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Examination of the Mediating Role of Attachment Dimensions in the Link between Suicide Probability and Cognitive Distortions about Relationships in University Students

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Abstract

Suicide, which is defined as an individual's intentionally attempting to end his or her life, is considered an important public health problem. In this study, it was aimed to examine the relationship between cognitive distortions and suicide probability in university students who are in age groups at risk for suicide, and to examine the mediating roles of the attachment dimensions of anxiety and avoidance, in this relationship. The study group consisted of 441 university students. In the study, Suicide Probability Scale, Experiences in Close Relationships Inventory, Cognitive Distortions in Relationships Scale and a personal information form were used as data collection tools. In accordance with the purpose of the study, a correlation analysis between variables and regression analyses were applied to examine the mediating roles of avoidance and anxiety in the relationship between cognitive distortions and suicide probability. The findings showed that there was a moderate positive correlational relationship between suicide probability scores and avoidance scores and there was a moderate positive correlational relationship between suicide probability scores and cognitive distortion scores. It was shown that there were low and moderate positive correlations between cognitive distortion scores, and avoidance and anxiety scores. The results of the mediation analyses showed that anxiety and avoidance had a partial mediating role in the relationship between cognitive distortion and suicide probability. The results were discussed in light of the literature.

Introduction

Suicide as a global phenomenon is one of the most important public health problems. It is simply defined as ending one's own life in an intentional way. Suicide is a tragedy seen all over the world, regardless of language, religion, race, status, culture, etc. The World Health Organization describes suicidal behavior as self-harm that is occurred with varying degrees of intent (WHO, 2000). It is handled in two groups as completed suicide and suicide attempt. Scientific research has shown that suicide rates have been continually increasing. WHO reports that approximately 800,000 people die each year as a result of suicide, and many more of them attempt it (WHO, 2019). Although it is seen in every age group, some age groups seem to be more at risk. Young people are at the forefronts of at risk groups.

Suicide is the second leading cause of deaths all over the world in the age group 19-29 years (WHO, 2019). Although death rates in Turkey are below the world average, it is stated that there has been an increase in suicide rates (TUIK, 2020). Because young people are in the at risk group, this research sample consists of young people studying at a university. Although university life can be considered as advantageous in terms of offering various opportunities to individuals, it also poses a risk in terms of the diversity of problems faced by young people and in terms of mental health. Therefore, it can be thought to be a vulnerable period. As it is a transitional period, many problems can be encountered. Some examples of them are: problems in social relations, economic and academic problems, problems in the process of identity formation, etc. All these may predispose the individual to some psychological problems. Studies often report these problems as anxiety, stress, depression, personality disorders, and suicide (Zivin, Eisenberg, Gollust & Golberstein, 2009). Among them, suicide can be expressed as one of the prominent problems because it causes devastating consequences for both the individual and society. Due to the fact that it is preventable, it is important to determine the risk factors and warning signs by doing research on suicide. This may be a significant contribution to the literature. Suicide is structurally complex and it can be said that it is affected by many factors such as individual, biological, psychological, social and cultural factors (WHO, 2016). Scientific research conducted to determine

psychologically related factors revealed that suicide was closely related to psychiatric disorders (Ak et al., 2013; Tezcan et al., 1995).

Beck (2008), one of the important representatives of cognitive theory, asserts that inappropriate affect in psychiatric patients results from their cognitive processes. He states that these processes consist of cognitive schemas, cognitive distortions, automatic thoughts, and cognitive triad. In the literature, there are some research findings revealing a relationship between cognitive processes and suicide (Kevlekçi, 2013; Metha, 1998). It was thought that cognitive processes, which have a significant effect on emotions, may be related to suicide. Therefore, cognitive distortions were included in the research as a variable.

Cognitive Distortions

According to the cognitive approach, thoughts are the real causes underlying emotions (Beck, 2008) and the drivers, creators and maintainers of behaviors (Rait, Monsen, & Squires, 2010). In simple terms, what leads to behavior and feelings are thoughts about events rather than events themselves. An error in this thought system may cause incompatibility between cognitively perceived events and the magnitude and quality of emotional and behavioral reactions to those events. In Beck's (2008) theory, this incompatibility results from schemas, cognitive distortions and automatic thoughts arising from schemas. Schemas are characterized as resistant structures shaped by the individual's past experiences, mostly influenced by his or her early childhood experiences (Atkinson et al., 2010). Schemas form the basis of rules in the process of the individual's interpreting events and they are unique to the individual (Wright, Basco, & Thanse, 2006). Negative schemas of the individual are the sources of automatic thoughts and cognitive distortions. Automatic thoughts lead to certain emotions and have a nature to pass quickly through the mind (Türkçapar, 2011).

Cognitive distortions occur when automatic thoughts can be categorized against certain criteria. Beck (2008) defines cognitive distortions as the tendency to interpret, perceive and evaluate external stimuli negatively. In general, ten different cognitive distortions are reported in the literature. These are "mind reading", "all or nothing thinking", "personalization", "emotional reasoning", "selective abstraction", "catastrophizing", "magnification and minimization", "overgeneralization", "labeling", and "'should' statements" (Beck, 2008). It has been revealed that there is a relationship between suicide and cognitive distortions (Hewitt, Flett, Sherry, & Caelian, 2006; Wenzel, Brown & Beck, 2008; Eskin & Köskün, 2019). It is also reported that the highest suicide rate in psychiatric cases is seen in major depressive disorders. In depression, negative bias in thought content is intense (Beck, 2001), cognitive distortions are often present (Bulut, Mercan & Yüksel, 2020), and the probability of suicide increases (Özer, Yıldırım & Erkoç, 2015); therefore, it is thought that cognitive distortions are associated with suicide.

The foundations of cognitive schemas are shaped by childhood experiences. From this point of view, it can be said that early childhood experiences are important. Considering that these experiences are also related to individuals' attachment patterns, it is suggested that the formation of schemas and thus cognitive distortions are related to individuals' attachment styles. Studies have also shown that there is a relationship between attachment styles and cognitive distortions (Çam & Çelik, 2018; Şahin & Yaka, 2010). In addition, some research reveals that attachment offers an important perspective in understanding psychological problems (Manes et al., 2016) and that insecure attachment styles create a predisposition to psychological problems in adulthood (Boysan & Çam, 2016). From this point of view, it was considered that attachment styles might have an effect on the probability of suicide and attachment styles were included in the study as a mediating variable.

Attachment Styles

The concept of 'attachment' in developmental psychology refers to the bond that is established between a caregiver and an infant in the first months of infant's life and is the source of the feeling of security in stressful situations. Attachment is shaped by the relationship established with the first caregiver during infancy (Bowlby, 2013). It continues throughout life and adult relationships. Attachment figures in infancy are mostly parents or caregivers. In later life, these figures correspond to peer groups and people in romantic relationships (Ainsworth, 1989). Bartholomew and Horowitz (1991), who conducted the most important studies on the concept of attachment in adults, developed the quadruple attachment model, based on the individual's cognitions of himself or herself and others. Among these four styles, in the secure attachment one, opinions about both the self and others are positive, and in preoccupied attachment - one of the insecure attachment styles, opinions about the self are negative and about others are positive. In dismissive attachment, the self model is positive, the

model of others is negative and in fearful attachment, both models are negative (Bartholomew & Horowitz, 1991). It is stated that insecure attachment styles make individuals more prone to various psychological problems (Bowlby, 2013 Boysan & Çam, 2016). It is thought that attachment patterns, which are shaped according to the assumptions developed by the individual about himself or herself and others, will affect schemas about relationships (Şahin ve Yaka, 2010) and cognitive distortions resulting from those schemas. There are many research findings in the literature revealing that some attachment styles are associated with various cognitive distortions (Çam & Şahin-Çelik, 2018; Gamble & Roberts, 2005; Sarsici, 2019). The number of studies examining the relationship between attachment styles and suicide is limited, and results of these studies generally indicate that insecure attachment styles are more associated with suicide (Özer, Yıldırım, & Erkoç, 2015).

Method

Research Model

The relational survey model, which is one of the general survey models, was used in the research. Relational survey models are models that aim to determine the existence of change in two or more variables combined (Karasar, 2005).

Research Group

After obtaining permission to use the measurement tools in the research and also the approval of the ethics committee, the data of the research were obtained through online forms in the 2020-'21 academic year. All procedures in the research were completed within the framework of approval of the University Scientific Research and Publication Ethics Committee. The descriptive information about participants is presented in Table 1.

Table 1. Descriptive information about research group

Gender	n	%
Female	289	
Male	152	
Low (SES)	68	15.4
Middle (SES)	294	66.7
High (SES)	79	17.9
<i>Total</i>	<i>441</i>	<i>100</i>

Data Collection Tools

Suicide Probability Scale

The scale developed by Cull and Gill (1990) to evaluate the possible risk of suicide in adolescents and adults, was adapted into Turkish by Şahin and Batıgün (2000). The 36 items were answered on a 4-point Likert-type scale including answers such as "never or rarely", "sometimes", "often" and "often or always". High scores on the scale mean a higher probability of suicide.

Experiences in Close Relationships Inventory

The scale developed by Brennan, Clarck and Shaver (1998) aims to measure anxiety and avoidance, which are the two main dimensions of attachment. The scale was adapted into Turkish by Sümer (2006). The scale consists of 36 Likert type items with 7 grades. The 18 items in the scale are used to evaluate the anxiety dimension and the remaining 18 items are used to evaluate the avoidance dimension. In the study conducted by Sümer (2006) to evaluate the psychometric suitability of Experiences in Close Relationships Inventory; anxiety and avoidance dimensions explained 38% of the total variance (22% Avoidance, 16% Anxiety) and both dimensions had high reliability coefficients ($\alpha_{\text{anxiety}} = .86$, $\alpha_{\text{avoidance}} = .90$).

Cognitive Distortions in Relationships Scale

The scale developed by Hamamcı (2003) to evaluate the cognitive distortions that individuals have in their interpersonal relationships consists of 19 items. The highest score that can be obtained from the 5-point Likert type measurement tool is 95, and the lowest score is 19. A high score means that individuals have cognitive distortions about close relationships (Hamamcı, 2003; Hamamcı & Büyüköztürk, 2003). The scale includes three independent factors: 'Avoiding Intimacy', 'Unrealistic Relationship Expectation' and 'Mind Reading'. Internal consistency and test-retest methods were used to determine the reliability of the scale. The internal consistency coefficient for the whole scale was found to be .67. When the sub-dimensions are examined, the internal consistency coefficient is .73 for the first sub-dimension; .66 for the second sub-dimension; and it was calculated as .49 for the third sub-dimension (Hamamcı & Büyüköztürk, 2003).

Personal Information Form

In the form prepared by researchers, there were questions about age, gender, and perceived economic status of participants.

Results

Analysis of Data

Skewness and kurtosis coefficients were used to examine the distribution of suicide probability, avoidance, anxiety and cognitive distortion scores. The skewness and kurtosis coefficients in the range of ± 1 indicated that scores had a normal distribution (Tabachnick & Fidell, 2013). The calculated skewness and kurtosis coefficients were shown in Table 2. This result indicated that scores obtained through measurement tools had a univariate normal distribution.

Table 2. Skewness and kurtosis coefficients of suicide probability, avoidance, anxiety, and cognitive distortion scores

Variables	Skewness		Kurtosis	
	z	SE	z	SE
Suicide probability	0.26	0.12	-0.22	0.23
Avoidance	-0.04	0.12	-0.16	0.23
Anxiety	-0.09	0.12	-0.48	0.23
Cognitive distortion	0.18	0.12	0.25	0.23

In accordance with the purpose of the study, regression analyses were used to examine the mediating role of avoidance and anxiety in the relationship between cognitive distortions and suicide probability. SPSS Process Hayes Macro (version 3.0) was used for regression analyses. Hayes Macro performs analyses based on the bootstrap method. In this method, direct and indirect significant effects are determined based on confidence interval (Shrout & Bolger, 2002). Before the regression analysis, Cook distance values were calculated to determine multivariate outliers. The obtained values (Cook distance < 1) showed that there were no multivariate outliers in data set.

The existence of a multicollinearity problem between independent variables was investigated by calculating variance increase factor (VIF) values. VIF < 10 indicated that there was no multicollinearity problem (Çokluk, Şekercioğlu, & Büyüköztürk, 2010). The calculated values ($1.07 \leq \text{VIF} \leq 1.54$) showed that there was no multicollinearity problem between variables. The Durbin-Watson coefficient was calculated to examine the assumption of independence of errors. The fact that this coefficient is in the range of (> 1.5 and < 2.5) indicates that assumption of independence of errors is met (Kalaycı, 2017).

The Durbin-Watson coefficient was calculated as 2.02 and the assumption was met. Graphs of standardized residuals were examined to determine whether homoscedasticity assumption was met. In the histogram graph, it was observed that residuals were distributed very close to the normal. In normal P-P plot, a large proportion of the residuals was distributed close to or parallel to the normal distribution line. The results indicated that homoscedasticity assumption was met. Confidence interval for analyses was determined as 95%, $p < 0.05$ values were considered as significant. Analyses were performed by using IBM SPSS 25.0 program.

Results

Table 3. Pearson correlation coefficients of relationships between suicide probability, avoidance, anxiety, and cognitive distortion scores

Variables	M	SD	1.	2.	3.	4.
1. Suicide probability	88.20	10.51	1			
2. Avoidance	71.03	14.82	0.29**	1		
3. Anxiety	67.81	20.13	0.38**	-0.09	1	
4. Cognitive distortion	56.24	9.19	0.51**	0.14**	0.56**	1

** $p < 0.01$; N=441

When statistically significant relationships in the table were examined, it was understood that there were moderate positive correlations between suicide probability and avoidance scores ($r=0.29$; $p < 0.01$), anxiety scores ($r=0.38$; $p < 0.01$), cognitive distortion scores ($r=0.51$; $p < 0.01$). Considering relationships between variables, it could be said that probability of suicide increased as avoidance, anxiety, and cognitive distortions increased. It was understood that there are low and moderate positive correlations between cognitive distortion scores and avoidance ($r=0.14$; $p < 0.01$) and anxiety ($r=0.56$; $p < 0.01$) scores. This meant that as cognitive distortion increased, avoidance and anxiety also increased.

Regression analysis was performed to examine mediating role of avoidance and anxiety in the relationship between cognitive distortions and suicide probability. In the regression analysis, cognitive distortion was independent variable, suicide probability was dependent variable, and anxiety and avoidance were mediator variables. The path coefficients obtained are shown in Table 4.

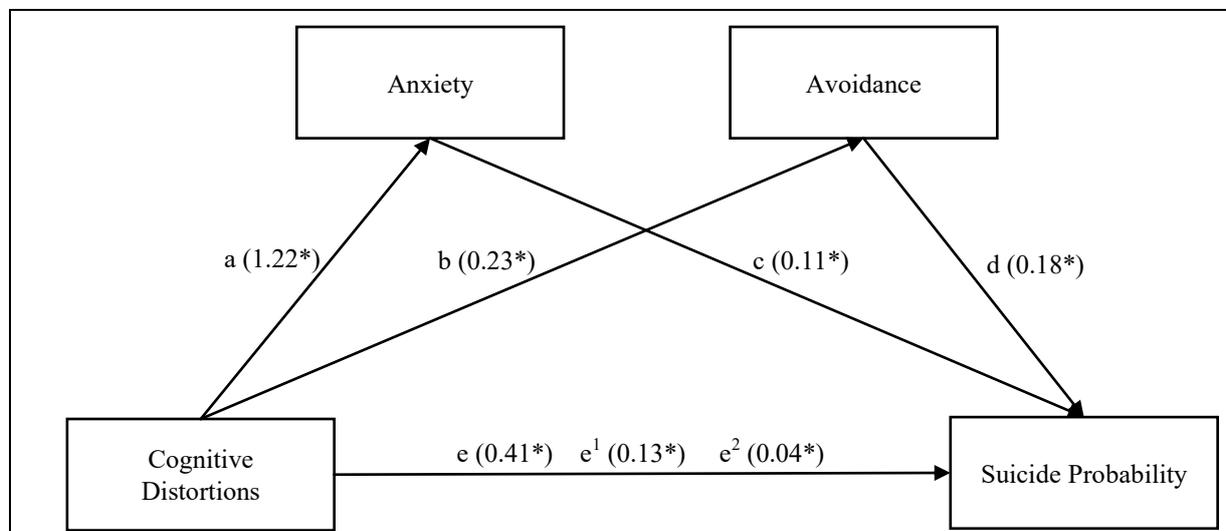


Figure 1. Mediator role of avoidance and anxiety in the relationship between cognitive distortion and suicide probability, * $p < 0.05$, e=Direct effect on suicide probability with anxiety and avoidance, e1=Indirect effect on anxiety, e2=Indirect effect on avoidance

In Model 1, the total effect of cognitive distortion on suicide probability was examined ($F_{(1,439)}=154.17$; $R=0.51$; $p < 0.01$). The fact that confidence interval 95% CI (0.49; 0.68) did not contain zero value indicated that total effect was statistically significant. Considering only the effect of independent variable on dependent variable, it was understood that cognitive distortion had a positive and significant effect on the probability of suicide ($\beta=0.58$; $p < 0.05$).

In Model 2, the direct effect of cognitive distortion on suicide probability was examined ($F_{(3,437)}=73.03$; $R=0.58$; $p < 0.01$). The fact that confidence interval 95% CI (0.30; 0.52) did not contain zero value indicated that direct effect was statistically significant. When cognitive distortion, anxiety and avoidance were included in the same model, cognitive distortion had a direct positive effect on suicide probability ($\beta=0.41$; $p < 0.05$).

In Model 3, mediating role of anxiety and avoidance in the relationship between cognitive distortion and suicide probability was tested. The fact that confidence intervals calculated for state anxiety 95% CI (0.07; 0.20) and trait anxiety 95% CI (0.01; 0.07) did not include zero value indicated that indirect effects ($\beta=0.13$; $\beta=0.04$;

$p < 0.05$) was statistically significant. The results showed that anxiety and avoidance had a partial mediating role in the relationship between cognitive distortion and suicide probability.

Table 4. Results of regression analysis performed to determine mediator role of avoidance and anxiety in the relationship between cognitive distortion and suicide probability

Models		β	SE	t	p	LLCI	ULCI	
Model 1 (Total effect)								
Cognitive Distortion	---->	Suicide Probability	0.58	0.05	12.42	0.00	0.49	0.68
Model 2 (Direct effect)								
Cognitive Distortion	---->	Suicide Probability	0.41	0.06	7.45	0.00	0.30	0.52
Model 3 (Indirect effect)								
Cognitive Distortion	----> Anxiety	----> Suicide Probability	0.13	0.03			0.07	0.20
Cognitive Distortion	----> Avoidance	----> Suicide Probability	0.04	0.02			0.01	0.07

LLCI= Lower limit confidence interval ULCI= Upper limit confidence interval

Discussion and Conclusion

The results of the study revealed that both cognitive distortions related to relationships and anxiety and avoidance, which were attachment dimensions, had a predictive effect on suicide, and that attachment dimensions had a partial mediating role in the relationship between cognitive distortions related to relationships and suicide probability. In other words, individuals' cognitive distortions and higher scores on anxiety/avoidance dimensions increase suicide probability. High scores on anxiety and avoidance dimensions also increase effect of cognitive distortions related to relationships on suicide probability. Cognitive distortions related to relationships can be thought as an individual's making some mistakes while interpreting relationships established by the individual with his/her close environment, and having a negative bias in his or her thinking system. Similarly, attachment styles are structures that affect an individual's close relationships. The individual's thoughts and expectations about their relationships are affected by attachment styles. The interpretation of a behavior of other person by someone with a secure attachment style differs significantly from that of someone with an obsessive, indecisive or fearful attachment. Because this structure, which affects interpretation and evaluation processes of events, is negative in insecure attachment styles, it is an expected situation that this structure is associated with a phenomenon related to intense negative thought content such as suicide. No study was found in the literature which included variables in this study together. However, when variables were considered separately, it could be seen that there were many research findings reaching similar results.

Some studies revealed that suicidal tendency and suicidal behavior were closely related to negative thoughts (Kevlekçi, 2013). Eskin and Köskün (2019) emphasized that individuals showing suicidal behavior commonly used cognitive distortions and in the treatment processes of these individuals, that dysfunctional thoughts should be focused on. Studies showed that 74% of those who attempted suicide had a psychiatric disorder (Tezcan, Oğuzhanoglu, & Ülkeroglu, 1995), and that depressive disorders were the most common of these disorders (Gould & Kramer, 2001). Other research indicated that individuals with depression had higher level of cognitive distortions (Cannon & Weems, 2010; İshikkawa, 2015) and suicide probability (Sabancıoğulları, Avcı, Doğan, Kelleci & Ata, 2015). According to DSM V, recurrent thoughts of death are among diagnostic criteria for major depressive disorder. These findings point out that malfunction in the cognitive system is closely related to suicide and psychiatric diseases that will bring it. In the light of this information, it is seen that results obtained from the research are consistent with the literature. Results also showed that there was a significant relationship between cognitive distortions about relationships and attachment dimensions such as anxiety and avoidance. One of sub-dimensions of cognitive distortions scale used in the research is avoiding intimacy. This cognitive distortion used in close relationships is expected to affect our attachment dimensions to people being close to us. In other words, cognitive distortions that individuals use in evaluating their relationships also affect their attachment styles. In the literature, there are a lot of studies that have concluded that there is a significant relationship between attachment style and cognitive distortions (Gamble & Roberts, 2005). Also, it is seen that there is a bidirectional relationship between these two variables. Başbuğ et al. (2017) found that attachment styles of those who had high level of cognitive distortions about relationships were affected by this situation, while Çam and Şahin-Çelik (2018) concluded that attachment styles predicted cognitive distortions related to relationships. Studies with similar results are as follows: Şahin and Yaka (2010) state that insecure attachment

negatively affects cognitive functions in adulthood, Deveci-Şirin (2017) affirms that avoidant attachment predicts cognitive distortions, and Sarsıcı (2019) says that attachment styles predict cognitive distortions. Because a person who uses cognitive distortions about relationships intensely tends to evaluate people around him negatively and consider them untrustworthy and decliner, this situation strengthens insecure attachment styles. Therefore, it can be said that the finding cognitive distortions and attachment dimensions are related is consistent with the literature. Research findings also show that attachment dimensions are associated with suicide probability. There are some findings in the literature supporting this result. Mikulincer and Shaver (2007) found that insecure attachment patterns were associated with suicidal tendencies. Özer et al. (2015) evaluated attachment styles as a general risk factor for psychopathology and found out that the rate of suicide attempts in fearful attachment style was high. There are also various studies indicating that insecure attachment is associated with suicidal ideation and behavior (Step et al. 2008; Grunebaum et al., 2010). Studies on self-harming behavior, which is often associated with suicide and can be evaluated as a sign, similarly reveal that insecure attachment styles are associated with self-harming behavior (Ferguson, Woodward, & Horwood, 2000). Some research has shown that while individuals with insecure attachment develop inappropriate ways of coping with negative emotions (Kobak, Zajac, & Smith, 2009), individuals with secure attachment use their coping skills (Gültekin & Arıcıoğlu, 2017) and emotion regulation competencies (Miga et al., 2010) more effectively, and they regulate negative emotions more constructively (Consedine & Magai, 2003). Boysan and Çam (2016) state that insecurely attached people are more vulnerable in emotion regulation than securely attached ones.

To sum up, it can be said that an individual's tendency towards negativity in cognitive processes and the use of cognitive distortions negatively affect his or her attachment patterns in close relationships and increase the likelihood of suicide. The percentage of explaining suicide of cognitive distortions over attachment dimensions was found to be higher. Insecure attachment styles increase negative effects of cognitive distortions, which increase the probability of suicide. Considering harms of suicide on both the individual and the society, it is recommended to carry out extensive studies on this issue that handle different variables.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in JESEH journal belongs to the authors.

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On behalf of all authors, the corresponding author states that there is no conflict of interest

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