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Need to Belong and Cognitive Flexibility in Young Adults: Mediating Role of Negative Affect and Moderating Role of Agreeableness

Genç Yetişkinlerde Aidiyet İhtiyacı ve Bilişsel Esneklik: Olumsuz Duygulanımın Aracı ve Uyumluluğun Düzenleyici Rolü

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ABSTRACT

Objective: Previous studies propose that the need to belong can explain some emotional and cognitive mechanisms. Yet, it is unclear which cognitive and emotional mechanisms may be predicted by the need to belong and whether this relationship varies within different personality traits. The general purpose of this study was to scrutinize the role of emotion and personal traits in the relationship between the need to belong and cognitive flexibility with the help of a model.

Method: A total of 719 university students, 446 female and 273 male, employed the participant group of the study (M ± SDage = 21.38 ± 1.97). Data measurement tools were Standard Information Form, Cognitive Flexibility Scale, Need to Belong Scale, Big Five Personality Traits Scale, Positive and Negative Affect Scale.

Results: The mediation analysis demonstrated a significant indirect effect of the need to belong on cognitive flexibility through negative affect (b =-.0606, t = -3.189). This finding showed that the need to belong reduced cognitive flexibility by increasing negative affect. With regard to the moderation analysis results, the interaction effect of the need to belong and agreeableness personality trait (need to belong X agreeableness) significantly predicted cognitive flexibility (b =-.1169; CI 95% =-.2033 to -.0304, t =-2.6542, p = 0.0081). Accordingly, the negative direct effect of the need to belong on cognitive flexibility was stronger in the lower agreeableness condition.

Conclusion: The current study indicated that agreeableness moderates the negative effect of the need to belong on cognitive flexibility. The highest cognitive flexibility was observed in the lower need to belong and higher agreeableness conditions. In conclusion, it is suggested that the effect of the need to belong on cognitive abilities may be accompanied by personality traits and emotional processes.

Keywords: Motivation, cognitive ability, personality trait, belongingness, emotion

ÖZ

Amaç: Geçmiş çalışmalar aidiyet ihtiyacının bazı duygusal ve bilişsel mekanizmaları açıklayabildiğini öne sürmektedir. Bununla birlikte, hangi bilişsel ve duygusal mekanizmaların aidiyet ihtiyacı tarafından yordanabileceği ve bu ilişkinin farklı kişilik özelliklerine göre değişip değişmediği yeterince açık değildir. Bu çalışmanın genel amacı, aidiyet ihtiyacı ile bilişsel esneklik arasındaki ilişkide duygu ve kişilik özelliklerin rolünü bir model aracılığıyla incelemektir.

Yöntem: Araştırmanın katılımcı grubunda 446'sı kadın, 273'ü erkek olmak üzere toplam 719 üniversite öğrencisi yer almaktadır (M ± SSyaş = 21,38 ± 1,97). Veri Toplama Araçları, Standart Bilgi Formu, Bilişsel Esneklik Ölçeği, Aidiyet İhtiyacı Ölçeği, beş Faktör Kişilik ölçeği, Pozitif ve Negatif Duygudurum Ölçeği'dir.

Bulgular: Aracılık analizi aidiyet ihtiyacının olumsuz duygulanım aracılığıyla bilişsel esneklik üzerinde anlamlı dolaylı etkisini ortaya koymuştur (b =-.0606, t =-3.189). Bu bulgu, aidiyet ihtiyacının olumsuz duygulanımı artırarak bilişsel esnekliği azalttığını göstermektedir. Düzenleyicilik analizi sonuçlarına göre, aidiyet ihtiyacı ile uyumluluk kişilik özelliğinin (aidiyet ihtiyacı X uyumluluk) etkileşim etkisi bilişsel esnekliği anlamlı düzeyde yordamıştır. Buna göre, aidiyet ihtiyacının bilişsel esneklik üzerindeki olumsuz etkisi, düşük uyumluluk durumunda daha güçlüdür.

Sonuç: Mevcut çalışma, uyumluluğun aidiyet ihtiyacının bilişsel esneklik üzerindeki olumsuz etkisini düzenlediğini göstermiştir. En yüksek bilişsel esneklik, daha düşük aidiyet ihtiyacı ve daha yüksek uyumluluk koşullarında gözlenmiştir. Sonuç olarak aidiyet ihtiyacının bilişsel beceriler üzerindeki etkisine kişilik özellikleri ve duygusal süreçlerin eşlik edebileceği öne sürülmektedir.

Anahtar sözcükler: Motivasyon, bilişsel yetenek, kişilik özelliği, ait olma, duygu

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Introduction

Need to belong, which is a rudimentary component of interpersonal relationships and thus can be a critical structure in the construction of the self, is one of the basic motivations (Baumeister & Leary 1995). Indeed, although belongingness is a pervasive fundamental drive, individuals may differ in terms of their level of acceptance by social groups and their desire to belong to these groups. Individuals' need to belong at different levels forms their cognitions, emotions, and behaviors (Baumeister & Leary 1995).

Generally, social exclusion procedures have been used as a threat to the need to belong in empirical studies investigating the impact of this basic motivation on people's emotional, cognitive, and behavioral processes. Accordingly, it has been reported that social exclusion or a greater need to belong results in largely negative emotional repercussions, such as loneliness, anxiety, anger, and sadness (Wang et al. 2017, Leary 2021). It is specifically highlighted that people with a high need to belong are more likely to experience negative emotions related to rejection. As a matter of fact, it has been determined that negative affect increased with increasing the need to belong (Leary et al. 2013). Furthermore, physiological and psychological effects such as increased cortisol levels and increased negative affect following social exclusion have been experienced more frequently in individuals with a higher need to belong than in individuals with a lower need to belong (Beekman et al. 2016). As a result, it is believed that the degree of need to belong may play a significant role in regulating susceptibility to unpleasant social cues, such as exclusion and rejection (Pickett et al. 2004).

According to Baumeister and Leary's (1995) need to belong hypothesis, threats to belonging may limit cognitive resources by raising attention to social relationships. In other words, when the need to belong is threatened, people frequently resort to using their limited cognitive resources to satisfy their need to belong, which can disrupt their higher-order cognitive processes (Baumeister et al. 2002). For instance, the majority of research on social exclusion has linked the threats to belongingness to impaired cognitive abilities such as weakened inhibitory control (Otten and Jonas 2013, Buelow et al. 2015, Xu et al. 2020) and lessened working memory capacity (Xu et al. 2018, Fuhrmann et al. 2019). It is also known that cognitive flexibility, which is thought to be linked to these cognitive functions, can also be damaged by negative emotional experiences (Davis and Nolen-Hoeksema 2000). Cognitive flexibility encompasses the awareness of having options in unexpected or changing circumstances, the willingness and flexibility to adjust to a new situation, as well as self-efficacy (Martin and Rubin 1995). Particularly, cognitive flexibility skills enable us to deal with negative thoughts and emotions by re-examining events under stress and creating multiple alternative coping strategies to make advantageous choices (Gabrys et al. 2018). In line with the need to belong hypothesis, it has been observed that gaining social acceptance and, therefore, the satisfying need to belong may protect against cognitive impairments due to negative affective experiences (Ni et al. 2020). Thus, it can be considered important to identify how the need to belong reflects on cognitive flexibility.

It is predicted that the personality trait of agreeableness, characterized by being cooperative, self-disciplined, meticulous, and hard-working (McCrae and Costa 2003) may provide an advantage in some cognitive skills. According to literature, high agreeable people may have better cognitive abilities, such as cognitive inhibition and cognitive flexibility than low agreeable people (Jensen-Campbell et al. 2002, Burnos and Skrobowski 2021). In addition to all these qualities, they are also highly likable, and have a high potential to be chosen as friend (Selfhout et al. 2010). Therefore, while low agreeableness may result in exclusion, high agreeableness may increase the possibility of being included in the group (Hales et al. 2016). In conclusion, it can be deduced that the need to belong may decrease in agreeable individuals due to the increase in the possibility of social acceptance.

The primary goal of this study was to present a need to belong model that includes emotional and cognitive factors and personality traits based on need to belong hypothesis proposed by Baumeister and Leary (1995). The literature generally offers some evidence that there may be a direct or indirect relationship between the need to belong and cognitive flexibility; furthermore, affect and personality traits may also play an active role in this relationship. On the other hand, there is no study that considers all these psychological processes together under a model framework. The current study focused on scrutinizing the predictive role of the need to belong on cognitive flexibility, as well as the mediating role of affect and the moderating role of agreeableness within a holistic model. Thanks to the modeling technique, using all these variables together will help explain which independent variables are more closely related to the need to belong. Hence, it was hypothesized that: (1) more need to belong would be related to more negative affect; (2) more negative affect would be related with less cognitive flexibility; (3) negative affect would be a mediator in the relationship between need to belong and cognitive flexibility; (4) more need to belong would be related to less cognitive flexibility, and this relationship was stronger with less agreeable people.

Method

Sample

A total of 719 university students constituted the participant group of this study examining the relationship between the need to belong and cognitive flexibility. Participants were students from Adana Alparslan Türkeş Science and Technology University in Adana, Turkey. Of the participants, 446 (62%) were female, and 273 (38%) were male. The mean age of the participants was 21.38 years (SD = 1.97; age range, 18-28 years). Participants were selected based on the convenience sampling method. To decide the sample size of the study, a power analysis was conducted through the G-Power 3.1 program. Considering the sample size in terms of an effect size of 0.02, a margin of error of 0.05, and a power (1-β) of 0.95, it was concluded that the study should be conducted with at least 652 people (Cohen et al. 2000). Hence, as a result of the power analysis, it was deemed sufficient to conduct the study with 719 participants at a level of 95%.

Procedure

The current study was confirmed by the Adana Alparslan Türkeş Science and Technology University's ethics committee (Date and Approval Number: November 30, 2022, and 2022/10). Before filling out the scales, participants gave their informed consent to take part in the study. Data collection was carried out by delivering surveys to the participants in person. After being approached in their classes, participants had around 25 minutes to fill out all the questionnaires. Initially, 750 participants filled out all questionnaires, but because 31 of them reported that they had a psychiatric or neurological disease, only 719 participants were included in the study. In conclusion, this study was conducted with the convenience sampling method, and all these processes were carried out between December 1, 2022, and January 30, 2023.

Measures

Standard Information Form

This form, prepared by the researchers, contains information about the age, gender, and health status (if they suffer from any psychiatric or neurologic disorders) of the participants. Since healthy young people were the present study's target group, all individuals who disclosed no history of neurological or psychiatric diseases were included in the sample.

Cognitive Flexibility Scale

The original version of the Cognitive Flexibility Scale was developed by Martin and Rubin (1995) and adjusted into Turkish by Altunkol (2011). This scale is utilized with a view to assessing one's potential to shift the thought process between multiple concepts, i.e., mental flexibility. A one-dimensional scale is composed of 12 items on a 6-point Likert-type scale. The retest reliability coefficient was calculated at as.73. In the Turkish adaptation study, Cronbach's alpha coefficient was observed to be .81, while it was calculated as .80 in the present research. According to the criterion-related validity analysis results, this scale was found to be related to the Irrational Beliefs ($r = .14$, $p < 0.01$) and Dysfunctional Attitudes Scale ($r = -.23$, $p < 0.01$) (Altunkol 2011). A higher test score indicates greater cognitive flexibility.

Need to Belong Scale

The Need to Belong Scale developed by Leary et al. (2013) utilized to test individual differences in the need to belong. A one-dimensional scale is composed of a 10 items on a 5-point Likert-type scale. High average scores from the test correspond to a high need to belong level. In the current study, a Turkish adaptation of the scale was conducted. Accordingly, internal consistency was alpha = .73. It was determined that the Turkish version consisted of 5 items and a single factor and accounted for 48% of the total variance.

Big Five Personality Traits Scale

This scale was developed by Rammstedt and John (2007) based on the Big Five model, and a Turkish version was created by Horzum et al. (2017). In this scale, scored on a 5-point Likert-type scale and comprises 10 items in total, the average scores obtained from each of the two items reflect each of the following five personality traits: neuroticism, openness to experience, agreeableness, extraversion, and conscientiousness. According to the outcomes of the factor analysis examining the validity of the Big Five Personality Traits Scale, these five factors explain 88.4% of the total variance (Horzum et al. 2017).

Positive and Negative Affect Scale (PANAS)

PANAS, developed by Watson et al. (1988) and adapted into Turkish by Gencoz (2000), was utilized to test the affect mediator variable. This test includes 20 items on a 5-point Likert-type scale. Of these 20 items, 10 are negative and 10 are positive emotional states. Internal consistency coefficients for positive and negative affect were determined as .86 and .83, respectively (Gencoz 2000). In the current study, these Cronbach's alpha coefficients for positive (.88) and negative affect (.82) were also high.

Statistical Analysis

SPSS 23 and Process Macro 4.2 were utilized in order to analyze all the data in the present study. The mean and standard deviation, range, skewness, and kurtosis values of the need to belong, cognitive flexibility, negative affect, and agreeableness variables included in the study were calculated. Process Macro Model 5- Moderation and Mediation Analyses was used to examine whether the need to belong has an indirect effect on cognitive flexibility through negative affect, and the moderating effect of the agreeableness personality trait on the association between the need to belong and cognitive flexibility was also assessed. The analysis of regression, indirect, direct, and total effects in this Model 5 was performed with 5000 repeated samples (bootstrap) using the 95% confidence interval. (Hayes 2018). Confidence intervals (Johnson-Neyman) not containing zero were taken as a criterion for supporting the moderator and mediator hypotheses.

Results

First of all, the statistical analysis of the research started with the calculation of the skewness and kurtosis values of the variables. There are details of descriptive statistics for all variables revealed in Table 1. Accordingly, it can be concluded that all four variables meet the normal distribution assumptions (skewness and kurtosis values between -2 and +2) (Kim 2013).

Table 1. Descriptive statistics of all variables

	N	M	SD	Range	Skewness	Kurtosis
Need to belong	719	14.40	3.98	20	-.014	-.326
Cognitive flexibility	719	53.80	8.57	60	-.355	.730
Negative Affect	719	22.45	7.60	40	.631	.123
Agreeableness	719	7.86	1.57	8	-.662	.348

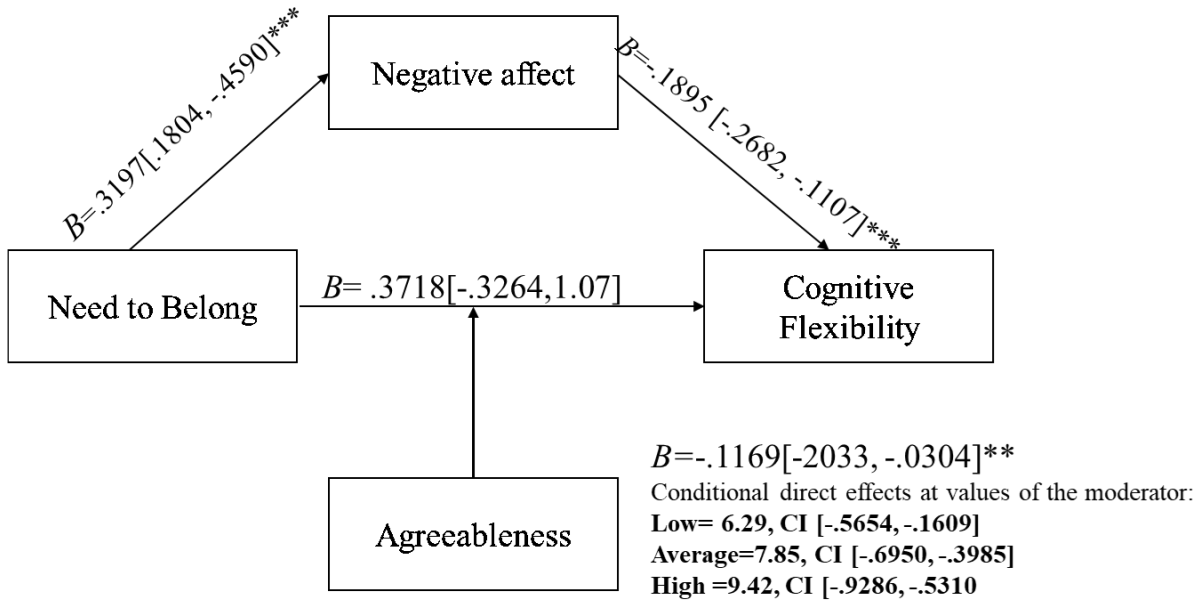

Figure 1. Mediation with a moderated direct effect model among need to belong and cognitive flexibility.

** p≤ 0.01; ***p < 0.001; CI: Confidence Interval.

Need to belong has a significant impact on negative affect (b = .3197, t = 4.5049, p <0.001). Negative affect was also found to have a significant impact on cognitive flexibility (b = -.1895, t =-4.7247, p <0.001). On the one hand, the need to belong has no significant impact on cognitive flexibility (b = .3718, t =1.0454, p>.05). Also, gender was found to have an insignificant covariate impact on both negative affect (b =.1529, t =-.2628, p>.05) and cognitive flexibility (b = 1.142, t=1.877, p>.05). The R-sq change was also found to be significant (p <0.01). The mediation results demonstrated a significant indirect effect of the need to belong on cognitive flexibility through negative affect (b =-.0606, t = -3.189). Besides, the direct effect of the need to belong on cognitive flexibility in the presence of the mediators was not found to be significant (b = 0.3718, p>.05) (Figure 1). Hence, even when the potential confounding effect of gender was eliminated, negative affect mediated the relationship between the need to belong and cognitive flexibility.

The interaction/moderating effect (Need to Belong * Agreeableness) accounted for a significant (at 95% CI: confidence interval) amount of variance in cognitive flexibility, R2 =.0081, p =.0081. 0.81% change in cognitive flexibility can be accounted to the interaction term. The results revealed a significantly moderating role of role agreeableness on the linkage between need to belong and cognitive flexibility (b =-.1169; CI 95% =-.2033 to -.0304, t =-2.6542, p = 0.0081). The graph shows that at high agreeableness, the negative impact of the need to belong on cognitive flexibility is weakened. (Figure 2). In other words, the negative impact of the need to belong on cognitive flexibility is stronger at low agreeableness than at average and high agreeableness. As a result, according to Figure 2 cognitive flexibility increases in the lower need to belong and higher agreeableness condition.

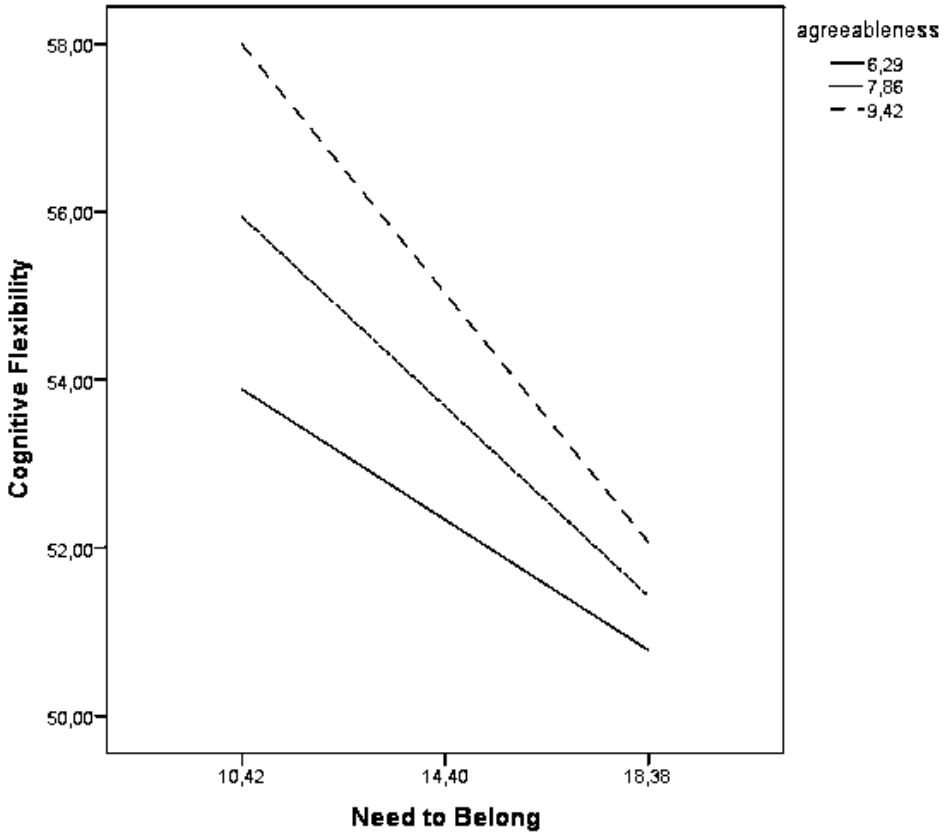

Figure 2. The moderating effect of agreeableness on the link between need to belong and cognitive flexibility (N = 719).

Discussion

The current study investigated the direct and indirect effects of the need to belong and negative affect on cognitive flexibility. Additionally, it was examined whether the impact of the need to belong on cognitive flexibility was different in terms of agreeableness. Primarily, it was found that a greater need to belong was related to less cognitive flexibility. This relation was clarified by negative affect. Regarding personality trait differences, the negative relationship between the need to belong and cognitive flexibility was stronger for low agreeable people than for average and high agreeable people.

As expected, an increasing need to belong reflected the decreased cognitive flexibility ability. Consistent with the Need to Belong Theory (Baumeister et al. 2002), it is shown that people with a high desire for social acceptance may have decreased cognitive flexibility capacity. Similarly, previous studies indicated that cognitive functions, which are closely related to cognitive flexibility, might decrease with an increasing need for social acceptance (Otten and Jonas 2013, Buelow et al. 2015, Xu et al. 2018, Fuhrmann 2019, Xu et al. 2020). In addition, as hypothesized, the mediator effect of negative affect between the need to belong and cognitive flexibility was significant. Namely, it was determined that the negative affect increased by the need to belong mediated the impaired cognitive flexibility. Previous studies revealed that individuals with a high desire for social acceptance who are inadequately accepted may experience negative emotions (Leary et al. 2013, Leary 2021) and impaired cognitive capacity (Baumeister et al. 2002). Another study demonstrated that people who are high in the need to belong might be more perceptive to unpleasant social cues more frequently than people who are low (Pickett et al. 2004). In particular, people with a high need to belong reported greater increases in negative affect after social exclusion compared to people with a low need to belong (Waldrip 2007). Additionally, in the literature, severe depressive symptoms are associated with a negative emotional response to social rejection and lower cognitive flexibility (Caouette and Guyer 2016). Particularly, it has been observed that individuals with borderline personality disorder and comorbid major depression may have weaker response inhibition cognitive abilities due to negative affect than healthy individuals (Ernst et al. 2018). Similarly, in other clinical samples, such as obsessive-compulsive disorder, the increased need to belong may be associated with higher negative affect and increased anxiety (James et al. 2017).

In line with the current study, it is also known that negative emotions negatively affect cognitive functions, especially cognitive flexibility, in healthy individuals (Davis and Nolen-Hoeksema 2000). The current research findings extend these studies by clarifying the negative influence of the need to belong on cognitive flexibility via a model, which might stem from increasing negative affect. Consequently, it can be recommended that an increased the need to belong can restrict cognitive skills by affecting emotional mechanisms.

Consistent with our hypothesis, agreeableness moderates the negative association between the need to belong and cognitive flexibility. That is to say, the interaction effect of the need to belong and agreeableness significantly predicted cognitive flexibility. Accordingly, higher agreeableness weakens the negative impact of the need to belong on cognitive flexibility. In other words, the disruptive effect of need to belong on cognitive flexibility increases in the low agreeableness condition. Particularly, individuals with a high score of agreeableness exhibit higher cognitive flexibility. Similarly, people with low agreeableness are more likely to have weak cognitive flexibility (Jensen-Campbell et al. 2002).

In line with the moderation and mediation model analysis results, it has been seen that agreeableness personality trait has an important role in the relationship between the need to belong and cognitive flexibility, as well as emotional mechanisms. Agreeable people are known to be especially cooperative and hard-working. (McCrae and Costa 2003). Additionally, these individuals may also have better cognitive inhibition and cognitive flexibility (Burnos and Skrobowski 2021). In parallel with the literature, it can be deduced that individuals with high agreeableness may have advantages in flexible thinking and the ability to manage negative emotions. In the present study, it is suggested that flexible thinking is protected from the negative effects of the need to belong, particularly in individuals with high agreeableness. Therefore, the ability to diminish the negative impact of need to belong may vary between individuals and determine the quality of mental flexibility. In conclusion, the current study extends the literature by demonstrating that the need to belong affects cognitive flexibility through negative affect, as well as that agreeableness moderates the negative affect of the need to belong on cognitive flexibility in framework of a model.

The first limitation of the current study is that we recruited merely healthy young adults to this study; thus, the results cannot be generalized to other age groups. In addition, as the current study was conducted with a healthy sample, future studies to be carried out in distinct clinical sample groups (i.e., depression, mania, personality disorders, and anxiety disorders) could improve the body of literature. Another limitation of this study is that it is merely dependent on self-report tests. The scope of the study could be expanded, especially with studies in which cognitive flexibility is measured via neuropsychological tests. Furthermore, future studies examining the relationship between the need to belong and emotional and cognitive processes need to be supported by neuroimaging studies. Another limitation is that this research tested a model with a correlational design; therefore, it cannot draw conclusions about the direction of the impacts of the results. Future studies could test this model with experimental methods that include social exclusion procedures. In addition, longitudinal experimental studies are required to understand the long-term effect of the need to belong and personality traits on cognitive skills.

Conclusion

This study proposed a model indicating the role of emotion and personality traits in the association between the need to belong and cognitive flexibility based on the need to belong theory. Accordingly, the need to belong negatively affects cognitive flexibility via negative affect. Besides, the current study contributed to the literature by showing that agreeableness moderates the negative effect of the need to belong on cognitive flexibility. The highest cognitive flexibility was observed in the lower need to belong and higher agreeableness conditions. As a result, it is concluded that the effect of the need to belong on cognitive skills may be accompanied by personality traits and emotional processes. Consequently, it is suggested that emotional rehabilitation programs centered on enhancing high-level cognitive functions (especially cognitive flexibility, inhibitory control, and working memory) should not be ignored by personality traits and need to belong.

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