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A model proposal on the relationships between loneliness, insecure attachment, and inferiority feelings

Ramazan Akdoğan

Anadolu University, Education Faculty, Guidance and Counseling Department, Tepebaşı-Eskişehir, Turkey

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ABSTRACT

Introduced by Bowlby and Adler respectively, the concepts of insecure attachment and inferiority feelings are based on the hypothesis that the relationships individuals experience during the early years of their lives influence both the form and quality of relationships they establish in adulthood. This study investigated to what extent the independent variables of insecure attachment and inferiority feelings can predict loneliness, and using a hypothetical model, it was analyzed whether inferiority feelings have the role of mediator between insecure attachment and loneliness. The results showed that insecure attachment and inferiority feelings can predict loneliness significantly and that inferiority feelings have partial mediation effect between insecure attachment and loneliness.

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1. Introduction

The feeling of loneliness is emphasized due to both its existential aspects and the tangible results it leads to in an individual's life. In the existentialist view, loneliness is a part of human nature and is unavoidable (Fischer, McElwain & DuBoise, 2000). This philosophical perspective regarding loneliness has been accepted within the counseling literature too (May & Yalom, 2005; Murdock, 2013). Nevertheless, this does not necessarily mean not fighting this feeling. As loneliness is felt at different levels by each individual (Perlman, Peplau & Peplau, 1984) the consequences of the adverse nature of this feeling could include even suicide (Heinrich & Gullone, 2006; Killeen, 1998). Hence, it is a preliminary symptom for depression and phobias (Heinrich & Gullone, 2006; Meltzer, Bebbington, Dennis, Jenkins, McManus & Brugha, 2013), schizophrenia (Kudo, Mori & Gomibuchi, 2002) and it is a risk factor for psychotic disorders (Olin & Mednick, 1996).

Being lonely does not only mean "being isolated" since it is partly based on individual perception (Perlman, Peplau & Peplau, 1984). Loneliness refers to an inner process especially. Therefore, it is defined as the subjective experience of having inadequate social contacts (Ayalon, 2016). It is not always true that people with a small social network are lonely because introverts or detached individuals may prefer being by themselves and do not feel lonely. The subjective satisfaction levels of relationships are a much better predictor of loneliness than frequency of contact (Fischer & Phillips, 1982).

Loneliness and social interaction are two inversely proportional variables (Brough, 1994). In this aspect, loneliness can be defined as restrictions in communicating and interacting with others and staying apart from others despite the fact that humans are social beings (Hawkley & Cacioppo, 2010; Perlman, Peplau & Peplau, 1984). Loneliness may also mean keeping oneself away from others, preferably (Heinrich & Gullone, 2006). It is often a byproduct of one's self-perception (Özben, 2013) stemming from poor relationships with others even when social relationships have been established (Perlman, Peplau, & Peplau, 1984). Some lonely individuals see the social world as a threatening place, expect negative social interactions, and remember negative social information (Hawkley & Cacioppo, 2010). Consequently, loneliness, be it a part of human nature or a psychological difficulty, is regarded as a condition to be tackled because of the negative results it produces in an individual's life (Hawkley & Cacioppo, 2010; Killeen, 1998).

Scholars have offered explanations with an examination of the underlying dynamics of loneliness and the relevant psychological variables, and several strategies have been suggested to cope with loneliness based on these explanations (Cacioppo & Hawkley, 2009; Hawkley & Cacioppo, 2010; Heinrich & Gullone, 2006). Bowlby's attachment theory and Adler's individual psychology have special significance in terms of either directly or indirectly explaining an individual's experiences of loneliness.

1.1. Attachment theory and loneliness

According to Bowlby (1973, 1984), attachment style is determined by the form of relationships that a child builds with immediate family members who take care of him/her, and this internalized relationship form, then defines the close relationships that the child will establish with others during adulthood. Internalized relationship types emerge as either secure or insecure attachment during adulthood. Secure

E-mail address: rakdogan@anadolu.edu.tr.

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attachment indicates a sense of worthiness or lovability, plus an expectation that other people are generally accepting and responsive (Bartholomew & Horowitz, 1991). People with secure attachment experiences are sociable and self-confident and do not refrain from building close relationships (Çalışır, 2009; Mikulincer & Shaver, 2005). Since these individuals deem themselves and other people worth loving and having relationships, they can establish intimate relationships (Akbağ & İmamoğlu, 2010) and they open themselves more to other people (Mikulincer & Nachshon, 1991). However, people with insecure attachment generally tend to protect themselves by avoiding close relationships, social settings, and contact with others (Bartholomew, 1990; Hazan & Shaver, 1994; Shaver & Brennan, 1992). Although people with insecure attachment have some special attachment figures, they are attached to these figures under threatening conditions (Mikulincer, Gillath & Shaver, 2002).

Insecure attachment should be examined in two aspects as attachment-anxiety and attachment-avoidance (Fraley, Waller & Brennan, 2000; Mikulincer & Shaver, 2014). While people with attachment-avoidance generally show less satisfaction, intimacy, self-disclosure, supportive behavior, and positive emotions during social interactions, people with attachment-anxiety show negative emotional experiences and more frequent feelings of rejection (Kafestios & Nezlek, 2002). Whereas attachment-anxiety surfaces as constant efforts to please others in order to be accepted and not to be abandoned by others, those with attachment avoidance avoid relationships (Selçuk, Günaydın, Sümer, & Uysal, 2005).

Despite the aforementioned differences, both insecure attachment styles still share some common features. In fact, individuals with attachment anxiety or avoidance, or both, suffer from attachment insecurities, self-related worries, and distrust of others' goodwill and responsiveness. In addition, people with either of these insecure attachment styles suffer from interpersonal conflicts, and have difficulties finding functional solutions for these conflicts (Mikulincer & Shaver, 2014).

According to Mikulincer & Shaver (2014) interpersonal problems and low-quality, unstable relationships of insecurely attached people can easily result in subjective feelings of loneliness. So, the experience of loneliness can be understood through an attachment framework (Thomas, 2016). Thereotically, loneliness in adulthood is seen as the emotional-cognitive-perceptual reflection of insecure attachment (Weiss, 1987). Therefore, attachment styles are vital factors for individuals to fulfill their social functions completely (Man & Hamid, 1998). Consecuently insecure attachment can be taken as a predictor of loneliness for an individual, whereas secure attachment bears a definitive role in having healthy relationships with others (Margalit, 2010).

Studies show that attachment types have a statistically significant impact on loneliness. For example, it was found that as the severity of loneliness decreases, so the level of secure attachment increases, and loneliness becomes more severe as the level of insecure attachment increases (DiTommaso, Brannen-McNulty, Ross, & Burgess, 2003). Researchers have mostly placed importance on social skills in their endeavors to explain the relationship between insecure attachment and loneliness. Poor social skills/competencies resulting from insecure attachment during the developmental process (Mallinckrodt, 2000) have been shown to be, at the same time, among the typical symptoms of loneliness (Jones, Hobbs, & Hockenbury, 1982; Lodder, Goossens, Scholte, Engels, & Verhagen, 2016). Lonely individuals often do not possess the social skills/competencies necessary to begin and develop close relationships (Jones, Hobbs, & Hockenbury, 1982), or they assume that they are deficient in these skills (Lodder et al., 2016). Accordingly, it has been reported that people with high level of secure attachment have better levels of social skills (DiTommaso et al., 2003).

1.2. Individual psychology and loneliness

Loneliness is also considerably significant within individual psychology. Adler (1996) stated that humans are social beings at birth and the degree of human health is bound to how social a person is. Again, according to Adler, being excessively spoiled or neglected during the early years of development causes individuals to experience inferiority feelings and, thus to have problems in their social relationships (Adler, 1998). Defective attitudes of caregivers during the early years lead individuals to develop inferiority feelings, and these feelings are sustained even during adulthood (Adler, 1927, 1996; Dreikurs, 1977).

Theoretically, inferiority feelings are related to low levels of social interest demonstrated by an individual (Adler, 1927; Ansbacher, 1992; Brough, 1994), and therefore, may be taken as a major indicator of loneliness. Indeed, inferiority feelings decrease as social interest grows (Akdoğan & Ceyhan, 2014). In this sense, low social interest is also a reflection of an individual's inferiority feelings (Adler, 1927). Individuals with high levels of inferiority feelings try to overcome this by surpassing others, and they engage in useless superiority efforts (Adler, 1998). In this regard, people with high levels of inferiority feelings regard those around them as threats, and prefer to stay away from them (Adler, 1996).

1.3. Current study

The theoretical explanations and determinations show that insecure attachment and inferiority feelings are the primary indicators of loneliness. The fact that individuals with insecure attachment do not trust themselves or others (Bartholomew, 1990; Bartholomew & Horowitz, 1991) can be taken as a sign that individuals who experience this feeling extensively also nurture inferiority feelings for themselves. Conversely, because intensive inferiority feelings are accompanied by distrust of others (Adler, 1996), it impedes the building of secure attachments and safe relationships. From this standpoint, loneliness can be regarded as an outcome affected by insecure attachment and inferiority feelings.

Although both insecure attachment and inferiority feelings play a crucial role in an individual's loneliness, there are also differences between the two. Firstly, any level of insecure attachment can make difficult individuals' life (Bowlby, 1984) while a certain level of inferiority feeling can become a motivating factor (Adler, 1996). Furthermore, insecure attachment has close ties with anxiety emanating from fear of rejection (Kafestios & Nezlek, 2002) and with efforts to please others in order to cope with this anxiety (Selçuk, Günaydın, Sümer, & Uysal, 2005), but inferiority feelings are primarily related with an inferiority complex and superiority efforts are developed to overcome this complex (Adler, 1927). Thus, individuals with insecure attachment can end up lonely as a result of their negative self-perceptions (Bartholomew & Horowitz, 1991) whereas, those with inferiority feelings can become lonely because of their efforts to surpass others (Adler, 1998). Similarly, people with insecure attachment can still establish relationships with others to some extent despite their anxiety and avoidance feelings (Mikulincer, Gillath & Shaver, 2002), but individuals with inferiority feelings can totally avoid social settings (Dreikurs, 1977).

In this study, a hypothetical model was proposed. Based on the model, (a) whether insecure attachment and inferiority feelings can predict loneliness as separate variables, and (b) whether inferiority feelings have a role as a mediator between insecure attachment and loneliness, were investigated.

2. Method

2.1. Participants

The study was conducted on students in the education, literature and science faculties of a university in Turkey, during the 2015–2016 academic year. The research was completed with 422 participants; 283 female, 139 male. In addition, 101 of participants were freshmen, 76 sophomores, 184 junior, and 61 senior students. The mean age was 20.98 (SD = 1.66). They were selected via simple random sampling

procedure (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2008). First, official permission was granted for the data collection. Then, the administrative boards of the aforementioned faculties were briefed about the aim of the study and appointments were made to visit randomly chosen departments and classes. A similar abridged explanation was made in the classrooms and volunteer students were selected. The complating of the data set was lasted about 20 min.

2.2. Measures

2.2.1. UCLA Loneliness Scale

UCLA was developed by Russell, Peplau & Cutrona (1980) and adapted to Turkish by Demir (1989). This 4-point Likert-type scale contains 20 items as 10 negatives and 10 positives, to produce a total loneliness score. A higher score indicates a more intense level of loneliness. The Cronbach's alpha of the scale was calculated to be 0.96, and the test/re-test coefficient was found to be 0.94. In the current study, the Cronbach's alpha value of UCLA was determined as 0.86.

2.2.2. Experiences in Close Relationships-Revised (ECR-R)

ECR-R is a seven-point Likert-type, was developed by Fraley, Waller, & Brennan (2000), and adapted to Turkish culture by Selçuk, Günaydın, Sümer & Uysal (2005). It has subscales of attachment anxiety (attachment-anx) and attachment avoidance (attachment-avo). The Cronbach's alpha values were determined as 0.86 and 0.90 for attachment-anx and attachment-avo subscales, and the test-retest reliability coefficients were determined as 0.82 and 0.81, respectively. In confirmative factor analysis confirmed that it has two-factor like original form, and fit indices were calculated as GFI = 0.86; NNFI = 0.86; CFI = 0.89; RMR = 0.087. In current study, the Cronbach's alpha values of attachment-anx, attachment-avo, and the total score of the ECR-R were determined as 0.84, 0.88, and 0.89 respectively.

2.2.3. Inferiority Feelings Scale (IFS)

Developed within the frame of Adlerian approach to measure inferiority feelings of university students, this is a five-point Likert-type scale with 20 items (Akdoğan & Ceyhan, 2014). The scores shows the severity of inferiority feelings of the individual. In the validity study, it was determined that all items in the scale explained 43.63% of the total variance. The Cronbach's alpha value was determined as 0.86; test-retest reliability was calculated as 0.88 (Akdoğan & Ceyhan, 2014). In this study, the Cronbach's alpha value of IFS was determined as 0.88.

3. Results

3.1. Descriptive statistics and data screening

Before examining the combined and separate predictive power of insecure attachment and inferiority feelings on loneliness, correlations between the three variables were analyzed and, the results are presented in Table 1.

As seen in Table 1, all three variables have a meaningful relationship ($p < 0.01$), there is a positive correlation between all four, and the highest correlation is between inferiority feelings and loneliness ($r = 0.57$). The correlations indicate that there may be a predictive relationship between the variables. Hierarchical multiple regression was selected to investigate the predictive relationships between the variables, but it was decided to check if the data met the criteria of normality, linearity, and lack of multicollinearity.

The scatter diagram and regression plot created in order to determine normality and linearity of the variables (Büyüköztürk, 2016). Results showed that data were clustered on an axis close to each other. Multicollinearity is possible when the correlation between variables is >0.90, when variation inflation factor (VIF) and tolerance value (TV) are >10, and when the condition indices (CI) value is >30 (Can, 2016; Çokluk, Şekercioğlu & Büyüköztürk, 2010; Frazier, Tix & Barron, 2004). The relevant analyses showed that the highest correlation between the variables was 0.57, and the highest VIF, TV and CI values were 1.3, 8, and 14 respectively. It is another evidence for lack of multicollinearity that the Durbin-Watson (DW) test result are between 1.5 and 2.5 (Kalaycı, 2006). The DW test result of the current study was 1.85. Consequently, results show that there was no multicollinearity problem between the variables.

3.2. The predictive power of insecure attachment and inferiority feelings on loneliness

In this step, the hierarchical multiple regression analysis was employed via IBM SPSS-22 (2013). The sub-dimensions of insecure attachment were analyzed during the first and second steps of regression, and inferiority feelings was added to the analysis in the third step. The results are given in Table 2.

Table 2 shows that attachment-anx included in the analysis within the first block can predict loneliness at a level of 20% ($R^2 = 0.20$; $p < 0.001$) and that total variance was explained at 27% with the addition of attachment-avo analyzed together with the same block ($R^2 = 0.27$; $p < 0.001$). Beta values indicate that attachment-anx ($^{\beta} = 0.33$; $p < 0.01$) is better at predicting loneliness than attachment-avo ($^{\beta} = 0.28$; $p < 0.001$). The contribution of inferiority feelings added to the analysis in the second block was 14% ($\Delta R^2 = 14$; $p < 0.001$), which increased the rate of loneliness variance up to 41% ($R^2 = 0.41$; $p < 0.001$). Considering all three variables in terms of the beta values ($^{\beta}$), inferiority feelings was the variable that predicted loneliness the most ($^{\beta} = 0.43$; $p < 0.001$).

3.3. Mediation role of inferiority feelings between insecure attachment and loneliness

The results of regression analysis indicate that inferiority feelings has a positive correlation with both the sub-dimensions of insecure attachment and loneliness and that inferiority feelings can significantly predict loneliness ($\Delta R^2 = 14$; $p < 0.001$). This raised the question of whether inferiority feelings have a mediator role between the two variables. Accordingly, a hypothetical mediation model (Fig. 1) was developed.

On the other hand, as can be seen in Table 2, when attachment-avo was added to the analysis within the second block, it made a statistically significant but relatively low level contribution to the variance of loneliness ($\Delta R^2 = 0.07$; $p < 0.001$). Furthermore, although theoretically there are differences between attachment-anxiety and attachment

Table 1
Descriptive statistics and correlations between dependent and independent variables.

	N	$\overline{X}$	Sd	Attachment-Anx	Attachment-Avo	Attachment-sum	Inferiority feelings	Loneliness
Attachment-Anx	422	67.26	16.91	1.00	0.43[a]	0.84[a]	0.48[a]	0.45[a]
Attachment-Avo	422	56.66	17.46	0.43[a]	1.00	0.85	0.31[a]	0.42[a]
Attachment-Sum	422	124.0	29.03	0.84[a]	0.58	1.00	0.46[a]	0.52[a]
Inferiority feelings	422	53.42	11.18	0.48[a]	0.31[a]	0.46[a]	1.00	0.57[a]
Loneliness	422	33.04	8.07	0.45[a]	0.42[a]	0.52[a]	0.57[a]	1

[a] Correlation was significant at the level of 0.01 (2-tailed).

Table 2
The results of hierarchical multiple regression analysis of the predictive effects of insecure attachment and inferiority feelings on loneliness.

	Predictive variables	B	B sd	β	R^2	ΔR^2
Step 1	(Constant)	18.60	1.44			
	Attachment-Anx	0.22	0.21	0.45	0.20	0.20[a]
Step 2	(Constant)	15.07	1.50			
	Attachment-Anx	0.16	0.20	0.33		
	Attachment-Avo	0.13	0.20	0.28	0.27	0.07[a]
Step 3	(Constant)	5.64	1.63			
	Attachment-Anx	0.70	0.20	0.15		
	Attachment-Avo	0.11	0.20	0.23		
	Inferiority Feelings	0.31	0.30	0.43	0.41	0.14[a]

[a] $p < 0.001$ dependent variable: loneliness.

avoidance, there are features common to both such as feelings of insecurity in relationships, self-related worries, and distrust of the goodwill and responsiveness of others (Mikulincer & Shaver, 2014). Considering this, attachment-anx and attachment-avo were included in the mediation model as one variable with a combined total score.

To determine mediation relationships, the gradual process proposed by Baron & Kenny (1986) was considered and the model established is shown in Fig. 1. Arrows in the figure below represent the paths related with the tested models and the direction of regression, and *a*, *b*, *c*, and *c′* indicate the path coefficients.

In order to determine whether the mediation model was suitable, first, the path coefficient for the effect of the independent variable on the dependent variable (*c*) should be proved to be significant (Fig. 1A). Moreover, the path coefficients for the effect of independent variable on mediator variable (*a*), for the effect of mediator variable on dependent variable (*b*), and for the effect of independent variable on dependent variable when the mediator variable is constant (*c′*) all have to be significant (Fig. 1B). Finally, to evaluate whether or not a variable is a mediator, the path coefficient (*c*) between the independent and dependent variables has to be higher than the path coefficient (*c′*) obtained when the mediator variable is constant (Baron & Kenny, 1986). In the light of these explanations, the model shown in Fig. 1 was tested via the Mplus statistics program (Muthén & Muthén, 2007). The path coefficients obtained are depicted schematically in Fig. 2.

Fig. 2 A depicts that the path coefficient between insecure attachment and loneliness (*c*) is 0.144 ($p < 0.001$). However, as shown in Fig. 1 B, the path coefficient between the two variables (*c′*) reduces to 0.89 ($p < 0.001$), which is still significant, and when inferiority feelings were added to the analysis as a mediator, the coefficient remained constant. Fig. 2 B show that the path coefficient between insecure

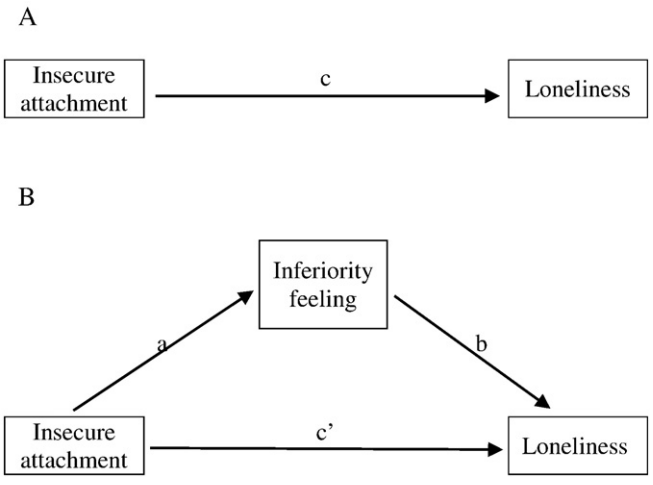


Fig. 1. Hypothesized model: Testing the mediation role of inferiority feelings between insecure attachment and loneliness based on the Baron and Kenny's procedure.

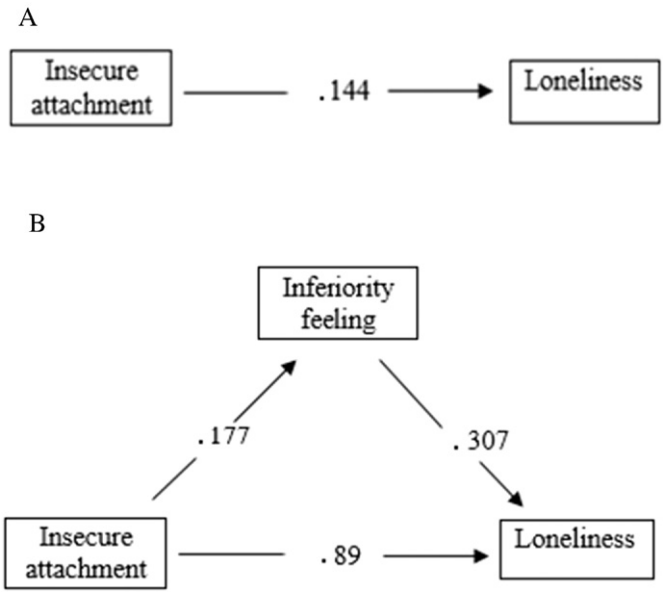


Fig. 2. The results of the hypothesized model.

attachment and inferiority feelings (*a*) is 0.17 ($p < 0.001$), and the path coefficient between inferiority feelings and loneliness (*b*) is 0.31 ($p < 0.001$). These values indicate that the conditions stipulated by Baron & Kenny (1986) are met in order to establish the mediation model. However, as shown in Fig. 2, the correlation between insecure attachment and loneliness becomes weaker when inferiority feelings were included in the model as a mediator variable, but it is still a statistically significant correlation. This finding may be taken as an indicator that the model is not a full but a partial mediation model (Baron & Kenny, 1986).

The Sobel (1982) procedure was employed to calculate the indirect effect of inferiority feelings on loneliness within the verified mediation model. The mediation effect, $m = a \times b$, was calculated as $0.177 \times 0.307 = 0.054$ ($t = 6.283$, $p < 0.001$) for the model depicted in Fig. 1B. Preacher & Hayes (2004) stated that the bootstrap method will produce more proper results than classical methods when checking the significance of *m* indirect effect coefficient. The bootstrap method is preferred for testing mediation that does not impose the assumption of normality of the sampling distribution (Preacher & Hayes, 2008). Therefore, 5000 bootstrap samples were generated using random sampling with replacement from the data set ($N = 422$). The 95% confidence interval was calculated [*lower* 0.039, *upper* 0.073]. The interval does not include zero, indicating that this indirect effect was significant (Preacher & Hayes, 2004). The joint evaluation of the research findings indicated that there is a significant indirect effect of insecure attachment on loneliness through inferiority feelings, but this could only be interpreted as a partial mediation effect.

4. Discussion

Consistent with literature, the results of the study indicated that insecure attachment could be taken as a predictor of loneliness (Bernardon, Babb, Hakim-Larson & Gragg, 2011; Çalışır, 2009; Mikulincer & Shaver, 2005; Sümer & Güngör, 1999; Yoraz, 2010). This clearly underpins that individuals with insecure attachment issues undergo certain limitations in terms of interacting with others and that insecure attachment is another explanatory reason for their loneliness. On the other hand, attachment anxiety can predict loneliness better than attachment avoidance. Indeed, loneliness does not mean "being isolated" since it is partially based on individual perception (Perlman, Peplau & Peplau, 1984). It has also been well-documented that even individuals with insecure attachments experience some level of

relationships with others, although they feel a constant threat during these experiences (Hawkley & Cacioppo, 2010; Mikulincer, Gillath & Shaver, 2002).

A noteworthy finding of the study was that inferiority feelings were determined as another factor predicting loneliness. This is compatible with the theoretical background that loneliness is closely related with inferiority feelings (Adler, 1998; Ansbacher, 1992; Dreikurs, 1977). Yet, one should bear in mind that loneliness may not always be related with low social interest or inferiority feelings. Because loneliness does not always refer to a small number of relationships, but is rather related to how an individual perceives them (Fischer & Phillips, 1982).

The results shows that inferiority feelings is one of the variables highly correlated with loneliness ($r = 0.57$). The regression analysis revealed that insecure attachment could predict loneliness at 27% on its own, and this percentage increased to 41% with the addition of inferiority feelings. Thus, it adds 14% to the variance, significantly. Considering this, it should be noted that the focus should not solely be on the density of their social relationships but to consider how far individuals deem themselves competent when working on strategies to cope with loneliness. Because loneliness does not only mean avoiding visible social relationships, but also suffering from an internal state of loneliness based on one's perceptions (Perlman, Peplau & Peplau, 1984).

The finding that both insecure attachment and inferiority feelings can predict adult loneliness supports the theoretical propositions of attachment theory (Bowlby, 1973, 1984; Weiss, 1987) and individual psychology (Adler, 1927, 1996; Dreikurs, 1977) that childhood experiences have a determinant function in adulthood. Therefore, it is possible to conclude that individuals seeking help for loneliness issues should be assessed in terms of both insecure attachment and inferiority feelings.

The results of the analyses of mediation model demonstrated that loneliness experiences are exacerbated by inferiority feelings of individuals with attachment issues. Theoretical explanations support this finding. Indeed, the avoidance of establishing relationships should be taken as a sign of both insecure attachment (Bartholomew, 1990; Bartholomew & Horowitz, 1991; Hazan & Shaver, 1994) and inferiority feelings (Adler, 1998, 1996; Sonstegard, 1998). Since a person with insecure attachment perceives the figures of attachment as threats that could hurt him/her, s/he refrains from social contact (Mikulincer, Gillath & Shaver, 2002) and because an individual with inferiority feelings constantly compares him/herself with others, s/he avoids building relationships if s/he considers him/herself inferior to others (Adler, 1998, 1996). Similarly, both individuals with insecure attachment (Mikulincer, Gillath & Shaver, 2002) and with inferiority feelings (Dreikurs, 1977) suffer from anxiety in relationships.

4.1. Conclusions

This research has identified positive and statistically significant correlations between loneliness, insecure attachment, and inferiority feelings. Moreover, insecure attachment and inferiority feelings can predict significantly the loneliness experiences of university students both on their own and combined. In addition, inferiority feelings have been determined to have a mediation role between insecure attachment and loneliness.

4.2. Future research

In the established model for the present study, insecure attachment was accepted as a precedent for inferiority feelings. However, a high correlation between the two variables ($r = 0.52$) and theoretical explanations suggest that inferiority feelings could also be precedent of insecure attachment. Therefore, it would be beneficial to develop a new model to investigate whether insecure attachment has a mediation role between inferiority feelings and loneliness.

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