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Prediction of Non-Suicidal Self-Injury based on Attachment Styles in High School Female Students

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ABSTRACT

Background and Objective: The increase in self-injurious behaviors is a concern about adolescents and is related to people's attachment styles. The present study used the descriptive-correlation method to predict self-harm based on attachment styles with the mediating role of emotion dysregulation in high school female students.

Methods: The statistical population of this study included all the female high school students in autumn and winter 2022-2023 in Pasargad City, Fars province, of which 337 students aged 13 to 18 years participated in the convenience sampling. In this research, three questionnaires were used including the self-harm Inventory (SHI), the attachment scale of Collins and Read (1990), and the difficulty in emotion regulation scale (DERS). Data analysis was conducted in SPSS-24 and Amos-24 software with Pearson correlation coefficient and bootstrap statistical tests.

Findings: The findings showed that there was a significant correlation between attachment styles and self-harm, difficulty in emotion regulation and self-harm, and finally between attachment styles and emotion dysregulation at the 0.01 level. The chi-squared value was significant with 56.29 at the 0.001 level.

Conclusion: The results demonstrated that emotion dysregulation played a mediating role between attachment styles (secure and avoidant) and self-harm, and their path coefficient was negative, and the anxious attachment style had a positive effect on self-harm due to the difficulty in emotion regulation.

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Introduction

Adolescence is one of the sensitive periods in every person's life which is associated with neurological, physical, and psychological changes [1]. These changes may expose teenagers to psychological pressure; therefore, adolescence is a period that requires efficient coping mechanisms to solve problems properly. One of these mechanisms that teenagers may choose instead of managing emotions and controlling mental pressure is self-harm to get rid of negative emotions [2].

Self-harm without suicidal intent is a very common behavior among teenagers and young adults between the ages of 14 and 24 [3]. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), Non-suicidal self-injury disorder (NSSID) is defined as intentional self-injury to body tissue, without suicidal intent, lasting more than 5 days per year (criterion A) and is performed to reduce interpersonal inconvenience, get rid of negative emotions and thoughts, or create positive feelings (criterion B). Self-injurious behavior is associated with interpersonal inconvenience, negative thoughts and emotions, and/or preoccupation with self-injurious behavior repetitively before doing it (criterion c), such behaviors are not socially acceptable (criterion D) and result in distress and reduced function (criterion E). Finally, another psychological disorder or condition is not preferable for these symptoms (criterion F) [4]. Research evidence shows that NSSI varies by age and gender [5].

According to John Bowlby's theory, attachment is the formation of a deep and stable emotional bond between a person and his main caregiver, which affects his social and emotional development [6]. The theory of attachment styles is a useful framework for understanding how early experiences shape care, sense of security, and future behavior in interpersonal relationships [7].

Attachment styles have been divided into secure, avoidant, and ambivalent. People with secure attachment usually have characteristics such as a positive attitude towards themselves, commitment in communication, and intimacy in their relationships. People with an avoidant style have a fear of closeness and intimacy and prefer autonomy. People with ambivalent attachment styles have unbalanced emotions and more conflicts. On the one hand, these people have a conflict between their strong need to establish an intimate relationship and on the other hand, worry about others not responding to their needs and the possibility of being rejected, and they usually do not have a positive view of themselves [8].

One of the psychological explanations that examine self-harm behaviors is the attachment theory. The initial experience of people's inappropriate relationship with their main caregivers is one of the most important factors in the occurrence of problematic behaviors. When faced with unpleasant experiences, people with a secure attachment style provide an effective problem-solving solution, while insecure attachment confuses dealing with threats and problems. Therefore, insecure attachment style is one of the predisposing factors in self-harm behavior [9, 10].

Emotion dysregulation refers to an ineffective pattern in experiencing or expressing emotions, which is related to purposeful activities and is observed in the manifestation of most psychiatric disorders or behavioral abnormalities [11]. One of these behavioral problems is self-harm behavior. Studies have considered self-harm behaviors to be the result of poor emotion regulation and emotional dysregulation [12]. Moreover, emotion regulation is an intra-individual and interpersonal process to monitor, investigate, and regulate emotional reactivity, especially intense and temporary emotions to achieve the stated goal and it advances through the developmental stages of a person. Studies support the relationship between emotion dysregulation and self-injurious behaviors without suicide and people involved in self-harm behaviors show significant emotion dysregulation compared to people without self-harm behaviors [13].

The attachment style of people is the basis for the formation of how to manage emotions; In this way, secure attachment will lead to the organization of adaptive methods of emotion regulation, and having an insecure attachment style will lead to maladaptive methods of emotion regulation [14]. Based on studies, children with secure attachment have better emotional awareness and perform better

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in identifying and naming their emotions. They have more information about emotion regulation strategies. It has been stated that children with a secure attachment style benefit from internalized effective emotion regulation strategies in accustomed and challenging situations. Meanwhile, children with insecure-avoidant or insecure-anxious attachment styles use emotional dysregulation and suppress their emotions [15]. Furthermore, studies have shed light on the mediating role of emotion dysregulation on the impact of attachment style on self-injurious behaviors [16].

As discussed, People's attachment style can predict self-harm behaviors [9], and on the other hand, difficulty in emotion regulation can be a predictor for self-harm behaviors [13], and the way emotions are regulated, depends on the attachment style of people [17], moreover, the high rate of self-injurious behaviors in adolescents and women with mental disorders was pointed out in previous studies [18]. Therefore, the present study aims to predict NSSI based on attachment styles and the mediating role of difficulty in emotion regulation in adolescent girls from the general population to help prevent NSSI in society by providing a more vivid understanding of this issue.

Methods

Study design and participant

The statistical population of this descriptive-correlational study was all female high school students in the city of Pasargad in Fars Province in the fall and winter of 2022-2023. Satisfaction and interest to participate in the research, answering questions entirely and compliance with the age criterion were considered as inclusion criteria. The exclusion criteria in this study were failure to complete the questionnaires and non-compliance with the age criterion.

Data collection

To maintain the principle of confidentiality, the surveys were collected without the subjects' names and addresses, and the data were only available to the researchers. Sampling and data collection were a collaborative effort between the school principals and the researchers. The link to the questionnaires was distributed through social networks and students completed them.

Research tools

Self-Harm Inventory (SHI): This 22-item instrument was created by Sansone, Wiederman, and Sansone in 1998, which direct self-harm behaviors (i.e., cutting, burning, attempting suicide, etc.) combined with the immediate tissue damage measures with indirect self-harm behaviors (i.e., abuse of illegal drugs, high-risk driving, high-risk sexual behaviors, etc.) A high score in this questionnaire indicates the intensity and frequency of the most self-harm behaviors. Scoring is yes/no [19]. In the study of Niyazi et al. (2021), the reliability of this questionnaire was determined at 0.78 using Cronbach's alpha coefficient [20]. In the present study, the internal consistency of this questionnaire was obtained with Cronbach's alpha method of 0.88.

Revised Adult Attachment Scale of Collins and Read (1990): This questionnaire was prepared by Collins and Read (1990) and modified by Nancy Collins (1996). This scale contains 18 items, which by analyzing the factors of 3 subscales, each of which contains 6 items, are: Dependence (D): measuring the extent to which the subjects trust and rely on others in the form of whether they are accessible when necessary. Closeness (C): it measures the level of comfort concerning intimacy and emotional closeness. Anxiety (A): it measures the fear of having a relationship [21].

The scoring range of the questions is based on Likert (completely disagree 1; disagree 2; no idea 3; agree 4; completely agree 5). The cases in which questions should be scored in reverse include questions 5, 6, 8, 16, 17, and 18. The scores of 6 items of each scale are added together and the sub-scale score is obtained [22]. Qassami et al. (2019) reported Cronbach's alpha coefficient for the whole scale as 0.75 [23]. In the present study, the criterion reliability using Cronbach's alpha method for secure, avoidant, and anxious attachments was 0.72, 0.71, and 0.73, respectively.

Difficulty in Emotion Regulation Scale (DERS; Gratz and Roemer, 2004): This 36-item scale was designed by Gratz and Roemer (2004), which

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assesses the levels of emotional regulation deficits on a 5-point scale from 1 (seldom) to 5 (almost always) in six subscales, it measures non-acceptance of emotional responses, difficulty engaging in goal-directed behavior, difficulty in impulse control, lack of emotion awareness, restricted access to emotion regulation strategies, and lack of emotional clarity. Items 7, 6, 2, 1, 8, 17, 10, 20, 22, 24 and 34 have reverse scoring. Scores between 36 and 72 indicate low emotion regulation difficulty, 72 to 108 indicate moderate emotion regulation difficulty, and scores above 108 indicate high emotion regulation difficulty. This questionnaire has a significant correlation with the NMR scale and the Acceptance and Action Questionnaire (AAQ, Hyse et al.). The results of foreign research indicate that this scale has a high internal consistency, 0.93 [24]. Fallahi et al. (2021) examined the validity of the scale of difficulty in emotion regulation by internal consistency method, using Cronbach's alpha coefficient and they obtained Cronbach's alpha coefficients respectively 0.77, 0.68, 0.70, 0.74, and 0.71 for the factor of lack of clarity, goal-directed behaviors, impulsive control, limited access to strategies and unaccepted emotional response, and 0.91 for the whole scale, which indicates the appropriate reliability of the scale [25]. The reliability of the indices was calculated using Cronbach's alpha coefficient, which was 0.91.

Sample Size and Sampling

A sample size of more than 330 people has been reported by the sample size calculator for Structural Equations Modeling (SEM). Therefore, in the present study, 337 students aged 13 to 18 participated in the convenience sampling

Statistical analysis

Data analysis was done in SPSS-24 and Amos-24 software with mean, standard deviation, skewness, kurtosis, and the correlation coefficient and significance coefficient were used to check the correlation between the data. Furthermore, the model of structural equations and fit indices including chi-square and goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), incremental fit index (IFI) and Toker-Lewis index (TLI), the root mean square error of estimation (RMSEA), and also Bootstrap test was applied.

Results

In total, 337 students aged 13 to 18 years (mean age: 15.5 years old) participated in the present study.

Table 1 shows the descriptive information on the research variables. It is noteworthy that the skewness and kurtosis of the research variables are in the range of -2 and 2, respectively, indicating that the research data have a normal distribution. Table 2 reports the correlation between research variables. The results of Table 2 reveal that there is a significant correlation between secure, avoidant, and anxious attachment styles with self-harm with coefficients of -0.18, -0.12, and 0.40 at the 0.01 level. There was a significant correlation between emotion dysregulation and self-harm with a coefficient of 0.53 at the level of 0.01. There was a significant correlation at the level of 0.01 between secure, avoidant, and anxious attachment styles with emotion dysregulation with coefficients of -0.34, -0.18, and 0.50 respectively. Therefore, there was a linear and significant relationship between the research variables, and to evaluate the research model, structural equation modeling was used.

Table 3 represents the fit indices of the model. Table 3 shows that the value of chi-square (X2) equal to 56.29 is significant at the level of 0.001 when the sample size is high, X2 becomes significant; In these cases, the index X2/df, which is the ratio of chi-square to the degree of freedom, is used, as can be seen in the table, its value is calculated as 2.16 and ranges from 1 to 5, and it indicates valid fit of the model. Also, the table presents that the Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), Incremental Fit Index (IFI), and Tucker-Lewis Index (TLI) are reported to be above 0.90 which indicate that the research model has a valid fit. Also, the Root Mean Square Error of Approximation (RMSEA) is 0.05 and less

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than 0.08, indicating the valid fit of the model. Figure 1 illustrates the final research model.

The bootstrap test in Table 4, shows that the indirect path of emotion dysregulation in the relationship between secure attachment and self-harm with a coefficient of -0.20 with a lower limit of -0.28 and an upper limit of -0.14, the indirect path of emotion dysregulation in the relationship between avoidant attachment and self-harm with a coefficient of -0.09 with a low limit of -0.15 and an upper limit of -0.03 and the indirect path of emotion dysregulation in the relationship between anxious attachment and self-harm with a coefficient of 0.26 and a low limit 0.19 and the upper limit of 0.34 are all reported as significant at the 0.01 level; Therefore, emotion dysregulation plays a mediating role in the relationship between attachment styles and self-harm.

Table 1. Descriptive information of research variables

Variable	Mean	Standard deviation	Skewness	Kurtosis
Self-harm	3.13	3.97	1.52	1.68
Secure attachment	12.36	2.66	-0.26	0.47
Avoidant attachment	11.74	2.95	-0.12	-0.24
Anxious attachment	9.74	6.21	0.12	-0.89
Non-acceptance	13.04	6.03	0.83	-0.05
Goal-directed behavior	14.28	4.88	0.15	-0.58
Impulse control	15.07	5.87	0.48	-0.52
Emotion awareness	15.59	4.43	0.41	0.25
Limited access	18.59	7.82	0.73	-0.18
Emotional clarity	10.98	3.72	0.71	0.27
Emotion regulation difficulty	87.57	23.75	0.39	-0.39

Table 2. Correlation between research variables

Variable	1	2	3	4	5	6	7	8	9	10
1- Self-harm	1									
2- Secure attachment	**-0.18	1								
3- Avoidant attachment	**-0.12	**0.15	1							
4- Anxious attachment	**0.40	**-0.27	**-0.21	1						
5- Emotion regulation difficulty	**0.53	**-0.34	**-0.18	**0.50	1					
6- Non- acceptance	**0.30	**-0.20	*-0.11	**0.40	**0.76	1				
7- Goal-directed behavior	**0.44	**-0.29	*-0.13	**0.44	**0.81	**0.54	1			
8- Impulse control	**0.49	**-0.28	**-0.16	**0.46	**0.84	**0.52	**0.75	1		
9- Emotion awareness	0.09	-0.09	-0.10	-0.03	**0.21	-0.05	-0.01	0.01	1	
10- Limited access	**0.51	-0.36	*-0.12	**0.48	**0.88	**0.65	**0.72	**0.74	٭-0.06	1
11- Emotion clarity	**0.38	**-0.18	**-0.14	**0.28	**0.62	**0.39	**0.29	**0.41	**0.36	**0.42

** P<0/01, * P<0/05

Table 3. Fit indices of the model

Model	X^2	Df	P-Value	X^2/df	GFI	AGFI	CFI	IFI	TLI	RMSEA
Model	56.29	26	0.001	2.16	0.96	0.93	0.97	0.97	0.95	0.05

Table 4. Indirect coefficients of the model

Variable	Path	lower limit	upper limit	Significance
Secure attachment→Emotion regulation difficulty→self-harm	-0.20	-0.28	-0.14	0.001
Avoidant attachment→Emotion regulation difficulty→Self-harm	-0.09	-0.15	-0.03	0.004
Anxious attachment→Emotion regulation difficulty→Self-harm	0.26	0.19	0.34	0.001

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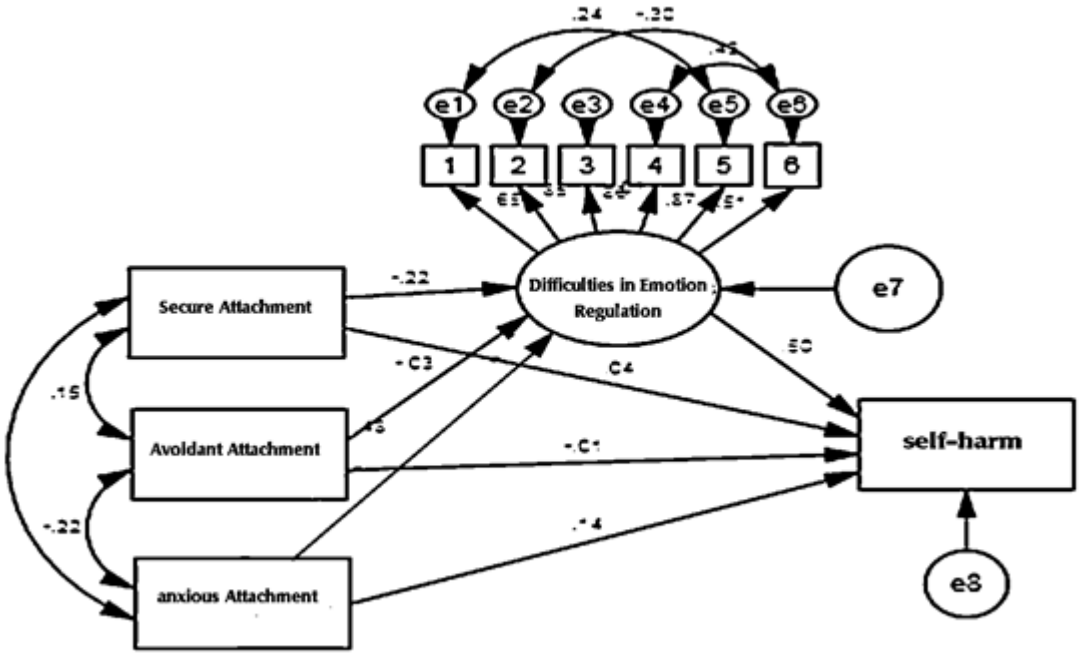

Figure 1. Research model

Discussion

The present study was conducted to predict self-harm behaviors based on attachment styles with the mediating role of difficulty in emotion regulation in high school female students. The findings revealed that emotion dysregulation plays a mediating role between attachment styles (secure and avoidant) and self-harm, and their path coefficient is negative, in fact, the increase in the score of the secure and avoidant attachment styles by the difficulty in emotion regulation reduces self-harm. Tatnell et al. presented in their study that attachment style affects non-suicidal self-harm behaviors due to its effects on emotion regulation. It is explained that a secure attachment style reduces the possibility of non-suicidal self-harm behaviors due to the development of emotion regulation strategies and increases the risk of non-suicidal self-harm behaviors likely due to attachment difficulties and the lack of development of emotion regulation strategies. It has also been mentioned that avoidant attachment to the father is one of the predictors of non-suicidal self-injurious behavior, but the importance of the relationship with the mother, especially in girls, is greater than the relationship with the father [9]. Since the current study was conducted on teenage girls, the findings regarding the negative relationship between avoidant attachment style and difficulties in emotion regulation and self-harm behaviors are not far-fetched due to the importance of the mother-daughter relationship even in the case of father avoidance.

Luxuk in 2021 investigated the effect of insecure attachment styles (avoidant and anxious) with the mediation of difficulty in emotion regulation on health problems (depression, lack of intellectual dynamism, agoraphobia, and social anxiety). This study stated that anxious insecure attachment style, mediated by difficulty in emotion regulation, was a predictor for health problems, and by controlling anxious insecure attachment, presented that avoidant attachment was not a predictor for any of the health problems examined in this study [26]. Other studies also reported that the avoidant attachment style has a limited effect on self-harm behaviors and its level does not differ between two groups of people with and without self-harm experience. In addition to attachment styles, the role

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of difficulties in emotion regulation in the development of self-injurious behavior has been highlighted [27, 28], which is consistent with the results of the present study.

Another result obtained from this study showed that increasing the anxious attachment style score due to the difficulty in emotion regulation causes an increase in self-harm. According to Yurkowski's study, unfamiliarity with parents, not receiving support during stress, and not receiving appropriate and sufficient response when needed reduces the opportunity to learn how to regulate emotions to adapt to stressful conditions and predict non-suicidal self-harm behaviors [29]. Also, according to other studies, maladaptive childhood experiences are a reason for the formation of insecure attachment, including the anxious insecure attachment style. This attachment style causes difficulty in emotion regulation, difficulty in emotion regulation, regardless of age and gender, and leads to an increase in the probability of self-harm behaviors and the formation of non-suicidal self-harm behaviors [15, 22, 16, 30]. Also, in line with the findings of the present study, Kharsati et al. announced in 2016 that the anxious insecure attachment style affects self-harm behaviors in the general population, non-psychotic patients, and people with borderline personality disorder. Hence, these people are very sensitive and expressive about experiencing stress, so they show more emotional reactions, and probably self-harm behavior is a way to express and react to their exhausting emotions and stress. Therefore, one of the reasons for self-harm behaviors is the difficulty in emotion regulation [27], which is in line with the results of the present study. Among the possible reasons for the difference in the effect of the two styles of avoidant and anxious attachment on self-injurious behaviors, we can probably mention the tendency of people with anxious attachment to catastrophize their emotions to gain support from others. while, people with avoidant attachment styles probably value self-resilience, which may end up reducing self-injurious behaviors in stressful situations. Furthermore, it has been reported that individual responses to perceived stress are moderated in people with avoidant attachment, while perceived stress is magnified in people with anxious attachment [26].

Also contrary to the findings of the present study, it has been claimed by Warth and Adams (2019) that both avoidant and anxious attachment styles can lead to self-injurious behaviors and suicide attempts, albeit in different ways. Additionally, the more severe forms of these insecure attachment styles are thought to be a risk factor for more serious forms of self-harm. Individuals with anxious attachment styles may use self-harm as a way to manage their intense emotions, while those with avoidant attachment tendencies may refuse help and avoid interpersonal relationships to maintain their attachment style [31]. The study of Schaub also confirms the relationship between avoidant attachment and self-injurious behavior [32]. The difference in the findings can be attributed to a different age group or the use of a different research method. However, further studies in this field are recommended.

Limitations of this study include that it refers to teenage girls. Considering the importance of the subject, it is suggested that a similar study be conducted on the population of boys and other age groups. Another limitation of this study is the cross-sectional analytical design using the correlation method, which makes it difficult to achieve causality. Based on this, to achieve causality, the implementation of interventional and longitudinal studies is suggested. In practice, it is suggested to implement therapeutic interventions to reduce self-injurious behavior based on predictive variables

Conclusion

In conclusion, attachment styles influence self-injurious behavior by mediating difficulties in emotion regulation and this effect depends on the type of attachment style. Thus, the secure attachment style and avoidant insecure attachment style reduce the probability of self-harm behaviors by reducing the difficulty in emotion regulation, and the anxious insecure attachment style has a positive relationship with difficulty in emotion regulation and increases the probability of self-harm behaviors.

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Ethical approval

The protocol of the current study was approved by the Ethics Committee of the Islamic Azad University of Rasht (Ethical Code: IR.IAU.RASHT.REC.1401.022).

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Conflict of interest

The authors declare no conflict of interest.

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