

The Mediating Role of Cognitive Flexibility between Self-Compassion and Anxiety Symptoms

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The Mediating Role of Cognitive Flexibility between Self-Compassion and Anxiety Symptoms Abstract

The aim of this study is to investigate the role of cognitive flexibility as a mediator in the relationship between self-compassion and anxiety. The research explores the association between self-compassion and anxiety symptoms. Additionally, it investigates cognitive flexibility role in this process, proposing that self-compassion might increase cognitive flexibility, which could which in turn could reduce anxiety levels. The study sample consists of 355 participants (251 female and 104 male) aged between 18 and 54 years old ($M = 24.17$, $SD = 5.92$). The Demographic Information Form, Beck Anxiety Inventory, Cognitive Flexibility Inventory and Self-Compassion Scale were used to collect data. The mediating role of cognitive flexibility was examined by PROCESS macro. The results showed that cognitive flexibility is a mediator between self-compassion and anxiety symptoms. The effect of self-compassion on anxiety is still significant in this relationship. Findings suggest that both self-compassion and cognitive flexibility are valuable to reducing anxiety. The implications of all results are discussed.

Öz-Şefkat ve Anksiyete Belirtileri Arasında Bilişsel Esnekliğin Aracı Rolü Öz

Bu çalışmanın amacı, öz-şefkat ve kaygı arasındaki ilişkide bilişsel esnekliğin aracı rolünü araştırmaktır. Araştırma, öz-şefkat ve anksiyete belirtileri arasındaki ilişkiyi incelemektedir. Ek olarak, bu süreçte bilişsel esnekliğin rolünü araştırarak, öz-şefkatin bilişsel esnekliği artırabileceğini ve bunun da kaygı düzeylerini azaltabileceğini öne sürmektedir. Araştırmanın örneklemini yaşları 18-54 arasında değişen 355 katılımcı (251 kadın ve 104 erkek) oluşturmaktadır ($Y=24.17$, $SS=5.92$). Verilerin toplanmasında Demografik Bilgi Formu, Beck Anksiyete Envanteri, Bilişsel Esneklik Envanteri ve Öz Şefkat Ölçeği kullanılmıştır. Bilişsel esnekliğin aracılık rolü PROCESS makro ile incelenmiştir. Sonuçlar, bilişsel esnekliğin öz-şefkat ve anksiyete belirtileri arasında bir aracı olduğunu göstermiştir. Öz şefkatin kaygı üzerindeki etkisi bu ilişkide hala anlamlıdır. Bulgular, hem öz-şefkatin hem de bilişsel esnekliğin kaygıyı azaltmada değerli olduğunu göstermektedir. Tüm sonuçların etkileri tartışılmaktadır.

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The most common symptoms of anxiety include disturbing physical, cognitive and emotional experiences. The World Health Organization (WHO) states that anxiety disorders are the most common mental disorders globally, affecting an estimated 301 million people in 2019 (WHO, 2023). A poll by the American Psychiatric Organization (2019) showed that 32% of the participants feel they are more anxious than they were last year (American Psychiatric Association, 2019). Symptoms of anxiety can impact psychological well-being and quality of life and increase the risk of development of considerable impairment or dysfunctionality.

This study aims to understand anxiety symptoms through the relationship between self-compassion and cognitive flexibility. To our knowledge, this is the first study to directly test and provide evidence for the hypothesis that cognitive flexibility mediates the relationship between self-compassion and anxiety. Our findings offer a new perspective on understanding anxiety symptoms. While anxiety symptoms have been studied from various angles, self-compassion, the study's main variable, emerges as a recent and significant concept in explaining psychological symptoms. Furthermore, this study uniquely combines self-compassion and cognitive flexibility, focusing on the emotional and cognitive dimensions of anxiety. Investigating human nature through such a multidimensional approach is a guiding and integrating method, providing valuable insights into this specific area.

Anxiety, a multifaceted psychological condition, is understood through various theories, including biological, cognitive, and emotional perspectives, each contributing to our understanding of anxiety symptoms (Strongman, 1995). Recently, third-generation cognitive-behavioral theories have revolutionized the conceptualization of anxiety disorders. These contemporary approaches stress the importance of emotions, mindfulness, acceptance, compassion, and cognitive flexibility. In line with these theoretical frameworks, empirical studies, as by Roemer (2009), demonstrated a significant correlation between anxiety and new wave concepts like mindfulness, acceptance levels, and self-compassion. The research interest in self-compassion, particularly its role in reducing psychological symptomatology, is rapidly growing in this field, as highlighted by Barnard and Curry (2011) and van Dam (2011). In this context, self-compassion emerges as an important concept within third-generation approaches to anxiety. This study aims to reveal the relationship between self-compassion and anxiety, positing that self-compassion relates to anxiety symptoms.

Self-compassion involves “being touched by and open to one’s own suffering, not avoiding or disconnecting from it, generating the desire to alleviate one’s suffering and to heal oneself with kindness” (Neff, 2003). This concept is anchored in three primary components: self-kindness, common humanity, and mindfulness. Self-kindness is defined as accepting and being kind to oneself, even in circumstances of failure and pain. The second component, common humanity, emphasizes the universality and ubiquity of failure and pain in life. Mindfulness is defined as the awareness and subsequent acceptance of thoughts and feelings, even if they are painful and aversive (Neff, 2003).

There is empirical evidence as to the relationship between self-compassion and various psychological concepts. For instance, Neff, Kirkpatrick and Rude (2007) reported significant positive correlations between self-compassion and happiness, optimism, positive affect, wisdom, personal initiative, curiosity, and exploration. The personality traits of agreeableness, extraversion and consciousness have also been shown to have a positive correlation with self-compassion; conversely, neuroticism and negative affect have been shown to have a negative correlation. Self-compassion has been shown to have a strong association with psychological symptoms as well as other psychological constructs; self-compassion is negatively correlated with the symptoms of depression, anxiety, PTSD and the severity of schizophrenia (Eicher, 2013).

Gilbert (2011) investigates the relationship between self-compassion and various mental health outcomes, notably highlighting the link between self-compassion and levels of depression, anxiety, and stress. Building on this, a study by van Dam et al. (2011) found that self-compassion, especially its subscales of self-judgment, isolation, and over-identification, strongly predicted anxiety and worry. In a similar vein, Soysa and Wilcobs (2015) argued that overidentification, a negative aspect of self-compassion, predicts anxiety symptoms among university students. Moreover, Neff et al. (2007) found in their lab study that participants with higher levels of self-compassion, as measured by the positive factors of self-kindness, common humanity, and mindfulness, experienced lower levels of anxiety when performing a given task. Therefore, it can be hypothesized that self-compassion acts as a protective factor against anxiety, particularly in ego-threatening situations. By fostering self-kindness, recognizing the commonality of human suffering, and maintaining a mindful attitude towards one's experiences, individuals can potentially alleviate the impact of anxiety and cultivate a more resilient mental state.

Research over the last decade indicates that self-compassion is also related to cognitive variables that have an impact on psychological symptoms such as anxiety and depression (Arimitsu & Hofmann, 2015). In other words, self-compassion affects certain cognitive mechanisms, reducing the extent to which psychological symptoms are experienced. However, there has been a limited focus on exploring the mediating role of cognitive variables between self-compassion and psychological symptoms. This gap underlines the necessity of the current study, which aims to increase our understanding of how self-compassion relates to mental health through cognitive processes. Raes (2010) showed that rumination, as a cognitive variable, mediates the relationship between self-compassion and anxiety/depression. Accordingly, high levels of self-compassion decrease levels of rumination, and both factors together reduce levels of anxiety and depression. In another study, Arimitsu and Hofmann (2015) found that negative automatic thoughts play a mediating role in the relationship between self-compassion and anxiety/depression. These studies showed that self-compassion is a robust psychological concept that influences psychological symptoms through cognitive variables, both directly and indirectly.

Cognitive flexibility is an essential mental ability that significantly influences how individuals process and respond to life's challenges. Defined as the capacity to shift one's thinking about a subject, recognize alternatives, and adapt to new situations, it plays a critical role in executive functioning (Martin & Rubin, 1995). While it has long been a focus in research related to executive functions, its relevance in clinical contexts is only recently gaining deserved attention.

Individuals with high cognitive flexibility typically find stressful situations more manageable and are better at coping than those with lower levels. They tend to approach problems with diverse strategies and consider various explanations for life events (Dennis, 2010). Additionally, cognitive flexibility enables the replacement of stressful, maladaptive thoughts with balanced and adaptive ones, enhancing mental well-being (Dennis & Vander Wal, 2010). The existing body of research emphasizes the importance of cognitive flexibility in managing psychological symptoms (Inozu et al., 2023). However, despite the established link between cognitive flexibility and psychological symptoms, there is a gap in research exploring its inverse relationship with anxiety, specifically in the context of self-compassion (Dennis, 2009). This absence highlights a need for studies examining how self-compassion, known for its positive impact on mental health, might influence anxiety through the mediating role of cognitive flexibility. Such research could provide valuable insights into the nature of this relationship and potentially guide therapeutic approaches.

Consequently, this study aims to examine the relationships between self-compassion, cognitive flexibility and symptoms of anxiety. First, the predictive role of self-compassion and cognitive flexibility on anxiety was examined. Subsequently, the mediating role of cognitive flexibility in the relationship between self-compassion and anxiety was investigated. Thus, this study aims to approach the relationships between these concepts in a comprehensive manner, allowing for a multifaceted as well as refined understanding of them. In this context, the question that this study investigates is how cognitive flexibility plays a mediating role between self-compassion and anxiety.

Method

Participants

The sample consists of 355 participants (251 female and 104 male) aged between 18 and 54 years old. The mean age of the participants was 24.17 (SD = 5.92). All participants were recruited online from different cities in Turkey.

Measurements

Demographic Information Form: The form created by the researcher includes questions about gender, education, marital status and socio-economic status.

Beck Anxiety Inventory (BAI): BAI is a self-report inventory which was developed to evaluate anxiety symptoms (Beck et al., 1988). In this study, the Turkish version of the BAI (Ulusoy et al., 1998) was used to assess participants' anxiety symptoms. The Turkish version of the BAI is a four-point likert scale which consists of 21 items. High scores indicate severe anxiety. The current study's estimate of the Cronbach's alpha coefficient is .92.

Cognitive Flexibility Inventory (CFI): CFI was developed as a self-report scale to assess the level of cognitive flexibility by Dennis and Vander Wal (2010). CFI was adapted to Turkish by Gülüm and Dağ (2012). CFI is a five-point likert scale and consists of 20 items. High scores indicate high levels of cognitive flexibility. CFI has two subscales, "Alternatives" and "Control", and can be considered as the total score. The Cronbach's alpha coefficient reported as .90 for the current study.

Self-Compassion Scale (SCS): Self-compassion scale was developed by Neff (2003b) to measure how compassionate people are towards themselves when they experience failure. SCS is a five-point likert self-report scale which consists of 24 items. Higher scores indicate higher levels of self-compassion. The reliability and validity study for the Turkish version was conducted by Deniz, Kesici and Sumer (2008). Although the original scale consists of six factors, the Turkish version has a single factor. In this study, the Cronbach's alpha coefficient was estimated as .86, indicating high internal reliability.

Procedure

The researchers promoted this research in their online community and spread the associated online link. The selection criteria for the participants were that they should be older than 18 years of age and with no psychiatric diagnosis. The participation in the study was completely voluntary and the response rate was 72%. All participants signed an informed consent form and were informed about the confidentiality of the study. Ethical approval was obtained from the affiliated university ethics committee. Before the analyses, 22

participants were screened out as outliers and distributions to conduct parametric statistics (Tabachnick & Fidell, 2007).

Results

Correlation Analysis Results

The result of the correlation analysis showed that there was a significant negative correlation between both Anxiety and Self-Compassion ($r = -.40, p < .01$) and Cognitive Flexibility ($r = -.34, p < .01$). A significant positive correlation between Self-Compassion and Cognitive Flexibility was also noted ($r = .60, p < .01$). Table 1 reports all the correlations between the variables used in the study.

Table 1

Correlation Coefficients Between Scales and the Mean Scores and Standard Deviations of the Scales (N = 355)

	1	2	3	<i>M</i>	<i>SD</i>
1 Self-Compassion Scale (SCS)	-			75.73	13.29
2 Cognitive Flexibility Inventory (CFI)	.60**	-		75.88	11.45
3 Beck Anxiety Inventory (BAI)	-.40**	-.34**	-	34.49	11.10

* $p < .05$ ** $p < .01$

Mediator Role of Cognitive Flexibility in the Relationship between Self-Compassion and Anxiety

The bootstrapping procedure was carried out using the PROCESS macro (Hayes, 2013) for SPSS to determine the mediator role of cognitive flexibility between self-compassion and anxiety. The results showed that self-compassion was positively related to cognitive flexibility ($\beta = .52$ SE = .04, %95 GA [.4403 - .5853], $p < .01$). Additionally, cognitive flexibility was negatively related to anxiety ($\beta = -.15$, SE = .06, %95 GA [-.2665, -.0366], $p < .01$). Also, the total effect of self-compassion on anxiety was significant ($\beta = -.34$, SE = .04, %95 GA [-.4134, -.2530], $p < .01$), indicating that higher self-compassion is associated with lower anxiety. However, the direct effect of self-compassion on anxiety decreased when cognitive flexibility and self-compassion are entered together in the regression ($\beta = -.26$, SE = .05, %95 GA [-.3545, -.1564], $p < .01$). Thus, self-compassion directly influences anxiety, a part of its effect is mediated through cognitive flexibility. As for the indirect effect of self-compassion on anxiety is significant when cognitive flexibility and self-compassion are entered together in the regression ($\beta = -.08$, SE = .03, %95 GA [-.1538, -.0157], $p < .01$). Consequently, a part of the effect of self-compassion on reducing anxiety occurs because self-compassion enhances cognitive flexibility, which in turn reduces anxiety. These findings highlight the important role of self-compassion in supporting cognitive flexibility, which can help in reducing anxiety. As self-compassion directly impacts anxiety, a significant part of its beneficial effect is mediated through its positive influence on cognitive flexibility.

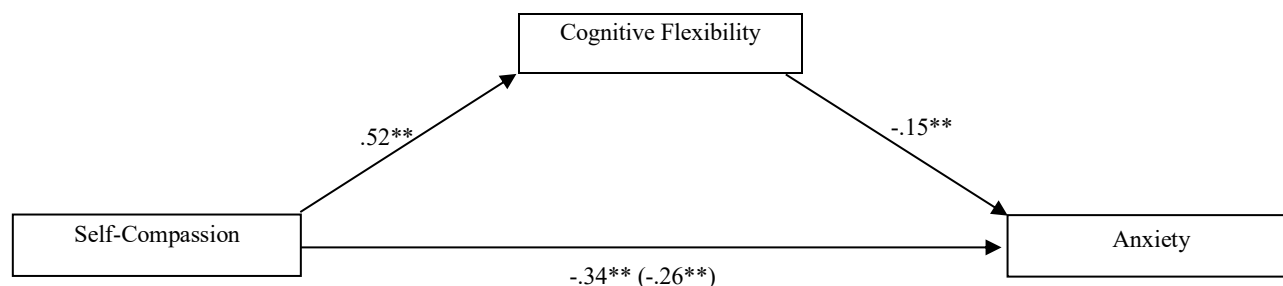


Figure 1. Mediation Model

Total Effect: ($\beta = -.34$, $SE = .04$, %95 GA [-.4134, -.2530], $p < .01$).

Direct Effect: ($\beta = -.26$, $SE = .05$, %95 GA [-.3545, -.1564], $p < .01$).

Indirect Effect: ($\beta = -.08$, $SE = .03$, %95 GA [-.1538, -.0157], $p < .01$).

Model: $N = (355)$ $R^2 = (.18)$, $F = (37.28)$, $p < .001$

Note 1. The figure includes unstandardized betas

Note 2. ** $p < .001$, * $p < .01$

Discussion

The first aim of the study is to investigate the relationships of self-compassion and cognitive flexibility and anxiety symptoms. As expected, self-compassion and cognitive flexibility were negatively associated to anxiety symptoms. Secondly, as proposed, cognitive flexibility has a mediator role between self-compassion and anxiety symptoms, whereby the effect of self-compassion remains significant in this model.

While physiological, hereditary, and developmental factors explain anxiety symptoms, there are also parental attitudes and relationships with the origins of anxiety. The onset of self-compassion at the early childhood stage is a robust factor that protects individuals from the occurrence of psychological symptoms, including anxiety (Gilbert, 2005). Self-compassion, being kind and tolerant without judging, and accepting one's inadequacies or failures and negative emotions, is crucial for anxiety (Neff, 2003a; Gilbert, 2009). This finding is consistent with the findings of our research. Our results are in line with the other empirical evidence. For example, self-compassion is related to anxiety symptoms (Roemer et al., 2009) through cognitive mechanisms such as unproductive repetitive thinking (Raes, 2010) and negative automatic thoughts (Arimitsu & Hofmann, 2015). In addition, Neff and Germer (2013) compared anxiety outcomes after a mindful self-compassion-based intervention program with randomly assigned experimental and control groups. Furthermore, therapies including compassion (Gilbert et al., 2011; Hofmann et al., 2010; Pauley & McPherson, 2010) and meditation (Shonin et al., 2015; Hofmann et al., 2011) have delivered a significant change effect on anxiety.

Another finding of this study is that cognitive flexibility predicts anxiety symptoms. Research by Dennis & Vander Wal (2010), Gülüm & Dağ (2011), and Levin et al. (2014) has shown an association between flexibility and anxiety. Inflexibility, such as rigid thinking, rumination, and difficulty to find alternatives, are key characteristics of most psychological symptoms (Beck et al., 1979; Thayer & Lane 2002). Particularly, as Hayes et al. (2006) noted, inflexibility is highly related to depression and anxiety. It is associated with restricted problem-solving and coping strategies, narrowed alternative approaches, and the inability to generate adaptive responses, and all these increase anxiety levels (Martin & Rubin 1995; Hayes et al. 2006; Hayes,

Stroshal and Wilson 2012). Likewise, Palm and Follette (2011) indicated that low levels of cognitive flexibility lead to experiential avoidance and the need for control, which also increases anxiety levels (Venta, Sharp & Hart 2012; Berman et al., 2010). In parallel with previous research (Hayes et al., 2012), this study also revealed that high levels of cognitive flexibility related to lower anxiety levels by providing the ability to evaluate alternatives and to feel more in control over life events.

Last major finding of this study is that cognitive flexibility is a mediator between self-compassion and anxiety. To the best of our knowledge, there is no study that examines the mediator role of cognitive flexibility between self-compassion and anxiety. Several research indicated that self-compassion affects anxiety through cognitive variables (Raes, 2010; Arimitsu & Hofmann 2015). Self-compassion is a strong psychological factor that is related to cognition. Consistent with our findings, Martin et al. (2011) indicated that self-compassion is positively related to cognitive flexibility. Similarly, Allen and Leary's (2010) review showed that self-compassion is positively related to the cognitive coping strategies that are considered the important constituents of cognitive flexibility. The 2014 study by Woodruff et al. demonstrates that combining psychological flexibility and self-compassion is a key predictor of anxiety levels. The study found that psychological inflexibility was a more significant predictor for negative aspects of psychological health compared to self-compassion. The findings highlight the need to focus on both psychological flexibility and self-compassion in understanding and treating anxiety.

Our research examines cognitive flexibility, focusing on finding alternatives and possessing control, which is slightly different from psychological flexibility. Furthermore, the direct effect of self-compassion on anxiety is still significant in the mediation model. This finding might be explained by cultural dynamics. Turkish culture, in a similar manner to many other eastern cultures, is defined as collectivistic (Göregenli, 1997), where the self is identified as more interdependent (Singelis, 1994). Accordingly, compassion is more prominent in collectivistic countries (Birkett, 2014) than cognitions, which are more prevalent in coping with difficulties in individualistic countries (Kuo, 2013).

It is well-known that the prevalence of anxiety symptoms is quite high, with studies indicating that the incidence rates are on an increasing trend (Walters et al., 2012; Parekh, 2017). The findings of this study point out the importance of self-compassion and flexibility in reducing anxiety symptoms, as suggested by the pioneers of third wave research (Tirch et al., 2014).

Self-compassion, which emerges during one's childhood years, should be considered in the clinical interventions. At this critical stage, there are studies that indicate the benefit of self-compassion-based intervention for anxiety symptoms (Muris et al., 2016; Werner et al., 2012). Furthermore, this study showed that cognitive flexibility is a crucial factor that reduces anxiety levels. As Johnco et al. (2014) suggest, cognitive flexibility can be developed through interventions. This is the first study to combine the effects of self-compassion and cognitive flexibility on anxiety. To summarize, interventions, including both self-compassion and cognitive flexibility, are valuable to reduce anxiety levels.

There are a few limitations to the current study. The first limitation is that the data-gathering tools are self-report questionnaires. Therefore, the findings are constituted by the participants' own report, which clearly might be subject to bias (Podsakoff et al., 2003). Another limitation is one of the variables of the study self-compassion is known to be related to childhood experiences. However, in the current study, there is no tool for gathering information about the childhood experiences of the participants. Therefore, future research might consider collecting additional information about the participants' childhood experiences, which should provide more comprehensive knowledge.

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