



Linking inferiority feelings to subjective happiness: Self-concealment and loneliness as serial mediators

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ARTICLE INFO

Keywords:

Subjective happiness
Loneliness
Self-concealment
Inferiority feelings
Self-disclosure
Individual psychology
Adlerian psychology
Social interaction

ABSTRACT

Despite recent research associating inferiority feelings with two of the social disruptors of happiness, namely self-concealment (Çimşir & Akdoğan, 2019) and loneliness (Akdoğan, 2017), neither the nature nor the mechanism of the connection between inferiority feelings and happiness have been investigated. The main objective of this study was, therefore, to test if inferiority feelings are associated with subjective happiness, while proposing a process in which inferiority feelings cause self-concealment, which in turn, causes loneliness, thereby resulting in a decrease in happiness. A serial mediation analysis was conducted via PROCESS, a computational tool for observed variable moderation, mediation and conditional process modeling (Hayes, 2012). The results confirm that self-concealment and loneliness act as serial mediators between inferiority feelings and subjective happiness, meaning that individuals with increased inferiority feelings have a higher tendency toward self-concealment. This, in turn, results in an increase in loneliness and a decrease in happiness. Additionally, a multiple regression analysis revealed that inferiority feelings, loneliness, self-concealment, age and gender significantly explain happiness at a level of 35% ($R^2 = 0.35$, $F(5, 276) = 30.27$, $p < .001$), with loneliness and inferiority feelings being the only significant predictors of subjective happiness.

1. Introduction

The pursuit of happiness has been one of the strongest motivators of human behavior since the beginning of human existence. This focus on happiness has driven many scientists to work on revealing the components and characteristics of a happy life. Although objective conditions, such as health (Easterlin, 2003), income (Diener, Tay, & Oishi, 2013) and social support (Ye, Yeung, Liu, & Rochelle, 2018) have been found to have a positive impact on happiness, subjective factors, such as emotional intelligence (Ye et al., 2018), self-esteem (Apaolaza, Hartmann, Medina, Barrutia, & Echebarria, 2013; Hanley & Garland, 2017; Lyubomirsky, Tkach, & DiMatteo, 2006; Yue, Liu, Jiang, & Hiranandani, 2014) optimism (Carver & Scheier, 2017) and extraversion (Lauriola & Iani, 2015) have also been shown to increase happiness. These findings have highlighted the ‘subjective’ nature of happiness, which indicates that happy and unhappy people tend to show variations in their strategies of self-organization, perceptions, interpretations, and thought processes under positive and negative subjective conditions (Lyubomirsky & Lepper, 1999; Lyubomirsky & Tucker, 1998).

Loneliness has been the subject of close scrutiny from researchers due to its negative influence on subjective happiness (e.g., Apaolaza

et al., 2013; Hombrados-Mendieta, García-Martín, & Gómez-Jacinto, 2013; Lyubomirsky et al., 2006; e.g., Kumar, 2015; Phu & Gow, 2018; Yan, Su, Zhu, & He, 2013). Similar to subjective happiness, loneliness has been found to be correlated with a number of variables that are subjective in nature, such as self-esteem (Kong & You, 2013), self-efficacy (Wei, Russell, & Zakalik, 2005), and self-confidence (Cheng & Furnham, 2002). Research has identified self-concealment as one of the predictors of loneliness (Çelik & Sahraç, 2015; Çimşir and Akdoğan, 2019; Doğan & Çolak, 2016; Yu, Li, & Wang, 2007), indicating that the nature of the restricted self-disclosure that characterizes self-concealment (Larson & Chastain, 1990) may have a detrimental effect on establishing and maintaining friendships, which may potentially lead to loneliness.

On the other hand, research is still limited with regard to the psychological dispositions that make some people more prone to self-concealment. Recent research suggests that inferiority feelings, a well-known Adlerian concept, may be an answer to this question, as a difficulty in believing that others can be a source of love and support that characterize inferiority feelings (see Adler, 1982; Akdoğan, 2012; Strano & Petrocchi, 2005) may cause an individual to limit the disclosure of personal information. Consequently, it appears logical that people with increased inferiority feelings isolate themselves from social

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<https://doi.org/10.1016/j.paid.2019.05.028>

Received 23 January 2019; Received in revised form 14 May 2019; Accepted 21 May 2019

Available online 30 May 2019

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relationships and become dissatisfied with the number and/or quality of the relationships they have, rendering inferiority feelings a potential predictor of both self-concealment and loneliness and, concomitantly, decreased happiness. Therefore, in this study, we propose a model where inferiority feelings are negatively associated with subjective happiness through self-concealment and loneliness in a causally connected manner. A more detailed description of the reasoning behind the current study, and a further explanation regarding the study variables, are presented in the following sections.

2. Background

2.1. Loneliness and subjective happiness

Loneliness refers to the uneasy feeling that is experienced when the quality or quantity of social relationships is insufficient to meet the social needs of an individual (Hawkey & Cacioppo, 2010; Peplau & Perlman, 1982). Similar to subjective happiness, loneliness is a subjective experience that is mostly dependent on the perception of the individual (Peplau & Perlman, 1982) rather than the actual number of social contacts she/he has (see Ayalon, 2016). This means that an individual may feel lonely even when surrounded by many individuals. As well as a direct connection between loneliness and happiness (e.g., Apaolaza et al., 2013; Hombrados-Mendieta et al., 2013; Lyubomirsky et al., 2006; e.g., Kumar, 2015; Phu & Gow, 2018; Yan et al., 2013), an indirect association between the two constructs is well-supported by research, which has revealed that loneliness is associated with maladaptive constructs, such as suicide (Heinrich & Gullone, 2006; Killeen, 1998), depression (Heinrich & Gullone, 2006; Meltzer et al., 2013), schizophrenia (Kudo, Mori, & Gomibuchi, 2002) and psychotic disorders (Olin & Mednick, 1996).

2.2. Self-concealment and subjective happiness

Self-concealment refers to keeping information from others in an effort to avoid embarrassment and/or judgment (Larson & Chastain, 1990). Although painful or traumatic experiences, such as sexual abuse as a child (Russell, 1986; Stark, 1984), rape (Binder, 1981) and grief (Evans, 1976) have been linked to an increased tendency toward self-concealment (Larson & Chastain, 1990), negative psychological constructs, such as depression (Kelly & Achter, 1995), general psychological distress (Cepeda-Benito & Short, 1998), anxiety (Larson & Chastain, 1990) and loneliness (Doğan & Çolak, 2016; Yu et al., 2007) have also been found to be correlated with self-concealment. In addition, self-concealment has been proposed as a way of preventing the development of more adaptive coping strategies, such as receiving feedback and support from others, by directing individuals to constantly monitor and inhibit the disclosure of personal information (Kawamura & Frost, 2004; see also Pennebaker, 1989). On the other hand, although research has revealed that concealing personal information is associated with negative well-being outcomes (Uysal, Lin, & Knee, 2010), no research has investigated self-concealment in relation to subjective happiness, while proposing a model that includes a dispositional causal agent (i.e., inferiority feelings) and a link (i.e., loneliness) that connects the two constructs.

2.3. Inferiority feelings and subjective happiness

Inferiority feelings represent a psychological construct that is highlighted in both Erikson's psychosocial theory and Adler's individual psychology, which are theories that both emphasize the importance of the social experiences of individuals in their development (Çelik & Ergün, 2016). According to the Adlerian conceptualization, inferiority feelings are characterized by a constant struggle with imagined and real inferiorities (Akdoğan, 2012; Strano & Petrocelli, 2005). They start in infancy as a normal part of human development and continue to act as

an adaptive source of motivation in life unless they reach an excessive amount (Adler, 1996; Ansbacher & Ansbacher, 1956). In fact, a moderate level of inferiority feelings was shown to be associated with a higher level of academic achievement (Strano & Petrocelli, 2005). However, inferiority feelings may increase as a result of negative early life situations/experiences, such as neglect, abuse and/or other defective parental behaviors and/or certain disabilities (Adler, 1982, 1996), turning into weakness and/or abnormality. Such increased inferiority feelings were proposed as a cause of an individual being more likely to experience difficulty in her/his social and interpersonal relationships (Adler, 1982, 1996; see also Cimsir, 2019). Consequently, individuals with a high level of inferiority feelings become more likely to suffer from negative psychological outcomes, such as depression, poor interpersonal relationships and low life satisfaction (Dreikurs, 1953).

According to Erikson's psychosocial theory, which conceptualizes human development in eight consecutive stages of psychosocial development, inferiority feelings can surface as an issue in the fourth stage of development, called 'industry vs. inferiority'. In this stage, a school-age child who fails to accomplish learning tasks may experience 'a sense of inferiority', meaning that inability to develop a sense of industry in the fourth stage of psychosocial development leads to feelings of inadequacy and inferiority (Çelik & Ergün, 2016). As a result, the individual may become likely to develop symptoms such as depression and anxiety in her/his adult life (Thomas, 2011; Weiland, 1993). Consistent with the views of both Adler and Erikson, several studies have highlighted inferiority feelings as a dynamic that interferes with healthy psychosocial development. For example, greater inferiority feelings have been linked to neurotic perfectionism (Ashby & Kottman, 1996), depression, hostility, insomnia, suicidal ideation (Lung & Lee, 2008), frustration in adolescents (Rajeshwari, 2012), and insecure attachment and loneliness (Akdoğan, 2017), suggesting an indirect connection between inferiority feelings and happiness.

2.4. Current study

The construct of inferiority feelings has been recently connected to both self-concealment (Cimsir and Akdoğan, 2019) and loneliness (Akdoğan, 2017), which are two constructs that are known to interfere with social well-being. In addition, theoretical propositions and research suggest that inferiority feelings may interfere with happiness by causing conflicts in interpersonal relationships (Adler, 1982, 1996; see also Cimsir, 2019). On the other hand, there has been no research investigating either the direct or the indirect effect of inferiority feelings on happiness. Therefore, this study has been conducted to investigate the nature of the association between inferiority feelings and subjective happiness, and whether self-concealment and loneliness mediate this possible relationship in a causally connected manner. Another objective was to determine if inferiority feelings, self-concealment, age and gender predict subjective happiness. Accordingly, the answers to the following questions were sought:

1. Do inferiority feelings, self-concealment, loneliness, age and gender predict subjective happiness?
2. Do self-concealment and loneliness operate as serial mediators between inferiority feelings and subjective happiness?

3. Method

3.1. Study design

A descriptive cross-sectional study was designed to examine the relationships among the variables of inferiority feelings, self-concealment, loneliness, and subjective happiness. Approval for the study was granted by the University Institutional Review Board. The aim of the study was explained in classrooms, with volunteer students completing a written data collection tool. Participants implied consent by

volunteering and completing the survey.

3.2. Setting and participants

The research participants, recruited through convenience sampling, comprised a total of 283 students attending a public university in Turkey, during the 2017–2018 academic year. The mean age of the participants was 20.05 ± 1.94 years. The sample comprised 201 (71%) females and 82 males (29%), of which 140 were freshmen, 49 were sophomores, 58 were junior students, and 33 were senior students. Although education, science, engineering, business, and health departments are represented in the study sample, the majority of the students ($n = 258$) were enrollees of different programs in the Faculty of Education, such as counseling (29%; $n = 82$), English teaching (20.5%; $n = 58$), mathematics teaching (13.1%; $n = 37$), special education (24%; $n = 68$), and preschool teaching (4.6%; $n = 13$). Other programs that are represented in the study sample are childhood development (4.6%; $n = 13$), computer engineering (1.8%; $n = 5$), physics (0.4%; $n = 1$), chemistry (0.4%; $n = 1$), economics (1.1%; $n = 3$), management (0.4%; $n = 1$) and mathematics (0.4%; $n = 1$).

3.3. Instruments

Instruments completed by the participants include the Inferiority Feelings Scale (IFS), the UCLA Loneliness Scale, the Self-Concealment Scale, and the Subjective Happiness Scale (SHS).

Inferiority Feelings Scale (IFS). Developed in Turkish, based on the ideas of Adlerian Psychology to measure inferiority feelings of university students, the IFS is a 20-item measure rated on a 5-point Likert-type scale, comprising three subscales, measuring the constructs of feelings of discouragement, denial of one's own value and useless superiority efforts (Akdoğan, 2012). The possible score range for the scale ranges from 20 to 100, with higher scores indicating higher levels of inferiority feelings. The IFS has demonstrated a test-retest reliability of 0.88 and an internal consistency of 0.86, and has evidenced good validity as a self-report measure of inferiority feelings explaining 43.63% of total variance in inferiority feelings (Akdoğan, 2012). The present study yields a reliability coefficient of 0.89.

UCLA Loneliness Scale. Developed by Russell, Peplau, and Cutrona (1980), the UCLA Loneliness Scale is a 4-point Likert-type scale consisting of 20 items, 10 of which are reverse coded. The scale produces a total loneliness score ranging from 20 to 80, with higher scores indicating higher levels of loneliness. The Cronbach's alpha of the scale has been calculated as 0.94 for the original scale. The scale was adapted to Turkish by Demir (1989) who reported a Cronbach Alpha coefficient of 0.96 and a test-retest reliability coefficient of 0.94. In this study, the Cronbach's Alpha value of the scale is determined to be 0.91.

The Self-Concealment Scale (SCS). The SCS (Larson & Chastain, 1990) is a 10-item scale measuring an individual's tendency to conceal personal information out of worry that it may lead to embarrassment and/or judgment (e.g., "My secrets are too embarrassing to share with others"). The SCS is a 5-point Likert-type scale with a possible score range of 10 to 50, with higher scores indicating increased levels of self-concealment. Along with demonstrating good validity, the scale produced an internal consistency coefficient of 0.83 and a test-retest reliability coefficient of 0.81 (Larson & Chastain, 1990). The SCS was adapted to Turkish by Terzi, Güngör, and Erdayı (2010) who reported a Cronbach's alpha coefficient of 0.82 and test-retest reliability of 0.72 in a Turkish sample. The present study yields a reliability coefficient of 0.84.

Subjective Happiness Scale (SHS). Developed by Lyubomirsky and Lepper (1999), the SHS is a 7-point Likert-type scale with four items measuring subjective happiness. One item of the scale is reverse coded, and higher total scores indicate greater levels of subjective happiness. Lyubomirsky and Lepper (1999) report an internal consistency coefficient of 0.86 and the test-retest reliability at three weeks of 0.72. The

Table 1

Means, standard deviations, and correlations for all study variables ($N = 283$).

Variable	M	SD	1	2	3	4
1. Subjective happiness	16.81	4.93				
2. Loneliness	38.20	10.68	-0.573**			
3. Self-concealment	26.34	8.18	-0.312**	0.361*		
4. Inferiority feelings	57.85	13.25	-0.426**	0.518**	0.474**	
5. Age	20.05	1.94	0.073	-0.023	-0.091	-0.139*
6. Gender	-	-	-0.035	0.075	0.116	-0.005

** $p < .001$.

* $p < .05$.

adaptation of the scale to Turkish was made by Akin and Satıcı (2011) who report an internal consistency coefficient of the scale of 0.86 and the test-retest reliability of 0.73. In the current study, the Cronbach's alpha value of SHS is calculated as 0.79.

4. Results

4.1. Preliminary analysis

The data cleaning/screening procedures and the main analyses (regression analysis and serial multiple mediation) were both conducted using the IBM SPSS-24. The missing data was first examined through Little's MCAR test, which resulted in a Chi-square = 542.464 ($df = 1218$; $p = 1.000$), indicating that the data is missing completely at random (Schlomer, Bauman, & Card, 2010), with only 0.36% of all of the data classed as missing. The missing data was imputed using the Expectation Maximization Algorithm, which is considered among acceptable data-based missing data procedures (Graham, Cumsille, & Elek-Fisk, 2003).

Table 1, which displays descriptive statistics and correlations, shows that the correlation between subjective happiness and loneliness is the highest, followed by the correlation between loneliness and inferiority feelings. There are moderate level correlations between self-concealment and inferiority feelings and between inferiority feelings and subjective happiness. In addition, there is a small negative correlation between age and inferiority feelings, indicating a negligible decrease in inferiority feelings as individuals age.

Before examining the direct and indirect influences of inferiority feelings on happiness through the hypothesized mediators of self-concealment and loneliness, a multiple regression analysis was conducted to check for multivariate normality, linearity, and lack of multicollinearity. Mahalanobis distance values indicated no values > 15 , suggesting that there were no problematic values (see Field, 2009). None of the VIF values was > 2 and no tolerance value was < 0.2 , indicating no problem with multicollinearity (Akinwande, Dikko, & Samson, 2015; Field, 2016). Other evidence of a lack of multicollinearity was the Durbin-Watson (DW) test result, which was 1.87, indicating no significant correlations between the residuals (Field, 2009). There is no evidence that the homoscedasticity assumption was violated as the plot of the standardized residuals by the regression standardized predicted values display a random array of dots around zero (Field, 2009). Lastly, the model was checked for Common Method Bias (CMB) using Harman's single factor score, which indicates that one factor explains only 25% of the total variance. Because this value is much lower than the 50% cutoff point (Mat Roni, 2014), CMB does not appear to be a concern in this study. Another indication of CMA not being a cause of problem in this study is the fact that none of the VIF values was > 2 ; all being much smaller than the 3.3 cutoff point (Kock, 2015).

Table 2
The results of the multiple regression analysis of subjective happiness ($N = 283$).

Variables	B	SE B	β	t
Inferiority feelings	−0.05 [*]	0.02	−0.14 [*]	−2.33 [*]
Self-concealment	−0.04	0.03	−0.07	−1.25
Loneliness	−0.22 ^{**}	0.03	−0.47 ^{**}	−8.24 ^{**}
Age	0.91	0.13	0.04	0.72
Gender	0.02	0.54	0.00	0.04

$R^2 = 0.35$, $Adj. R^2 = 0.34$.

^{**} $p < .001$.

^{*} $p < .05$.

4.2. Regression analysis of the predictors of subjective happiness

A multiple regression analysis was conducted via the IBM SPSS-24 predicting subjective happiness with the variables of *inferiority feelings*, *loneliness*, *self-concealment*, *age* and *gender* (coded as 0 = Female, 1 = Male). The results are given in Table 2.

Table 2 shows that the variables *inferiority feelings*, *loneliness*, *self-concealment*, *age* and *gender* can predict subjective happiness at a level of 35% ($R^2 = 0.35$, $F(5, 276) = 30.27$, $p < .001$). Considering the beta values (β) of all of the variables, loneliness and inferiority feelings appear to be the only significant predictors of subjective happiness. While self-concealment is included in the subsequent serial mediation analysis due to the theoretical background of this study, age and gender are not included in it due to their lack of significant association with the rest of the study variables.

4.3. The direct and indirect effects of inferiority feelings on subjective happiness

As can be inferred from the introduction section, previous research and theoretical formulations appear to support our reasoning for proposing a serial mediation model in which inferiority feelings (X) are modelled as causing self-concealment (M_1), which in turn, causes loneliness (M_2), thereby resulting in a decrease in happiness (Y). On the other hand, it is still important to provide some statistical evidence as to why a serial mediator model with the specified direction flow (i.e., $X \rightarrow M_1 \rightarrow M_2 \rightarrow Y$) was preferred over alternative models, such as a parallel mediator model that assumes no causality between the mediators or a serial mediator model with the mediators in reverse order. Following Hayes' suggestion (2013) that a serial mediator model can be supported if the two mediators remain correlated, even after controlling for the causal agent of interest (X), we estimated the partial correlation between self-concealment and loneliness while controlling for inferiority feelings (X). The relationship between self-concealment and loneliness, which initially had a zero-order correlation of $r(281) = 0.361$, $N = 283$, $p < .001$, remained significant after controlling for inferiority feelings, as indicated by the partial correlation coefficient of $r(280) = 0.154$, $N = 283$, $p = .01$. This is an indication that some of the relationship between self-concealment and loneliness cannot be accounted for by inferiority feelings, supporting our hypothesis that self-concealment affects loneliness. To further support that self-concealment is the cause of loneliness but not vice versa, we conducted a serial mediation analysis with the mediators in reverse order (i.e., $X \rightarrow M_2 \rightarrow M_1 \rightarrow Y$) and found no evidence of indirect effect, given the 95% bias corrected confidence interval involving zero (−0.009–0.001). This means that inferiority feelings are not indirectly linked to a decrease in happiness when loneliness is modelled as a cause of self-concealment. Therefore, we proceeded with a serial mediator model with the specified direction flow (see Hayes, 2012).

The serial multiple mediation analysis was conducted on the SPSS PROCESS macro (Model 6) developed by Hayes (2013). The statistical diagram in Fig. 1 depicts this serial mediator model in which the

variable inferiority feelings (X) are modelled as affecting subjective happiness (Y) through four pathways (i.e., a_1b_1 , a_2b_2 , $a_1d_{21}b_2$, c'). Arrows in the figure display the paths of the tested model, and a_1 , a_2 , b_1 , b_2 , d_{21} , c , c' , indicate the path coefficients.

Fig. 1A shows the path coefficient between inferiority feelings and subjective happiness, which indicates that the total effect of inferiority feelings on subjective happiness, without the mediators in the model, is significant ($c = -0.16$, $p < .001$). However, as shown in Fig. 1B, the path coefficient between the two variables (c') decreases to -0.06 ($p < .05$), when self-concealment and loneliness are added to the analysis as serial mediators, suggesting that the total indirect effect of inferiority feelings on subjective happiness through both mediators may be significant. As also displayed in Table 3, the 95% bias-corrected confidence interval produced by the PROCESS Macro, based on the 5000 bootstrap method, confirms that this total indirect effect (i.e., $a_1b_1 + a_2b_2 + a_1d_{21}b_2 = -0.10$) is significantly negative. In addition, although the specific indirect effect of inferiority feelings on subjective happiness only through self-concealment (i.e., $X \rightarrow M_1 \rightarrow Y$, $a_1b_1 = -0.1$) is not statistically significant, another specific indirect effect of inferiority feelings on subjective happiness through loneliness alone (i.e., $X \rightarrow M_2 \rightarrow Y$, $a_2b_2 = -0.08$) is significant. Lastly, the specific indirect effect of inferiority feelings on subjective happiness through both mediators in serial (i.e., $X \rightarrow M_1 \rightarrow M_2 \rightarrow Y$, $a_1d_{21}b_2 = -0.1$) is also significant.

A joint evaluation of the research findings suggests that there is a significant specific indirect effect of inferiority feelings on subjective happiness, occurring through self-concealment and loneliness as serial mediators, indicating that inferiority feelings cause self-concealment, which in turn causes loneliness, concluding in a decrease in the level of happiness as a final consequence. Table 2 shows the values associated with the total, direct and indirect effects.

5. Discussion

This study investigates the magnitude of the relationship between inferiority feelings and subjective happiness and whether self-concealment and loneliness act as serial mediators in this relationship. The significantly negative correlation ($r = -0.43$) found in this study, between inferiority feelings and subjective happiness, reveals the negative nature of the impact that inferiority feelings have on an individual's happiness. This finding provides empirical evidence for Adlerian Psychology (i.e., Individual Psychology) which suggests that individuals with increased inferiority feelings are less likely to experience satisfaction in their lives, particularly in the domains of work, friendship, and love (see Dreikurs, 1953). The finding also supports Erikson's psychosocial theory that conceptualizes inferiority feelings as an interference factor in healthy psychosocial development.

The results of the serial mediation analysis reveal that the specific indirect effect of inferiority feelings on subjective happiness through both self-concealment and loneliness is significantly negative. This finding provides support for our hypothesis that the negative impact of inferiority feelings on subjective happiness occurs through a process in which inferiority feelings cause self-concealment, which in turn, increases loneliness and concludes in a lower level of happiness as a final consequence. In other words, this study indicates that an individual with an increased level of inferiority feelings has an increased tendency to limit the disclosure of personal information, which results in increased loneliness, translating into a decreased level of happiness. This revelation is consistent with studies in the literature that highlight limitations in social relationships as an important aspect of inferiority feelings (i.e., Adler, 1927; Ansbacher, 1992) and limitations in social relationships as a reason for unhappiness (i.e., Apaolaza et al., 2013; Hombrados-Mendieta et al., 2013; Lyubomirsky et al., 2006). It can be interpreted from the study results that, regardless of an individual's disregard for feelings of inferiority due to their disturbing nature (Adler, 1982; Dreikurs, 1957), these feelings still seem to be reflected in

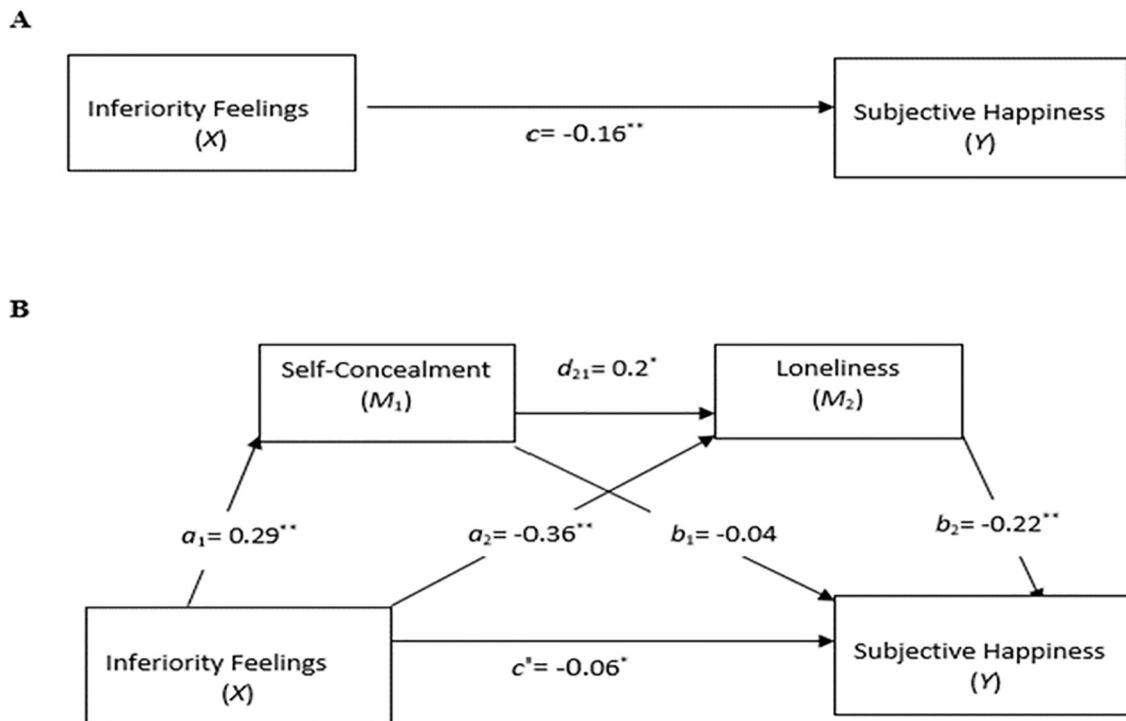


Fig. 1. The statistical diagram of the serial multiple mediator model ** $p < .001$ * $p < .05$.

Table 3

Total, direct and indirect effects of inferiority feelings (X) on subjective happiness (Y) through self-concealment (M₁) and loneliness (M₂); N = 283.

Effects	Point estimate	SE	t	p	Lower	Upper
Total effect	-0.159	0.02	-7.898	0.000**	-0.198	-0.119
Direct effect	-0.055	0.022	-2.468	0.014*	-0.099	-0.011
Total indirect effect	-0.103 ^b	0.015 ^b			-0.134 ^{a,b}	-0.074 ^{a,b}
Indirect effect (X → M ₁ → M ₂ → Y)	-0.012 ^b	0.006 ^b			-0.025 ^{a,b}	-0.003 ^{a,b}
Indirect effect (X → M ₁ → Y)	-0.013 ^b	0.01 ^b			-0.034 ^{a,b}	0.006 ^{a,b}
Indirect effect (X → M ₂ → Y)	-0.078 ^b	0.014 ^b			-0.109 ^{a,b}	-0.054 ^{a,b}

* $p < .05$.

** $p < .001$.

^a 95% Bias Corrected Confidence Interval.

^b Based on 5000 bootstrap samples.

their lives as self-concealment, loneliness, and consequently unhappiness.

Another finding of the study is the non-significant specific indirect effect of inferiority feelings on happiness only through self-concealment. This finding demonstrates that although an increase in inferiority feelings creates a higher tendency toward self-concealment, this increase does not necessarily translate into less happiness unless it is followed by loneliness, which indicates that self-concealment caused by inferiority feelings is connected to less happiness through increasing the loneliness level of an individual. The significance of another specific indirect effect that occurs only through loneliness suggests that increased inferiority feelings cause significantly less happiness by increasing an individual's loneliness. This finding is important in revealing the significant place of loneliness caused by inferiority feelings in the unhappiness of an individual.

Although a joint evaluation of these two specific indirect effects, occurring through one mediator at a time (i.e., either only through self-concealment or only through loneliness), indicates that the negative impact of inferiority feelings on subjective happiness is more related to loneliness than self-concealment, the significance of the indirect effect of inferiority feelings on happiness through both mediators justifies our reasoning for placing self-concealment and loneliness in a causal order

as serial mediators between inferiority feelings and happiness. Based on the study findings, it is thus possible to argue that an essential part of the role that loneliness plays in the association between inferiority feelings and subjective happiness is due to the causal link between self-concealment and loneliness. In other words, the findings of this study verify that it is the causal association between self-concealment and loneliness that facilitates a considerable part of the negative impact of inferiority feelings on subjective happiness.

Finally, when viewed in light of theoretical formulations about inferiority feelings, self-concealment, loneliness, and happiness, the results of this study seem to be consistent with previous contentions (e.g., Adler, 1982, 1996; Dreikurs, 1957). Inferiority feelings affect the quality of an individual's social life negatively to a considerable extent and can, therefore, be suggested as a variable of key importance in an individual's experience of self-concealment, loneliness and happiness. However, inferiority feelings tend to be hidden by the individual because of their disturbing nature (Adler, 1982). In other words, it is not easy for an individual to face up to their own inferiority feelings and, thus, it is understandable that individuals who live with these feelings keep themselves from self-disclosure and become solitary (Akdoğan, 2017; Dreikurs, 1957). In this context, research findings suggest that self-concealment and loneliness are likely to be experienced as a

reflection of inferiority feelings, thereby interfering with an individual's happiness.

6. Limitations and further research directions

As is the case with any research investigation, there are certain limitations and further research directions to be followed. Firstly, the study relies on the use of self-report measures that were administered at a single point in time and the results are produced based on correlational evidence between observed variables. As a result, the specific causal relationships that were assumed in the establishment of the proposed serial mediation model cannot be guaranteed. In addition, it is possible that suggested relationships between the study variables may occur in a reversed causal order, meaning that individuals who are less happy may subsequently develop loneliness that is followed by a tendency toward self-concealment, resulting in inferiority feelings. On the other hand, it is considerably difficult to theoretically support the conceptualization of inferiority feelings as the result of unhappiness, as both previous research and theoretical explanations suggest that inferiority feelings form during childhood and interfere with an individual's subsequent social relationships, resulting in a decreased level of well-being. Therefore, we believe that we are able to establish an argument against competing causal orders. However, longitudinal studies are still needed to explore the long-term effects of inferiority feelings on happiness, which can better investigate the suggested causal relationships in our serial mediator model.

Secondly, the mono-method of gathering data that was employed in this study through the use of self-reporting questionnaires may have caused responses to be influenced by social desirability. Future research endeavors might take the reports of others (e.g., a close friend) into consideration in respect of study variables or have some form of control for social desirability to prevent possible impression-making influences. Furthermore, asking those who know the participants well to report their perceptions of the participant's self-concealment, loneliness, happiness, and inferiority feelings would allow for increased confidence in the results if the two reports (i.e., self-reporting and other-reporting) were consistent.

In addition, the recruitment of college students through convenience sampling may have decreased the generalizability of the findings to a more representative population. In particular, females from the Faculty of Education constituted the majority of the sample, potentially limiting the applicability of the findings to students from different educational backgrounds, gender, and study programs. Therefore, future studies could investigate whether the current model applies to other groups of students. This would help in further understanding the complex processes that lead to loneliness and unhappiness.

7. Conclusion

The research findings suggest that self-concealment and loneliness act as serial mediators between inferiority feelings and subjective happiness, meaning that individuals with increased inferiority feelings have a greater tendency to conceal personal information, which, in turn, creates a greater likelihood of loneliness, and results in less happiness. In addition, by placing inferiority feelings as the causal agent of interest, the findings of this study suggest that individuals in the caring professions should consider the role of inferiority feelings when help is requested by clients in respect of feelings of unhappiness and/or loneliness. It is also of paramount importance to emphasize that one of the ways in which these feelings seem to emerge is through self-concealment, because inferiority feelings, by nature, are characterized by an individuals' own efforts to hide or suppress these feelings. In other words, the findings of this research show that an individual's self-concealment and loneliness can emerge as a product of inferiority, and that this situation is closely related to the individual's happiness. Inferiority feelings, which are found to be closely related to loneliness and self-

concealment, are known to be theoretically founded in childhood due to negative parental attitudes, such as neglectful, authoritarian or overprotective parenting (Adler, 1982, 1996) or due to failing to accomplish learning tasks at school (Çelik & Ergün, 2016). In this regard, the study findings also reveal the importance of preventing such negative parental attitudes that can result in inferiority feelings in children along with highlighting the importance of supporting school age children in experiencing a sense of success at school. Therefore, it can be inferred from the study results that fostering healthy parenting attitudes and effective teaching strategies could shield children from experiencing these feelings, which would then help them to lead happier and more socially satisfactory lives as adults.

Acknowledgements

This study was funded by the Anadolu University Research Initiative Project (Number 2694355).

The authors are grateful to Edward Mcquaid for proofreading the manuscript.

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