

Examining the Relationship Between Alexithymia, Loneliness, and Differentiation with Suicidal Thoughts in High School Students

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ABSTRACT

Objective: The present study aimed to examine the relationship between alexithymia, loneliness, and differentiation with suicidal thoughts in high school students.

Materials and Methods: This research is a descriptive correlational study. The statistical population included all female high school students in District 4 of Tabriz during the 2023-2024 academic year (N=4000). Using Krejcie and Morgan's table and multistage cluster random sampling, 351 students were selected as the sample. The data collection tools included the Jackson Differentiation of Self Inventory (2003), the Toronto Alexithymia Scale (1994), the Beck Scale for Suicidal Ideation (1991), and the UCLA Loneliness Scale (1980). Data were analyzed using Pearson correlation coefficient and multiple linear regression analysis with SPSS version 20.

Findings: The results indicated a significant positive correlation between alexithymia and loneliness with suicidal thoughts in high school students. Additionally, a significant inverse relationship was found between differentiation and suicidal thoughts in high school students. The multiple regression results also showed that differentiation (beta = -0.38), alexithymia (beta = 0.35), and loneliness (beta = 0.23) could significantly predict changes in suicidal thoughts among high school students, accounting for 52% of the variance in suicidal thoughts.

Conclusion: The findings of this study underscore the importance of planning and providing appropriate educational and therapeutic programs aimed at enhancing self-differentiation to reduce suicidal thoughts among students, while also addressing loneliness and alexithymia. The study's results should be communicated to education officials for implementation.

Keywords: Alexithymia, Loneliness, Differentiation, Suicidal Thoughts, Students.

1. Introduction

Suicide is the act of intentionally killing oneself (Lyu & Li, 2023). Suicide has garnered significant attention from the World Health Organization (WHO) and other medical fields (American Psychiatric Association, 2022). A recent report published by the WHO indicated that the global suicide rate in 2019 was approximately 9.2 per 100,000 people, with the suicide rate among men being more than double that of women (12.6 per 100,000 for men and 5.7 per 100,000 for women). According to Beck et al. (1975), there are three key concepts that suicide studies should be based on: suicidal thoughts, suicide attempts, and completed suicide. When suicidal thoughts or ideas arise without any motivational process, individuals are said to have suicidal thoughts. When there is a motivational process, albeit incomplete, individuals are said to attempt suicide (Lyu & Li, 2023). Suicidal thoughts are typically a necessary precursor to suicide attempts, although no direct evidence can confirm a causal relationship between them (Klonsky & May, 2014). The prevalence of suicidal thoughts and attempts increases sharply during adolescence (Ziaei et al., 2017). According to a systematic review, approximately one-third of adolescents aged 12 to 20 have reported suicidal thoughts (Evans et al., 2005). Additionally, 12.8% of students have had suicidal ideation within the past 12 months, and 7.8% have attempted suicide at least once (Donath et al., 2019). Adolescence is a transitional stage from childhood to adulthood, during which adolescents experience significant changes. These include physical growth, new social relationships, and emotions that can exert considerable pressure on them. Without social and parental support, this pressure can put adolescents at risk for suicide (Strandheim et al., 2014). Numerous factors can lead an adolescent toward suicidal behavior, which can be categorized into two groups: psychological problems (depression, loneliness, anxiety, hopelessness) (Larsgaard et al., 2011; Page & West, 2011) and socio-environmental factors such as low or lack of parental or peer support, harmful alcohol and drug use, smoking (Ziaei et al., 2017), and abuse or sexual harassment (Nahar et al., 2013). The high rate of suicide attempts and their individual, familial, economic, and social harms best explain the necessity of research aimed at diagnosing, preventing, and improving the psychological well-being of adolescents with suicidal thoughts and attempts. Therefore, suicidal thoughts during adolescence should receive more attention (Kölves & De Leo, 2016).

It seems that one of the important variables associated with students' suicidal thoughts is alexithymia (Hemming et al., 2019). Alexithymia is a personality and psychological trait where individuals are unable to identify, express, and describe their emotions and feelings. It has been repeatedly observed that a common background for suicidal thoughts and behaviors is the experience of uncontrollable emotional distress (Dour et al., 2011). Alexithymic traits are often associated with depression, which is the most significant risk factor for suicidal thoughts and behaviors (Hintikka et al., 2004). In addition to alexithymia affecting suicidal thoughts and behaviors through depression, this relationship also exists independently of depression (Kim et al., 2016). It has been suggested that individuals with alexithymia may experience emotional information as overwhelming and confusing, which can lead to feelings of helplessness (Foran & O'Leary, 2013). Moreover, effective emotion regulation focuses on the ability to identify feelings (emotional clarity) and the ability to respond to and recover from negative emotions (access to effective strategies) (Velasco et al., 2001). Therefore, for individuals with poor emotional clarity, progressing in the effective regulation of these emotions is more difficult. Conversely, individuals experiencing alexithymia often use maladaptive coping strategies such as social isolation, behavioral isolation, and emotional inhibition (Velasco et al., 2001). Thus, it is assumed that individuals experiencing alexithymia may gravitate toward suicidal thoughts and behaviors due to incomplete/limited awareness of alternative ways to cope with the unclear emotions they experience (Hemming et al., 2019). Accordingly, the results of the study by Baghani et al. (2017) showed a significant positive relationship between emotional alexithymia and suicidal thoughts among female high school students in the city of Rezvanshahr (Baghani et al., 2017). In another study, Rahimzadeh Yinghi et al. (2020) found that difficulty in identifying emotions and difficulty in describing emotions (alexithymia) were positively associated with suicidal thoughts among youth in the city of Bukan (Rahimzadeh Yinghi et al., 2020). Additionally, the results of the research by Mohamed and Ahmed (2022) indicated that low emotional intelligence and increased emotional alexithymia in patients with depressive disorders led to an increase in suicidal thoughts (Mohamed & Ahmed, 2022).

Furthermore, it should be noted that another variable closely related to students' suicidal thoughts is loneliness (Khatcherian et al., 2022). In recent years, loneliness has emerged as a key predictor of mental health and is described

when an individual's social network is lacking in important aspects, whether quantitatively or qualitatively (Pavlova & Bannikov, 2015). It is important to highlight the distinction between social isolation and loneliness. Social isolation is outwardly visible to observers. It is inferred from a lack of social closeness and interaction with others, although the individual may not feel lonely. In contrast, loneliness is a subjective psychological state identified through introspection and, as a result, encompasses those who may feel lonely even in a crowd (Bondevik & Skogstad, 1998). Recently, loneliness has attracted increasing attention from national governments and public health organizations (McClelland et al., 2020), recognizing that approximately 11 to 17 percent of the general population worldwide experience loneliness at some point in their lives (Beutel et al., 2017). Cross-sectional research indicates that the prevalence of loneliness is age-dependent, being more common under the age of 30 and over 80, with peaks in adolescence and old age (Batigün, 2005). It has been reported that the prevalence of loneliness among adolescents is between 70 to 80 percent (Mehrandish et al., 2019), and these age ranges coincide with an increase in the prevalence of suicidal thoughts and behaviors (though not necessarily suicide deaths) among adolescents and young adults compared to other age groups (Lamis et al., 2014; Sharma et al., 2017). Numerous studies have identified loneliness and lack of social connection as significant factors in psychological distress and suicidal behavior (Page et al., 2006). However, the likelihood of suicide prevention exists when an individual has close relationships with others, and their suicidal signs and thoughts are recognized by close associates (Ghaffari et al., 2021). Accordingly, in a study by Najafi et al. (2014), it was concluded that there is a significant relationship between loneliness and suicidal ideation (Najafi et al., 2014). Moreover, the results of Wairimu's (2022) research indicated a significant relationship between loneliness and depression, suggesting that loneliness, characterized by feelings of isolation from others, can lead to depression. Finally, this study showed a significant relationship between depression and suicidal thoughts among students at Makerere University (Wairimu, 2022). However, the results of the study by Lasgaard et al. (2011b) indicated that when controlling for depression symptoms, loneliness did not predict suicidal thoughts over time or cross-sectionally in high school students (Lasgaard et al., 2011).

Another concept closely related to suicidal thoughts is differentiation. Bowen (1985) introduced differentiation as

the most important concept in family systems theory and defined it as the degree to which an individual can separate their mental and emotional processes from others (Parsakia et al., 2023), which increases an individual's awareness and understanding of their personal characteristics and has a significant impact on their functioning. In fact, differentiated individuals have a clear definition of themselves and their beliefs; they can choose their direction in life and maintain self-control in highly emotional situations that might lead many people to engage in impulsive behaviors or make hasty decisions, allowing them to make decisions based on reason and logic. In contrast, undifferentiated individuals, who lack a defined identity and move along with the emotional currents of the family in interpersonal roles and issues, experience high levels of chronic anxiety and depression and are prone to psychological problems and illness symptoms (Babaie Khakian et al., 2015). Individuals with a high level of differentiation are more adaptable in the family and society, and as a result, suicidal thoughts and attempts are significantly lower among them (Luo et al., 2013). Accordingly, the results of Aghajani et al.'s (2022) research highlighted the protective role of self-differentiation and cognitive flexibility against suicide-inducing factors (Aghajani et al., 2022). Additionally, the results of the study by Fayaz and Arefi (2018) indicated that the levels of all three variables—self-differentiation, authentic happiness, and resilience—differed among students with and without suicidal thoughts (Fayaz & Arefi, 2018).

Due to its high prevalence, likelihood of recurrence, wide-ranging effects on society and those around the individual, cultural and religious issues, high treatment costs, and increased likelihood of successful suicide, adolescent suicidal thoughts are among the most significant social problems related to adolescents. Therefore, given the importance of the issue, the research gap, and the lack of empirical studies on the relationship between the mentioned variables (alexithymia, loneliness, and differentiation) and suicidal thoughts in high school students, this study aimed to examine the relationship between alexithymia, loneliness, and differentiation with suicidal thoughts in high school students.

2. Methods and Materials

2.1. Study Design and Participants

This research, given its objective, is an applied study, and in terms of data collection and analysis methods, it is descriptive and correlational in design. The statistical

population in this study comprised all female high school students in District 4 of Tabriz during the 2023-2024 academic year (N=4000). Using Krejcie and Morgan's table and multistage cluster random sampling, 351 students were selected as the sample. In this study, the population of female high school students in Tabriz was divided into schools, and then from each school and each grade, two classes were randomly selected.

After obtaining permission from the Education Department of District 4 of Tabriz, coordination with school principals was established, and the questionnaires (alexithymia, loneliness, differentiation, and suicidal thoughts) were distributed to 351 female high school students in Tabriz, accompanied by brief instructions on how to complete the questionnaires. It should be noted that the researcher explained the research objectives and questionnaire completion method, and after obtaining informed consent, the four questionnaires were administered consecutively and collectively to the participants for completion. The questionnaires were designed to be anonymous, and once completed by the participants, they were collected. Data were collected in groups and on the premises of the students' schools.

2.2. Measures

2.2.1. Suicidal Thoughts

Beck's scale, which is used in studies related to suicidal thoughts, includes 19 questions, each scored from zero to two, resulting in a total score ranging from zero to 38. The final scoring of this test is as follows: 0-3 indicates no suicidal thoughts, 4-11 indicates low-risk suicidal thoughts, and 12-38 indicates high-risk suicidal thoughts. This test has been translated into Persian, and preliminary studies for its implementation were conducted at the Cognitive and Behavioral Studies Center of Roozbeh Hospital. The reliability coefficient was calculated as 0.87 using Cronbach's alpha, and 0.54 using the test-retest method. The test has been translated into Persian, and concurrent validity with the General Health Questionnaire was reported as 0.76, and its reliability using Cronbach's alpha was reported as 0.95 (Basharpoor & Samadifard, 2018).

2.2.2. Differentiation of Self

This questionnaire was developed by Skowron and Friedlander in 1988 and revised by Skowron and Smith in 2003. The final questionnaire was developed by Jackson in

46 items based on Bowen's theory. This tool focuses on important life relationships and individuals' current relationships with their family of origin. The items of this questionnaire are scored on a Likert scale from 1 (not at all true for me) to 6 (very true for me). The scoring method of the differentiation of self-inventory is such that the entire questionnaire is scored inversely except for questions 4, 7, 11, 15, 19, 23, 27, 31, 37, and 43. This scale has four subscales: emotional reactivity, I-position, emotional cutoff, and fusion with others. The maximum possible score is 276. A lower score indicates lower levels of differentiation (Babaie Khakian et al., 2015). In the study by Hashemi et al. (2014), the content validity of the questionnaire was confirmed (Hashemi et al., 2014).

2.2.3. Loneliness

To measure loneliness, the UCLA Loneliness Scale was used, which is the most well-known loneliness scale and has greater psychometric validity than other scales. This scale consists of 20 questions scored on a four-point Likert scale. The highest score is 80, the lowest score is 20, and the cut-off score is 50. A higher score indicates a greater intensity of loneliness. The reliability coefficient of this scale using the test-retest method was 0.94, and the Cronbach's alpha reliability coefficient was 0.96, with a correlation coefficient of 0.77 with the Beck Depression Scale (Daniel, 2013). Pasha and Esmaeili (2007) conducted a study to determine the reliability of this scale using Cronbach's alpha and split-half methods, which were 0.75 and 0.71, respectively. Its validity was assessed using anxiety, with a result of 0.4 (Maleki, 2019).

2.2.4. Alexithymia

This scale was developed by Bagby, Taylor, and Parker (Bagby et al., 1994) and is a 20-item test. Its Persian version assesses three subscales: difficulty identifying feelings (7 questions), difficulty describing feelings (5 questions), and externally oriented thinking (8 questions) on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). For scoring this scale, scores of 60 and above indicate high alexithymia, while scores of 52 and below indicate low alexithymia. Cronbach's alpha coefficients for overall alexithymia and its three subscales were 0.85, 0.82, 0.75, and 0.72, respectively, indicating good internal consistency. The test-retest reliability of this scale was confirmed as 0.80 and 0.87 for overall alexithymia and its various subscales. Concurrent validity was confirmed based on the Pearson

correlation coefficient between overall alexithymia and emotional intelligence scales, which was 0.80 (Saffarian Toosi & Khadivi Rofugar, 2020).

2.3. Data analysis

The collected data were analyzed using SPSS version 20 with the Pearson correlation coefficient and simultaneous multiple regression analysis.

Table 1

Descriptive Statistics for Variables (n = 351)

Variables	Mean	Standard Deviation	Skewness	Kurtosis	Minimum	Maximum
Suicidal Thoughts	13.49	6.55	0.34	-0.41	0	30
Alexithymia	55.25	10.33	0.21	-0.15	32	82
Loneliness	46.52	9.19	0.13	-0.02	25	72
Differentiation	160.74	52.41	-0.08	-0.98	55	258

To examine the normality of the distribution of variables, the Kolmogorov-Smirnov test was used. The results indicated that all variables had a normal distribution ($p >$

3. Findings and Results

Based on the findings in Table 1, the mean scores for suicidal thoughts were 13.49 (SD = 6.55), alexithymia was 55.25 (SD = 10.33), loneliness was 46.52 (SD = 9.19), and differentiation was 160.74 (SD = 52.41).

.05). Pearson correlation was used to examine the relationships between the variables. The results of the Pearson correlation test are presented in Table 2.

Table 2

Results of Pearson Correlation for Relationships Between Variables (n = 351)

Variables	Suicidal Thoughts	Alexithymia	Loneliness	Differentiation
Suicidal Thoughts	r = 1 p = 0			
Alexithymia	r = .588 p = .001	r = 1		
Loneliness	r = .49 p = .001	r = .523 p = .001	r = 1	
Differentiation	r = -.539 p = .001	r = -.32 p = .001	r = -.212 p = .001	r = 1 p = 0

The Pearson correlation test results showed a significant positive correlation between alexithymia ($r = .59, p < .05$) and loneliness ($r = .49, p < .05$) with suicidal thoughts in students. However, there was a significant inverse correlation between differentiation and suicidal thoughts in students ($r = -.54, p < .05$).

To investigate the predictive role of alexithymia, loneliness, and differentiation in suicidal thoughts among students, simultaneous multiple linear regression was used. The multiple correlation coefficient was 0.72, and the coefficient of determination was 0.52. In fact, 52% of the

variance in suicidal thoughts among students is explained by the variables alexithymia, loneliness, and differentiation. The Durbin-Watson value was 1.93. Since this value falls between 1.5 and 2.5, it is concluded that the dependent variable does not have autocorrelation and that errors are independent of each other. Also, the significance level of the F-test was 0.001. Given that the significance level of the F-test is less than 0.05, it indicates that there is a significant linear relationship between the dependent variable and the predictor variables.

Table 3

Regression Coefficients

Model	B	Standard Error	Beta (β)	t-Value	Significance Level	Tolerance	VIF
Constant	1.376	1.944	-	0.708	0.480	-	-
Alexithymia	0.221	0.029	0.347	7.713	0.001	0.681	1.469
Loneliness	0.162	0.031	0.228	5.216	0.001	0.724	1.380
Differentiation	-0.047	0.005	-0.379	-9.654	0.001	0.895	1.118

The final regression results are presented in [Table 3](#). Based on the table, it is concluded that alexithymia ($\beta = 0.35$, $p = 0.001$) and loneliness ($\beta = 0.23$, $p = 0.001$) have a significant positive impact on students' suicidal thoughts. However, differentiation has a significant inverse impact on students' suicidal thoughts ($\beta = -0.38$, $p = 0.001$). Therefore, the variables alexithymia, loneliness, and differentiation can predict students' suicidal thoughts. Differentiation, with a standardized coefficient (β) of -0.38, has the greatest impact on predicting students' suicidal thoughts, followed by alexithymia and loneliness.

4. Discussion and Conclusion

This study aimed to examine the relationship between alexithymia, loneliness, and differentiation with suicidal thoughts among high school students. The results showed that alexithymia has a significant positive relationship with suicidal thoughts in high school students and can predict their suicidal thoughts ($\beta = 0.35$). To date, this finding has not been reported in the research literature; however, the obtained result is consistent with the prior findings ([Baghani et al., 2017](#); [Hemming et al., 2019](#); [Mohamed & Ahmed, 2022](#); [Rahimzadeh Yinghi et al., 2020](#)), which suggest a significant positive relationship between alexithymia and suicidal thoughts and behaviors in adolescents and young adults.

In explaining this research finding, it can be said that suicide is a major public health challenge in the United States and worldwide. Among high school adolescents aged 14 to 18 years, 1,952 suicides occurred in 2021, making suicide the third leading cause of death in this age group (2021 rate = 9.0 per 100,000 population). Suicide accounts for almost one-fifth (18.6 percent) of deaths in this age group. Death is only part of the burden of suicidal behavior; suicide attempts and suicidal thoughts are more prevalent among adolescents than death in this group ([Gaylor et al., 2023](#)). Compared to their male peers, girls are more likely to attempt suicide and have suicidal thoughts, while boys are more prone to suicide. The gap in suicide mortality between the two sexes may be narrowing during the ages of 10 to 19

years ([Glenn & Nock, 2014](#)). Childhood maltreatment, mental health concerns (such as depression), social isolation, emotional and mood dysregulation, neurocognitive impairments, loneliness, hopelessness, and other risk factors are all associated with suicide attempts, suicidal thoughts, and suicide deaths ([Lindsey et al., 2019](#)). Accordingly, it can be said that emotional dysfunction (alexithymia) is a cognitive-emotional trait, and individuals affected by it are unable to regulate and understand their emotions. When emotional information cannot be processed, perceived, and evaluated in cognitive processing, individuals become emotionally and cognitively distressed, and this inability can disrupt their emotional and cognitive organization. These individuals, due to emotional unawareness and inability to cognitively process their feelings, are usually unable to identify, perceive, or describe their emotions and have limited ability to adapt to stressful situations. One of the ways to control stress, particularly in the case of emotions, is not to express them. When an individual is unable to verbally express their negative emotions, the psychological component of emotional expression and psychological distress, including depression and anxiety, increases. Overall, it can be said that students who cannot identify or describe their feelings tend to have dysfunctional thoughts, such as suicide ([Rahimzadeh Yinghi et al., 2020](#)).

Additionally, the results showed that loneliness has a significant positive relationship with suicidal thoughts in high school students and can predict their suicidal thoughts ($\beta = 0.23$). The obtained result is consistent with the prior findings ([Najafi et al., 2014](#); [Wairimu, 2022](#)), which suggest a significant positive relationship between loneliness and suicidal ideation in students. However, it is inconsistent with the findings of [Lasgaard et al. \(2011\)](#), who reported that loneliness does not predict suicidal thoughts over time or cross-sectionally in students when controlling for depression symptoms ([Lasgaard et al., 2011](#)).

In explaining this research finding, it can be stated that loneliness is an unpleasant individual experience, such as the thought of being different from others, which is associated with observable behavioral problems such as sadness, anger,

and depression. Everyone feels the need for contact and interaction with others in their lives. The lack of social relationships leads to loneliness, which causes many psychological disorders in individuals (Mardani & Kiyani, 2021). Loneliness is an important risk factor in developing suicidal thoughts. If loneliness is exacerbated during adolescence (e.g., due to the lack of a peer group), it can lead to decreased overall life satisfaction, poor academic performance, low self-esteem, internet addiction, etc., which can result in suicidal thoughts or even attempts (Khatcherian et al., 2022).

Another finding of this study showed that differentiation has a significant negative relationship with suicidal thoughts in high school students and can predict their negative thoughts ($\beta = -0.38$). The obtained result is consistent with the prior findings (Aghajani et al., 2022; Fayaz & Arefi, 2018; Luo et al., 2013), which suggest a significant negative relationship between differentiation and suicidal thoughts in female students.

In explaining this research finding, it can be stated that, in general, the lower the level of differentiation in individuals, the more they are prone to anxiety. They react more emotionally and intensely to events, are trapped in their emotions, have lower self-esteem and self-respect, and in crisis situations and facing life's challenges, they make sudden decisions based on their feelings, lack the necessary competence, and may resort to suicidal thoughts and behaviors to solve life problems. In contrast, adolescents with higher levels of self-differentiation can easily separate their emotions from rationality and are capable of using their rational system to react to and solve life's challenging situations (Vaghee et al., 2017).

The simultaneous multiple regression analysis results also showed that 52% of the variance in suicidal thoughts among students is explained by the variables alexithymia, loneliness, and differentiation and that they have significant predictive power. Differentiation, with a standardized coefficient (β) of -0.38, has the greatest impact on predicting suicidal thoughts. Following that, alexithymia ($\beta = 0.35$) and loneliness ($\beta = 0.23$) also have significant predictive power. Therefore, it can be said that differentiation involves reaching a level of emotional independence where an individual can make autonomous and emotional decisions in emotional and highly charged situations without becoming overwhelmed by the emotional atmosphere. Students who are not well-differentiated have their rationality and emotions so intertwined and mixed that their lives are governed by the feelings of those around them. As a result,

they are easily disturbed in stressful situations, experience high levels of chronic anxiety throughout different stages of family life, and are the most susceptible to acute psychological problems, which in turn increases the likelihood of suicidal thoughts and attempts (Luo et al., 2013).

5. Limitations & Suggestions

Among the limitations of this research is the gender-specific sample, as only female high school students from East Azerbaijan Province were selected, which limits the generalizability of the results. It is recommended that methods to enhance self-differentiation and skills to reduce alexithymia and loneliness be employed as strategies to reduce students' anxiety and stress in critical situations and increase their ability to use effective and constructive coping strategies. This could be a significant step toward reducing suicidal thoughts and behaviors among students across the country, implemented by school psychologists and counselors. Additionally, given the study's limitations, such as the sample consisting only of female high school students from East Azerbaijan Province, it is suggested that similar research be conducted among male high school students and in other cities.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this article.

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