles is more important than the role of the personality traits.^[11]

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Attachment styles and suicide

According to Bowlby's theory, "attachment" refers to an emotional bond between individuals and their caregivers in the early years of their lives. This bond leads to the formation of the positive and negative internal working models in connection with oneself and others. These models almost remain stable until adulthood, determining the person's attachment style. Traditionally, Ainsworth's Strange Situation introduces the three early attachment styles in children^[12] and adults^[13] as the "secure," "avoidant insecure," and "anxious/ambivalent insecure" styles. Individuals who have the secure attachment style feel close to others and are able to trust them. Persons with the avoidant insecure attachment style, which is also known as the "dismissive" attachment style, have unresponsive or emotionally unavailable caregivers during childhood. These individuals are not fond of intimacy and closeness and value excessive independence and detachment. Individuals with the anxious/ambivalent attachment style, which is also known as the "preoccupied" attachment style, have unpredictable caregivers in childhood. These people strongly tend to establish close relationships, fear rejection, and often believe others are not adequately close and intimate.^[14] According to the previous research, the attachment style is a general risk factor in "psychopathology". Evidence also suggests that people with the secure attachment style manifest a narrower range of psychopathological signs and a higher level of psychosocial performance throughout their lives as compared to individuals with the insecure attachment style.^[15] Recent reports also suggest that the avoidant insecure and anxious/ambivalent insecure attachment styles are more prevalent among suicidal patients.^[6-9] In fact, these individuals experience more problematic consequences due to inadequate support. Furthermore, these individuals have other symptoms such as pessimism, low self-esteem, and despair, which can set the scene for suicide attempts in difficult situations.^[6]

Neuroticism and suicide

The "big-five framework" is a "hierarchical model" of the "five broad factors" that reflects the personality at the broadest level of "abstraction."^[16] These five broad factors include I) surgency or extraversion, II) agreeableness, III) conscientiousness or dependability, IV) emotional stability versus neuroticism, and V) culture, intellect, or openness.^[17] Neuroticism is one of the big five personality traits and a high level of neuroticism can lead to characteristics such as anxiety, vulnerability, impulsiveness, angry hostility, and depression.^[18] As compared to the control group, suicidal patients show higher levels of neuroticism.^[19-21] In a recent meta-analysis, neuroticism (as a personality trait) was introduced as the most important predictor of the risk of suicide.^[22] The relationship between the neuroticism personality trait and suicide probably originates from the experience of emotions such as despair, helplessness, and severe stress, which make highly neurotic patients show a set of negative emotions in stressful conditions.^[18,23-26] Hence, the neuroticism personality trait increases the person's vulnerability to the psychosocial stress factor.^[22] As a result, the individual is more prone to suicidal

thoughts;^[27] suicide attempts;^[28] and eventually completed suicide.^[29]

Attachment styles and neuroticism

As stated, the attachment styles specifically include the emotions and behaviors shown in the context of close relationships. However, neuroticism is a personality trait that is manifested as a wide range of negative emotions in relational and non-relational situations. Shaver and Brennan were the first researchers to report the correlation between the attachment styles and the big five personality traits. Their findings reflected the positive correlation between the anxious/ambivalent insecure attachment style and the neuroticism personality trait.^[30] Since the publication of these results, the correlation between the attachment styles and neuroticism has been reported in several studies. The results of these studies generally unveiled the negative average correlation between the secure attachment style and neuroticism.^[31,32] These results also showed the positive average correlation between the avoidant insecure attachment style and neuroticism, while they revealed the average to strong positive correlation between the anxious/ambivalent insecure attachment style and neuroticism.^[33-35]

Research goal

In our review of the research background, there were reports of the significant role of the attachment styles and the neuroticism personality trait in suicidal thoughts. However, the present research strives to find an experimental response to these questions: "Is the relationship between the neuroticism personality trait (as one of the most important predictors of suicide) and suicidal thoughts a simple relationship? Or are there other psychopathological variables such as the attachment styles that also influence this relationship?" Considering these questions, the higher rate of suicide among the medical students as compared to ordinary people, and the shortage of related studies in Iran, the present research was designed and conducted to assess the correlation between the neuroticism personality trait and suicidal thoughts among the Iranian medical students with an emphasis on the moderating role of the attachment styles.

Subjects and Methods

Procedures

In this cross-sectional study, the sample size, which was 376, was obtained considering the 43% prevalence of suicidal thoughts among the medical students,^[36] the 5% error level, and the 95% confidence level. Following the approval of the research design by the Research and Technology Center of Zahedan University of Medical Sciences with ethical ID IR.ZAUMS.REC.1397.207, the aforementioned sample size was determined by collecting samples from the three major cities of Iran using the multistage sampling technique. The research inclusion criteria were 1) being interested in involvement in this study, 2) studying a medical field for at least a year in one of the Iranian universities, and 3) having physical, mental, oral, and auditory health. The exclusion criteria

also included 1) inaccurate completed questionnaires, 2) incidence of a major stressful incident such as death of the loved ones, the terminal illness of the participant or their family, or any other incident that could negatively affect the daily life routine, behavior, and performance of the participant, 3) withdrawing from the research, and 4) having a mental problem or disorder or taking antipsychotic drugs. In line with the Declaration of Helsinki, the related questionnaires including the demographic information questionnaire, Beck Scale for Suicidal Ideation (BSSI), the Revised NEO Personality Inventory (NEO-FFI), and the Adult Attachment Questionnaire (AAQ) were provided to the students after explaining the present research objectives to them and obtaining their consent.

Measures

Beck Scale for Suicidal Ideation (BSSI)

The BSSI, which consists of 19 questions, was invented by Aaron Beck in 1961. The questions in this scale are designed to study parameters such as the desire for death, preparedness for suicide, and desire for actual suicide. The final score on this test is calculated as follows: 0–3 no suicidal thought; 4–11 low-risk suicidal thoughts; and 12–38 high-risk suicidal thoughts. The validity and reliability of the English BSSI questionnaire have been repeatedly assessed and the Cronbach's alpha coefficient has always been higher than 0.85. The Persian translation of BSSI has shown satisfactory "psychometric properties," while the Cronbach's alpha coefficient of this scale has been satisfactory in different studies (over 0.80).^[37]

The revised NEO personality inventory (NEO-FFI)

The NEO-FFI is composed of 60 questions designed to assess the big five personality traits namely neuroticism, extraversion, agreeableness, openness, and conscientiousness. The answer sheet for this questionnaire is designed based on the Likert scale. The Cronbach's alpha coefficient reported for each dimension was 0.92, 0.89, 0.87, 0.86, and 0.90. In Iran, this questionnaire was translated and adapted by Haghshenas. The Cronbach's alpha reported for the Iranian version varies from 0.86 to 0.92.^[38]

Adult attachment questionnaire (AAQ)

The AAQ is developed to assess the attachment styles based on Hazan and Shaver's self-classification items. This questionnaire consists of 15 questions about the secure, avoidant insecure, and anxious/ambivalent insecure attachment styles. The score on this questionnaire is calculated based on the five-point Likert scale. The internal consistency of the Persian version of this questionnaire is also 0.70 based on the Cronbach's alpha coefficient. The validity and reliability of this scale have always been satisfactory in various Iranian populations.^[39]

Statistical analysis

The descriptive statistics methods such as mean and standard deviation were used to analyze the data. Data comparison in different groups was also carried out using the independent *t*-test and one-way analysis of variance (ANOVA) methods. The

correlation between the variables was analyzed using Cramer's V test and Pearson's correlation coefficient. The moderating effect of the attachment styles on the relationship between neuroticism and suicidal thoughts was also studied using the hierarchical multiple regression analysis. To this end, first, the demographic variables (including gender and relational status) were incorporated into the analysis. In stage two, the predictor variables, namely neuroticism and the attachment styles, were introduced to the analysis by controlling the effect of the gender and relational status. In the last stage, bilateral interactive sentences were included in the analysis. Finally, data was analyzed in SPSS 25 on the <0.05 significance level.

Results

A total of 376 medical students (including 188 male and 188 female students) took part in this study. Table 1 presents the demographic characteristics of the participants including their age, gender, Relational status, and residence.

The frequency and the percentage of the presence or absence of suicidal thoughts in the participants are listed in Table 2 according to the participants' gender. The information obtained through the analysis of 376 medical students indicated that the prevalence (%) of low-risk suicidal thoughts in the male and female students was 12 (6.4) and 25 (13.3), respectively. Besides, the frequency and percentage of high-risk suicidal thoughts in the male and female students was 3 (1.6) and 24 (12.8), respectively.

Table 1: The frequency and percentage of the demographic characteristics of the participants

Variables		n (%)
Age	<24 years	132 (35.1)
	≥24 years	244 (64.9)
Gender	Male	188 (50)
	Female	188 (50)
Relational status	Single	328 (87.2)
	Married	36 (9.6)
	Widowed/separated/divorced	12 (3.2)
Residence	Dormitory	234 (62.2)
	Rental house	61 (16.2)
	With parents	72 (19.1)
	Owned house	9 (2.4)

Table 2: The frequency and percentage of suicidal thoughts among the participants

Suicidal Thoughts	Male (n=188) n (%)	Female (n=188) n (%)	Total (n=376) n (%)
No suicidal thoughts	173 (92)	139 (73.9)	312 (83)
Low-risk suicidal thoughts	12 (6.4)	25 (13.3)	37 (9.8)
High-risk suicidal thoughts	3 (1.6)	24 (12.8)	27 (7.2)
The overall prevalence of having suicidal thoughts	15 (8)	49 (26.1)	64 (17)

Moreover, the overall prevalence of having suicidal thoughts among the Iranian medical students was 17%.

Table 3 presents the analysis and comparison of the mean scores on neuroticism, attachment styles, and suicidal thoughts according to the demographic characteristics of the participants. The age-wise analysis revealed that the mean score on the anxious/ambivalent attachment style of the students over the age of 24 was higher than students aged 24 years ($t(df) = -4.03(374), P = 0.000$). The gender-wise analysis and comparison also indicated that the mean score on the secure attachment style ($t(df) = 4.94(359.68), P = 0.000$) was significantly higher in the male students. Besides, the mean scores on neuroticism ($t(df) = -3.78(352.45), P = 0.000$), the anxious/ambivalent attachment style ($t(df) = -6.96(352.15), P = 0.000$), and suicidal thoughts ($t(df) = -5.20(265.00), P = 0.000$) were significantly higher among the female students. The analysis and comparison carried out with respect to the relational status indicated that the mean scores of the single ($P = 0.000$) and married ($P = 0.006$) respondents on the secure attachment style were considerably higher. Besides, the mean scores of the widowed/separated/divorced respondents on the anxious/ambivalent attachment style ($P = 0.000$) and suicidal thoughts ($P = 0.000$) were considerably higher. The results of the residence-wise analysis and comparison of the participants revealed the significant difference between the mean

neuroticism ($P = 0.016$) and suicidal thoughts ($P = 0.011$) scores of the students, who were tenants, and the students who lived with their parents. Besides, there was a significant difference between the suicidal thoughts scores of the students who lived in dormitories and the students that were tenants ($P = 0.017$).

The results of correlation between suicidal thoughts and the research variables revealed the significant correlation between suicidal thoughts and gender (Cramer's $V = 0.327, P < 0.05$) and between suicidal thoughts and relational status (Cramer's $V = 0.455, P < 0.001$). This findings also showed a significant correlation between suicidal thoughts and neuroticism ($r = 0.446, P < 0.01$), between suicidal thoughts and the avoidant insecure attachment style ($r = 0.440, P < 0.01$), between suicidal thoughts and the anxious/ambivalent insecure attachment style ($r = 0.335, P < 0.01$), and between suicidal thoughts and the secure attachment style ($r = -0.547, P < 0.001$) [Table 4].

The hierarchical multiple regression analysis was employed to study the moderating role of the attachment styles in the relationship between neuroticism and suicidal thoughts. Regression analysis in Table 5 revealed a significant contribution of gender ($\beta = 0.253, P < 0.001$) and relational status ($\beta = 0.253, P < 0.001$) on suicidal thoughts in first step ($R^2 = 0.143$). In second step, neuroticism ($\beta = 0.166, P < 0.001$), avoidant insecure attachment style ($\beta = 0.310, P < 0.001$), secure attachment style ($\beta = -0.418,$

Table 3: Calculating and comparing the mean scores of neuroticism, attachment styles, and suicidal thoughts according to the demographic characteristics

Variables		Neuroticism M (SD)	AIAS M (SD)	SAS M (SD)	AAIAS M (SD)	Suicidal Thoughts M (SD)
Age	<24 years	36.54 (5.99)	14.21 (2.78)	16.01 (2.69)	11.53 (2.58)	1.93 (4.80)
	≥24 years	36.48 (5.90)	13.97 (2.79)	15.64 (2.81)	12.75 (2.90)	2.29 (5.11)
	t (df)	0.09 (374)	0.809 (374)	1.22 (374)	-4.03 (374)	-0.66 (374)
	P	0.923	0.419	0.221	0.000	0.507
Gender	Male	35.36 (5.50)	13.80 (2.64)	16.46 (2.40)	11.35 (2.32)	0.86 (2.89)
	Female	37.64 (6.50)	14.31 (2.92)	15.09 (2.94)	13.28 (3.00)	3.46 (6.19)
	t (df)	-3.78 (352.45)	-1.75 (374)	4.94 (359.68)	-6.96 (352.15)	-5.20 (265.00)
	P	0.000	0.079	0.000	0.000	0.000
Relational Status	Single (a)	36.14 (5.82)	14.06 (2.76)	15.91 (2.66)	12.24 (2.78)	1.08 (4.34)
	Married (b)	38.63 (5.78)	13.47 (2.64)	15.58 (3.07)	11.91 (2.62)	2.27 (6.07)
	Widowed/separated/divorced (c)	40.00 (7.13)	15.75 (3.54)	12.66 (3.05)	15.75 (3.36)	11.75 (8.41)
	F (df)	5.14 (2)	3.02 (2)	8.32 (2)	9.57 (2)	25.94 (2)
	P (a-b)	0.054	0.480	0.790	0.804	0.847
	P (a-c)	0.083	0.120	0.000	0.000	0.000
	P (b-c)	0.785	0.049	0.006	0.000	0.000
	Residence	Dormitory (a)	36.64 (5.95)	14.07 (2.76)	15.72 (2.94)	12.34 (2.92)
Rental house (b)	38.04 (6.29)	14.65 (3.16)	15.29 (2.96)	12.75 (3.13)	4.22 (6.60)	
With parents (c)	34.75 (5.43)	13.56 (2.51)	16.18 (1.97)	11.88 (2.39)	1.36 (4.41)	
Owned house (d)	36.55 (3.16)	13.55 (2.60)	17.22 (1.64)	12.33 (2.17)	0.00 (0.000)	
F (df)	3.59 (3)	1.77 (3)	1.98 (3)	1.02 (3)	4.92 (3)	
P (a-b)	0.427	0.554	0.764	0.779	0.017	
P (a-c)	0.128	0.609	0.679	0.709	0.848	
P (a-d)	1.000	0.959	0.467	1.000	0.713	
P (b-c)	0.016	0.172	0.337	0.387	0.011	
P (b-d)	0.917	0.747	0.284	0.982	0.125	
P (c-d)	0.859	1.000	0.768	0.979	0.894	

AIAS: Avoidant insecure attachment style; SAS: Secure attachment style; AAIAS: Anxious/ambivalent attachment style

Table 4: Correlation matrix of study variables

Variables	Cramer's V				r			
	Age	Gender	Relational status	Residence	Neuroticism	AIAS	SAS	AAIAS
Suicidal thoughts	0.202	0.327*	0.455***	0.259	0.446**	0.440**	-0.547**	0.335**

*P<0.05 is significant; **P<0.01 is significant; ***P<0.001 is significant. AIAS: Avoidant insecure attachment style; SAS: Secure attachment style; AAIAS: Anxious/ambivalent attachment style

Table 5: A summary of regression analysis carried out to analyze moderating role of attachment styles in relationship between neuroticism and suicidal thoughts among medical students

Variables		Model 1		Model 2		Model 3	
		B (β)	SEB	B (β)	SEB	B (β)	SEB
Stage I: covariates	Gender	2.530 (0.253)***	0.479	0.476 (0.048)	0.389	0.347 (0.035)	0.371
	Relational status	3.078 (0.274)***	0.539	1.648 (0.147)***	0.411	1.551 (0.138)***	0.390
	Neuroticism			0.140 (0.166)***	0.033	0.110 (0.131)**	0.032
Stage II: predictors	AIAS			0.555 (0.310)***	0.069	0.514 (0.287)***	0.067
	SAS			-0.753 (-0.418)***	0.070	-0.669 (-0.371)***	0.067
	AAIAS			0.234 (0.134)**	0.070	0.190 (0.108)**	0.071
	AIAS × neuroticism					0.589 (0.119)**	0.179
Stage III: moderators	SAS × neuroticism					-0.637 (-0.140)***	0.171
	AAIAS × neuroticism					0.311 (0.078)*	0.151
R ²		0.143		0.537		0.586	
Adj. R ²		0.138		0.529		0.576	
ΔR ²		0.143		0.394		0.049	
ΔF (df)		31.003 (2, 373)***		78.508 (4, 369)***		14.505 (3, 366)***	
F (df)		31.003 (2, 373)***		71.263 (6, 369)***		57.560 (9, 366)***	

*P<0.05 is significant; **P<0.01 is significant; ***P<0.001 is significant. AIAS: Avoidant insecure attachment style; SAS: Secure attachment style; AAIAS: Anxious/ambivalent attachment style

P < 0.001) and anxious/ambivalent insecure attachment style (β = 0.134, P < 0.01) significantly contributed to suicidal thoughts (ΔR² = 0.394, P < 0.001), whereas controlling for gender and relational status. In the final step, a significant predicting effect of avoidant insecure attachment style × neuroticism interaction (β = 0.119, P < 0.01), the secure attachment style × neuroticism interaction (β = -0.140, P < 0.001), and the anxious/ambivalent insecure attachment style × neuroticism interaction (β = 0.078, P < 0.05) emerged (ΔR² = 0.049, P < 0.001). The final equation was significant (F (9, 366) = 57.560, P < 0.001, R² = 0.586).

Discussion

The overarching goal of the present study was to assess the relationship between neuroticism and suicidal thoughts with the moderating role of the attachment styles in this relationship. This study was conducted on 376 Iranian medical students. The results of this study suggest that the reported prevalence of suicidal thoughts among the Iranian medical students was 17%, which is higher than the average global prevalence (i.e., 11.1%). However, the reported prevalence in the present study was lower than the figures reported in the studies previously conducted in Iran (17% versus 24.4%).^[2,3] The prevalence observed in this study and its deviation from the average global prevalence could be attributed to the differences in the culture, religion, attitudes, and life style of the Iranian society. However, a difference in the research scales can also be considered a source of difference. The results of this study indicated that the prevalence of suicide is higher among the female medical students as compared to

the male students. To explain this result, it could be stated that suicidal thoughts is more prevalent among the female students due to the larger effect of the life events on them and their fragility in dealing with the problems. Therefore, girls show more preparedness yet a weaker performance.^[3] Nevertheless, there are contradictory statistics on the suicidal thoughts in both genders. For instance, Mousavi *et al.*^[40] and Mohammadi *et al.*^[41] carried out studies in Iran and reported a higher rate of suicidal thoughts among boys. Their findings are, therefore, contradictory to the findings reported in other studies and our study.^[3] In the present study, the mean neuroticism and anxious/ambivalent attachment style scores of the female students were higher, which can also explain the higher prevalence of suicidal thoughts among female students. Furthermore, the results of our study indicated that the prevalence of suicidal thoughts is higher among the widowed/separated/divorced medical students as compared to the single and married students. The high rate of suicide in this group of students could be attributed to their weaker commitment in life and their lack of a major support system such as a spouse. In addition, depression and many psychological disorders in divorced and widowed individuals can also be the additional causes.^[3] In addition, in our study, the mean scores of the anxious/ambivalent attachment style were higher in the widowed/separated/divorced students as compared to the single and married students, which can explain the higher prevalence of suicide in this group. The results of the residence-wise analysis and comparison of the respondents also revealed a significant difference between the mean neuroticism and suicidal thoughts scores of the tenant students and students that lived with their parents. There was also a significant difference between the mean

suicidal thoughts scores of the students who lived in dormitories and the students that were tenants. This difference can be explained by factors such as isolation, lack of a support system, and depression. In the present study, the correlation matrix of the variables reflected the positive significant correlation between suicidal thoughts and the insecure attachment styles, and between suicidal thoughts and neuroticism personality trait. In addition, there was a negative significant correlation between suicidal thoughts and the secure attachment style. These findings are in line with the findings reported by Boroojerdi *et al.*,^[6] Li *et al.*,^[7] Ürün *et al.*,^[8] Sheftall *et al.*,^[9] and Brezo *et al.*^[22] In the study by Boroojerdi *et al.*^[6] and Brezo *et al.*,^[22] there was a significant positive correlation between suicidal thoughts and the anxious/ambivalent insecure attachment style. This finding is, however, contradictory to our findings. The results of the hierarchical multiple regression analysis also revealed that neuroticism, as a personality trait, predicts suicidal thoughts. To wit, neuroticism leads to a certain degree of maladjustment and emotional instability by increasing the potential for “mental distress” including fear, grief, shame, anger, guilt, resentment, impulsiveness, and other negative emotions. Hence, individuals with neurotic characteristics are prone to irrational ideas and have lower ability to control their impulses. They are also more vulnerable to stress. Perhaps these individuals commit suicide due to these traits and their inability to properly deal with their problems. In addition, neuroticism is a predisposing factor in the development of psychiatric disorders such as the mood disorders, which result in an increase in suicidal tendencies.^[42-45] The results of the regression analysis indicated that the secure attachment style, the avoidant insecure attachment style, and the anxious/ambivalent insecure attachment style predict suicidal thoughts. As suggested by Bowlby in his attachment theory, the secure attachment style is one of the most reliable means of bonding with an environment. Moreover, since the secure attachment style is the core of mental health, it increases life expectancy, thereby reducing negative thoughts. Hence, as a child’s confidence in his/her main caregiver increases, the number of suicidal thoughts in his/her future decreases. On the contrary, when a child does not experience a responsive, accountable, and available attachment figure, the avoidant insecure attachment style emerges. As a result of this attachment style, the child shows more psychopathologies because these individuals probably experience negative incidents and emotions more than the secure individuals.^[46-48] The assessment of the moderating effect of the attachment styles on the relationship between suicidal thoughts and neuroticism in our regression analysis indicated that the secure attachment style, avoidant attachment style, and anxious/ambivalent insecure attachment style have a moderating effect on suicidal thoughts and neuroticism. In fact, neuroticism combined with parenting with the insecure attachment styles not only can ruin interpersonal relationships but also can reduce the person’s desire for relationships with others and a safe environment. Consequently, the individual eventually becomes prone to suicide.^[9,21] Moreover, the insecure attachment style and neuroticism both share anxiety. Therefore, the individual overcomes their anxiety and eliminates their need

for communication with others by selecting suicide as a safe and available basis. In fact, parenting with the avoidant attachment style puts the individual in a situation that nourishes neuroticism, which also ruins the secure relationships and reduces the future desire for these relationships.^[9,10,22,49] These findings are in line with Bowlby’s theory. He argued that the attachment experiences have lifelong effects on the individual and are among the determinants of the development of the personality disorders and psychological disorders.^[14] Besides, the insecure attachment styles are linked to “psychopathology” (such as depression and anxiety).^[46] The relationship between the attachment styles and psychopathology has been proven in numerous studies through theoretical and experimental evidence.^[50,51] In fact, these “initial attachments consist of emotional and behavioral regulation patterns,” which function as prototypes in the future personality of the individuals.^[52]

Limitations

There were constraints on this study. First, the sample size was small and the study was conducted in a certain geographic region under different sociocultural conditions. Hence, there are noteworthy limitations to the generalization of the results to other societies. Second, the accuracy of the research results, especially regarding the prevalence of suicide, is slightly reduced due to the cross-sectional nature of this study. This is because the research results may be influenced and changed by the biopsychosocial model of stress. Third, the AAQ self-report questionnaire may make the respondents report different attachment styles at different times and in different life situations under the influence of the individual difference model. Therefore, this limitation can be mitigated by analyzing the romantic relationships and the type of the relationships with families and peers using the Family and Peer Attachment Interview (FPAI) and other attachment models (e.g., the secure, fearful, dismissive, and preoccupied styles described by Bartholomew). Fourthly, this study only discusses the neuroticism personality trait and the attachment styles. However, it seems other variables also contribute to suicidal thoughts and call for an analysis.

Conclusion

Since neuroticism, as a personality trait, has various characteristics, it has become an interesting concept in suicide studies. This trait is important in several respects. First, neuroticism can foster the diathesis for suicide in the individuals by changing their perceptions of themselves, their surrounding environment, and their adjustment methods. Therefore, identifying the neuroticism personality trait in the individuals can contribute to the early diagnosis of groups that are prone to the risk of suicide (such as repeated suicide attempters and suicide completers).^[49] Second, the mature form of this trait can encourage the suicide attempters to look for long-term treatments. Even if we assume this trait can only be corrected during childhood, therapeutic actions can still influence the individuals in the long run. Since the neuroticism personality trait is rooted in genes, the living environments, the

gene-gene interactions (epistasis), and the gene-environment interactions, and since it is stabilized till the age of 6, early preventive measures have to be taken to treat the neuroticism personality trait.^[22]

According to the self-determination theory, which is about the importance of the internal and intrinsic factors influencing personality transformations and self-determination, attachment is one of the three basic psychological needs.^[49] Since this area stresses mental health and prevention more than psychological disorders and treatment and since the secure, avoidant, and anxious/ambivalent insecure attachment styles can predict suicide, early preventive measures can reduce the risk of suicide.^[6-9] Therefore, first, the adolescents should be trained in the coping skills, while the families should be trained in the parenting skills. Secondly, prevention programs that revolve around attachment can be offered at universities to inhibit the risky behavior, especially suicidal thoughts, in medical students. The results of the present study revealed that despite the development of the neuroticism personality trait, the attachment styles can reduce the risk of suicide in medical students due to their moderating role.

Future Directions

Despite the significant emphasis put in recent studies on the strong correlation between mental health and suicidal thoughts among medical students, this concept has not considerably garnered the attention of the professors of medicine. Seemingly, the insecure attachment styles are more prevalent than the secure attachment style at least among the students in Asia, especially Iran, as compared to North America. Hence, if researchers can stress the suicide risk factors (such as the neuroticism personality trait and attachment styles) and the necessity of using some preventive plans through longitudinal studies, professors of medicine will pay more attention to this issue. However, it seems suicide cannot be fully eliminated but the proper preventive measures can reduce its prevalence.

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Conflicts of interest

There are no conflicts of interest.

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