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ORIGINAL PAPER

Rumination mediates the association between self-uncertainty and generalized anxiety disorder symptoms

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Abstract
Self-concept clarity (SCC), the extent to which self-beliefs are clearly defined, internally consistent, and stable, has been linked to anxiety, yet the processes translating self-uncertainty into generalized anxiety disorder (GAD) symptoms remain underexplored. Grounded in control and goal-progress accounts of repetitive negative thinking, the present study tested whether rumination mediates the association between SCC and GAD symptoms in young adults. A cross-sectional sample of 251 university student participants (*M*age = 22.21, *SD* = 1.56) completed the Self-Concept Clarity Scale, the Perseverative Thinking Questionnaire, and the Generalized Anxiety Disorder Scale. Pearson correlations showed that SCC was negatively associated with both rumination (r = -.51, p < .001) and GAD symptoms (r = -.44, p < .001), whereas rumination was positively associated with GAD symptoms (r = .58, p < .001). The mediation analysis indicated mediation, with rumination mediating the link between SCC and GAD symptoms (b = -0.081, 95% bootstrap CI [-0.110, -0.055]); the outcome model explained 37.9% of the variance in GAD symptoms (R^2 = .379), after adjustment for age, gender, education level, and demographics. These findings suggest that reduced SCC is associated with elevated GAD symptoms partly through heightened rumination, identifying self-concept structure and repetitive negative thinking as complementary targets for interventions.

Keywords: self-uncertainty, self-concept clarity, generalized anxiety disorder, rumination, mediation analysis

Ruminasyonun benlik belirsizliği ile yaygın anksiyete bozukluğu belirtileri arasındaki ilişkideki aracı rolü

Öz
Alanyazındaki bulgular, bireyin kendisine ilişkin inançlarının açık, içsel olarak tutarlı ve zaman içinde istikrarlı olmasını ifade eden benlik belirginliğinin (Self-Concept Clarity; SCC), daha düşük anksiyete belirtileriyle ilişkili olduğunu göstermektedir. Bununla birlikte, benlik belirsizliğinin yaygın anksiyete bozukluğu (YAB) belirtilerine nasıl dönüştüğünü açıklayan süreçler yeterince araştırılmamıştır. Tekrarlayıcı olumsuz düşünmeye ilişkin kontrol ve hedef ilerleme kuramlarına dayanan bu çalışma, genç yetişkinlerde ruminasyonun benlik belirginliği ile YAB belirtileri arasındaki ilişkiye aracılık edip etmediğini incelemiştir. Kesitsel tasarıma sahip çalışmaya 251 üniversite öğrencisi katılmıştır (*Ort.* yaş = 22.21, *SS* = 1.56). Katılımcılar Benlik Belirginliği Ölçeği, Perseveratif Düşünme Ölçeği ve Yaygın Anksiyete Bozukluğu Ölçeği'ni doldurmuştur. Pearson korelasyon katsayıları, benlik belirginliği ile ruminasyon arasında negatif yönde (r = -.51, p < .001), YAB belirtileri ile negatif yönde (r = -.44, p < .001) ilişkili olduğunu; buna karşılık ruminasyonun YAB belirtileri ile pozitif yönde (r = .58, p < .001) ilişkili olduğunu göstermiştir. Arabuluculuk analizi sonuçları, yaş, cinsiyet, eğitim düzeyi ve demografik değişkenler kontrol edildiğinde ruminasyonun benlik belirginliği ile YAB belirtileri arasındaki ilişkiye aracılık ettiğini ortaya koymuştur (b = -0.081, %95 bootstrap GA [-0.110, -0.055]); sonuç modeli, YAB belirtilerindeki varyansın %37.9'unu açıklamıştır (R^2 = .379). Bu bulgular, düşük benlik belirginliğinin artmış ruminasyon yoluyla kısmen daha yüksek YAB belirtileri ile ilişkili olduğunu göstermektedir. Sonuçlar, benlik yapısı ve tekrarlayıcı olumsuz düşünmenin müdahalelerde birlikte ele alınabilecek tamamlayıcı hedefler olduğunu ortaya koymaktadır.

Anahtar Kelimeler: benlik belirsizliği, benlik belirginliği, yaygın anksiyete bozukluğu, ruminasyon, aracılık analizi

INTRODUCTION

Self-Concept Clarity

Self-concept is a dynamic construct comprising two sub-components: content and structure. The content component of self-concept refers to the beliefs and evaluations of the self. The structure component, on the other hand, captures how the working-self stores and organizes self-concept content (Campbell et al., 1996). With the rise of cognitive perspective in psychopathology (e.g., Beck, 2002; Beck et al., 1992; Beck & Haigh, 2014), researchers have investigated how the content of self-concept, i.e., negative self-concept, exacerbates depression and anxiety (Baik et al., 2024; Baylon et al., 2022; Beck et al., 1992; Drew et al., 1999; Reed-Fitzke, 2020). However, accumulating evidence suggests that structural features of the self, especially self-concept clarity (SCC) and the stability of self-concept content, may be particularly informative for understanding psychopathology (Baik et al., 2024; Kernis, 2005; Campbell et al., 2002; Wilson & Rapee, 2006).

SCC refers to the degree to which an individual's self-concept is "confidently defined, internally consistent, and stable over time" (Campbell et al., 1996, p. 141). SCC goes beyond beliefs about the self and underscores how consistent, stable, and coherent those beliefs are, closely related to knowledge of the self, commitment, and values (Campbell, 1990; Campbell et al., 1996, 2003; Crocetti & Van Dijk, 2018). SCC is a telltale of self-certainty (Crocetti & Van Dijk, 2018)—linking to meaningful identity choices (Schwartz et al., 2011). It plays a crucial role in psychological adjustment and emotional balance; low SCC implies poor psychological adjustment and emotional balance and is associated with various poor mental health outcomes such as rumination, anxiety, depression, and stress (Bigler et al., 2001; Campbell et al., 2003; Constantino et al., 2006; Katz, 2016).

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Self-Concept Clarity and Generalized Anxiety Disorder

Generalized Anxiety Disorder (GAD) is marked by persistent, excessive, and unrealistic worry about everyday things (Munir & Takov, 2022). The intolerance of uncertainty model of GAD (Dugas et al., 1997) suggests that people with GAD cannot tolerate uncertainty, and the excessive worry is an attempt to cope with the resulting uncertainty (Dugas et al., 1998). Researchers have adapted the uncertainty model to understand the link between SCC and GAD symptoms (Kusec et al., 2016). Low SCC presents as an uncertainty within the self, triggering repetitive negative thinking as an attempt to cope with discomfort in the face of an unclear self-concept (Cicero, 2017).

Previous studies have established the relevance of SCC to worry and GAD symptoms. Kusec et al. (2016) found that lower SCC was associated with elevated GAD symptoms even when accounting for intolerance of uncertainty. Zheng et al. (2023) subsequently examined possible selves and SCC in individuals with high GAD symptoms and found that SCC uniquely accounted for variation in worry beyond established correlates. Longitudinal evidence suggests that lower SCC precedes increases in anxiety symptoms (Hertel et al., 2024), consistent with the idea that an unclear, unstable self-concept creates a fertile ground for persistent worry. Higher SCC is associated with more active, goal-directed coping, whereas lower SCC is linked to more maladaptive strategies, e.g., denial, avoidance, and behavioral or mental disengagement, that can maintain and exacerbate distress (Smith et al., 1996). Converging cross-sectional findings show that SCC is negatively associated with anxiety across general samples (Butzer & Kuiper, 2006; Smith et al., 1996; Treadgold, 1999) and is also lower among individuals reporting elevated GAD symptoms (Kusec et al., 2016). Additionally, SCC, along with self-esteem, mediated the path between exposure to stressful life events and depressed mood (Chang, 2001), suggesting that with low SCC, the stressors may be interpreted as self-relevant threats, and coping may become less coherent.

Even though research underlines poor psychological functioning, emotional balance, coping styles, and worry as to why SCC links to GAD, the paths through which self-concept clarity may affect GAD are far from fully understood (Bigler et al., 2001; Campbell et al., 2003; Constantino et al., 2006; Katz, 2016; Kusec et al., 2016).

From Self-Uncertainty to Rumination

Rumination is a maladaptive strategy to regulate emotions and is considered a form of repetitive negative thinking whereby one ponders upon and fixates on symptoms, causes, and consequences of distress (Nolen-Hoeksema et al., 2008). Rumination increases negative thinking, interferes with problem-solving, increases behavioral avoidance, and may result in social withdrawal and loss of social support (Nolen-Hoeksema, 1991; Nolen-Hoeksema et al., 2008). These consequences further intensify the emotional and psychological burden on individuals, contributing to the chronicity of their mental health issues. Growing evidence points to rumination's significant role in driving emotional dysregulation, which underpins various disorders as a transdiagnostic factor (Aldao & Nolen-Hoeksema, 2010; Watkins, 2008).

Worry and rumination are sometimes distinguished by their typical temporal orientation and thematic focus (McLaughlin et al., 2007; Watkins et al., 2005). Worry is more future-oriented and centers on anticipated threats and uncertainty, whereas rumination is more past- or present-oriented and centers on causes, meanings, and consequences of negative events (Watkins et al., 2005). Worry is one of the defining features of GAD. However, a growing body of research suggests substantial overlap in their underlying cognitive mechanisms: worry and rumination are closely related forms of repetitive negative thinking and show strong correlations in both general and clinical samples (Segerstrom et al., 2000). Both processes exhibit similar patterns of association with anxiety symptoms (Fresco et al., 2002; Segerstrom et al., 2000; Szkodny & Newman, 2019) and are linked to heightened and prolonged negative emotional states (McLaughlin et al., 2007; Ottaviani et al., 2011). Higher levels of both worry and rumination have been associated with poorer problem-solving ability, reduced perceived controllability, and difficulties with attentional shifting (Llera & Newman, 2020; Watkins et al., 2005), as well as poorer sleep quality (Clancy et al., 2020) and increased somatic complaints (Brosschot et al., 2006). Researchers, hence, posit these factors share a common cognitive process that contributes to the development and maintenance of diverse forms of psychopathology (Ehring & Watkins, 2008; McEvoy et al., 2019).

The common mechanisms of worry and rumination underline rumination as crucial to understanding GAD. Rumination can be critical to elucidate how self-concept predicts and exacerbates anxiety and GAD symptoms (Murray et al., 2024; Kusec et al., 2016). Control models of rumination suggest that the ruminative cycles are triggered when individuals fail to make sufficient progress towards a goal (Martin & Tesser, 2006; Roberts et al., 2013; Watkins, 2008). A coherent and stable self-concept is a central psychological need, and low SCC signals difficulty maintaining that coherence (Swann & Buhrmester, 2012). When the self feels unclear or internally inconsistent, individuals may become more preoccupied with resolving self-uncertainty (Schwartz et al., 2011), making rumination a likely coping response aimed at restoring coherence. Low SCC may also undermine perceived controllability over internal experiences (Yang et al., 2024). In that context, rumination can function as an effort to regain control, through heightened monitoring and repetitive analysis, especially when perceived control is threatened (Krys & Reininger, 2023).

This account positions low SCC as a potential source of unresolved self-related concerns and rumination as a candidate process linking those concerns to GAD symptoms. Consistent with this account, cross-sectional evidence shows that lower SCC is associated with higher rumination (Willis & Burnett, 2016). Experimental and situational findings further converge that individuals with low SCC are more likely to rely on maladaptive, repetitive

coping such as rumination (Bechdoldt et al., 2010), and they ruminate more when confronted with self-knowledge conflicts (Xiao et al., 2025). Taken together, these findings position rumination as a plausible cognitive process linking low SCC to heightened GAD symptoms.

The Present Study

Although previous research consistently demonstrates that low SCC is linked to elevated GAD symptoms, the mechanisms underlying this association remain underexplored. The present study aims to investigate a mediation model in which rumination mediates the relationship between SCC and GAD symptoms. Whereas previous research has established SCC as a correlate of worry and GAD symptoms (Kusec et al., 2016; Zheng et al., 2023), establishing that SCC correlates with anxiety does not clarify whether this association is shared with the tendency to engage in repetitive, intrusive, and difficult-to-disengage-from negative thinking. Grounded in evidence suggesting that reduced SCC promotes rumination as an attempt to resolve discrepancies between a coherent self-concept and a currently incoherent or uncertain self-representation (Krys & Reininger, 2023; Willis & Burnett, 2016), the present study, therefore, examines rumination as a candidate cognitive process that may help account for this association within a single model. Examining this indirect association can therefore refine the account of how self-concept structure and cognitive processing relate to anxiety and inform subsequent longitudinal and experimental investigations.

Given the well-established role of repetitive negative thinking in the maintenance of anxiety and GAD symptoms, the model posits rumination as a central pathway through which self-concept uncertainty is translated into GAD symptoms, extending prior work on the mental and emotional correlates of SCC (Bigler et al., 2001; Campbell et al., 2003; Constantino et al., 2006; Katz, 2016; Kusec et al., 2016). The hypotheses of the study are as follows: Hypothesis 1: SCC is positively associated with and predicts GAD; Hypothesis 2a: Rumination is positively associated with and predicts GAD symptoms; Hypothesis 2b: SCC is negatively associated with and predicts rumination; Hypothesis 3: Rumination mediates the relation between SCC and GAD (see Figure 1).

METHODS

Participants

Sample size estimation using a priori G power analysis (Faul et al., 2009) for correlational analyses, for which an effect size (r) of 0.3 (Willis & Burnett, 2016), $\alpha = 0.05$, and a power of 0.8 were entered, indicated a minimum sample size of 82. However, since the data analyses included mediation, we aimed to include a minimum of 200 participants, assuming a medium effect size for mediation (Sim et al., 2021). The sample consisted of 255 participants; the data had no missing values. However, outlier investigation took place on the self-report scores based on the 1.5 * interquartile range rule from above the third quartile and below the first quartile (Chatterjee & Hadi, 1986). Four outliers were present and excluded from the sample. After excluding outliers, the final sample consisted of 251 participants (Mage = 22.17; SD = 1.51) aged 18 to 25 years. Participants were asked to report their gender by selecting "woman," "man," or "other/prefer not to disclose." Of the participants, 182 (72.50%) selected "woman," 64 (25.50%) selected "man," and five (1.99%) selected "other/prefer not to disclose." The combined option was treated as a separate response category rather than a distinct gender identity.

Participants were university students with varying levels of educational attainment. Educational status indicated that the majority were at the undergraduate (bachelor's) level (n = 220, 87.65%), followed by the master's level (n = 14, 5.58%), high school level (n = 10, 3.98%), and associate degree level (n = 7, 2.78%). Participants reported their perceived social class as follows: The largest proportion identified themselves as middle class (n = 125, 49.80%), followed by upper-middle class (n = 90, 35.86%), and smaller proportions reported being lower-middle class (n = 26, 10.36%), lower class (n = 5, 1.99%), and upper class (n = 5, 1.99%). Participation was voluntary, and course credits were offered to the volunteer participants.

To verify we have established enough power in our analyses, we ran post hoc power analyses with Monte Carlo Power Analysis for Indirect Effects (Schoemann et al., 2014). For the coefficients a = -0.42, b = 0.20, and c' = -0.07, and corresponding standard deviations, the post hoc analyses indicated a power of 0.82.

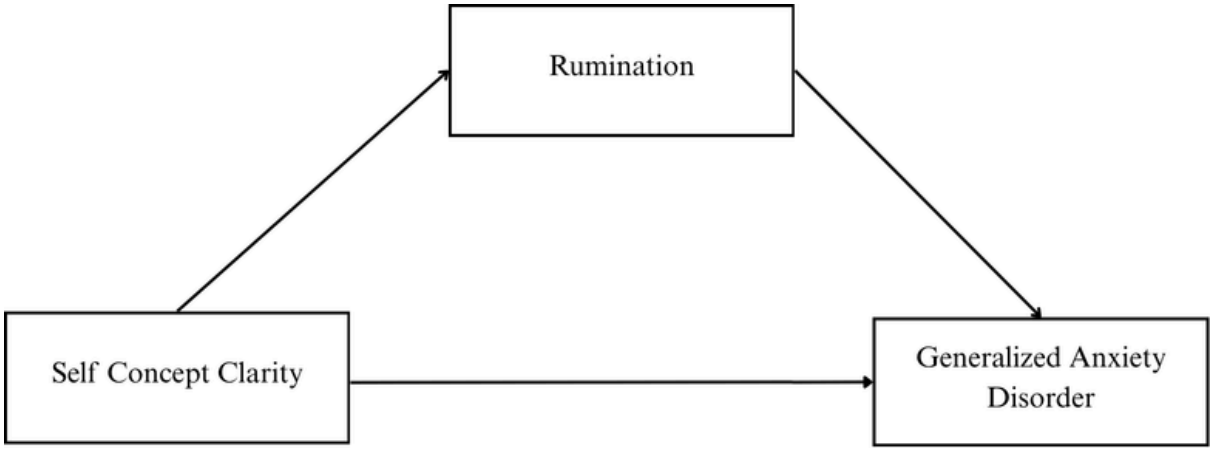

Figure 1. The Hypothesized Mediation Model of Rumination

Measures

The Self-Concept Clarity Scale (SCCS) The SCCS, developed by Campbell et al. (1996), aims to measure the clarity, reliability, and consistency of an individual's beliefs about themselves. The scale comprises 12 items and is structured as a 5-point Likert scale from 1 (Strongly Agree) to 5 (Strongly Disagree). An example item is as follows: "In general, I have a clear sense of who I am and what I am". Responses are summed to obtain final scores, with higher scores indicating higher self-concept clarity. The Turkish adaptation of the SCCS, conducted by Çürükvelioğlu (2014), demonstrated an internal consistency coefficient of .84. The scale demonstrated good internal consistency in the present study (Cronbach's $\alpha = .90$).

The Perseverative Thinking Questionnaire (PTQ) The PTQ, developed by Ehring et al. (2011), is designed to assess the trait disposition for rumination. The scale does not touch upon disorder-specific content, e.g., depressive rumination, and evaluates ruminative thoughts from a transdiagnostic perspective. It comprises 15 items, each of which employs a 4-point Likert scale from 1 (Almost never) to 4 (Almost always). Responses are summed to obtain final scores, with higher scores indicating higher rumination levels. Example items include "Thoughts intrude into my mind", "My thoughts take up all my attention". The Turkish adaptation confirmed its validity and reliability, with an internal consistency coefficient of .95 (Altan-Atalay & Sarıtaş-Atalar, 2018). The scale demonstrated good internal consistency in the present study (Cronbach's $\alpha = .94$).

The Generalized Anxiety Disorder-7 Scale (GAD-7) The GAD-7, developed by Spitzer et al. (2006), is a diagnostic tool used in primary care and the general population. It consists of 7 items, and each item corresponds to the seven symptoms of GAD over the last two weeks, from 0 (Not at all) to 3 (Nearly daily). Responses are summed to obtain a final score for each subscale and overall score. Higher overall scores indicate greater GAD symptoms. "Feeling afraid as if something awful might happen" is an example item from the scale. The Turkish adaptation has been validated for reliability and validity, with an internal consistency coefficient of .85 (Konkan et al., 2013). The scale demonstrated good internal consistency in the present study (Cronbach's $\alpha = .89$).

Procedure

The study information, including the link to the online questionnaire, was presented on the university's research participation platform, similar to SONA, where students can view options to gain course credits. The link directed the students to an online questionnaire in Qualtrics. The online questionnaire included an informed consent form and a demographic information form, followed by self-report scales of study variables. The scales were counterbalanced in a randomized order. This research received approval from the Çankaya University Social Sciences and Humanities Scientific Research and Publication Ethics Committee (Decision No: 154; Date: 02/11/2025) and was conducted in compliance with the Declaration of Helsinki.

Data Analysis

After screening for missing values and outliers, identified using the 1.5 × interquartile range criterion, descriptive statistics were calculated for the study variables. Variable distributions were examined using skewness, kurtosis, Shapiro–Wilk tests, and visual inspection. Regression diagnostics included inspection of residual plots for heteroscedasticity, Cook's distances and standardized residuals for potentially influential observations, and condition indices and variance proportions for multicollinearity (Chattarjee & Hadi, 1986). After data inspection, Pearson correlations were calculated to examine the bivariate associations among self-concept clarity (SCC), rumination, and generalized anxiety disorder (GAD) symptoms. Two-tailed correlations were calculated to allow for associations in either direction.

A simple mediation model was estimated using Model 4 of PROCESS for R (Version 5.0; Hayes, 2022), with SCC as the predictor, rumination as the mediator, and GAD symptoms as the outcome. Age, gender, educational level, and perceived social class were included as covariates in both the mediator and outcome models. The mediator model estimated the association between SCC and rumination (path *a*), whereas the outcome model estimated the association between rumination and GAD symptoms while controlling for SCC (path *b*) and the direct association between SCC and GAD symptoms while controlling for rumination (path *c'*). The indirect effect was calculated as the product of paths *a* and *b*.

The indirect effect was evaluated using 5,000 bootstrap resamples to construct a 95% percentile bootstrap confidence interval and was considered statistically significant when this interval excluded zero. Unstandardized coefficients are reported, and two-tailed significance tests used an α level of .05.

RESULTS

Descriptive Statistics and Assumption Checks

Descriptive statistics for the study variables are presented in Table 1. Mean levels were 8.88 (SD = 4.83) for GAD symptoms, 51.90 (SD = 13.87) for SCCS, and 47.77 (SD = 11.54) for rumination [see Table 1]. GAD severity was minimal in 47 participants (18.73%), mild in 107 (42.63%), moderate in 64 (25.50%), and severe in 33 (13.15%). Based on the GAD severity, the sample is skewed toward lower-to-moderate anxiety, with mild symptoms most common.

Preliminary screening indicated only modest departures from normality (skewness -0.12 to 0.66; kurtosis -0.61 to -0.12). Although Shapiro–Wilk tests were significant for all variables ($ps \leq .05$), visual inspection and the small magnitudes of skewness/kurtosis suggested minimal impact on regression and bootstrap-based inference.

Table 1. Descriptive Statistics for The Study Variables

	M	*SD*	Skew.	Kurt.	Min	Max
SCC	51.90	13.87	-0.12	-0.61	17.00	83.00
GAD	8.88	4.83	0.65	-0.22	1.00	21.00
Rumination	47.77	11.54	0.07	0.12	20.00	75.00

Note: *SD* = standard deviation. Skewness and kurtosis describe distribution shape (univariate). SCC = self-concept clarity; GAD = generalized anxiety disorder symptoms.

Residual plots showed no evidence of heteroscedasticity, so variables were analyzed on their original scales.

Regression diagnostics indicated no problematic influential observations, as investigated by Cook's distances and standardized residuals. Collinearity diagnostics were also within acceptable ranges (condition indices below common thresholds; variance proportions did not suggest problematic overlap), indicating that regression results are reliable (Chattarjee & Hadi, 1986).

Correlational Analyses

Pearson correlation coefficients were calculated to examine the relationships among SCC, rumination, and GAD symptoms. SCC was negatively correlated with GAD symptoms (r = -.44, p < .001) and rumination (r = -.51, p < .001), indicating that lower SCC was associated with higher GAD symptomatology and greater rumination. Rumination was strongly and positively correlated with GAD symptoms (r = .58, p < .001). All correlations were statistically significant and in line with our hypotheses; see Table 2.

Mediation Model

To test whether rumination mediates the association between SCC and GAD, we conducted a classical mediation analysis using PROCESS for R (Version 5.0; Hayes, 2022) Model 4 with 5,000 bootstrap resamples, adjusting for age, gender, demographics, and education levels in both the mediator and outcome models. The model results demonstrated that SCC significantly predicted rumination (b = -0.411, SE = 0.046, t(246) = -8.97, p < .001, 95% CI [-0.501, -0.321]). The model explained 27.96% of the variance in rumination (R^2 = .280, F(5, 246) = 19.09, p < .001). None of the covariates significantly predicted rumination: age (b = -0.707, p = .108, 95% CI [-1.570, 0.155]), gender (b = 0.490, p = .699, 95% CI [-2.005, 2.985]), demographics (b = 1.500, p = .081, 95% CI [-0.183, 3.183]), and education (b = 0.012, p = .993, 95% CI [-2.623, 2.648]).

In the outcome model predicting GAD from SCC and rumination, adjusting for the covariates, rumination was positively associated with GAD (b = 0.197, SE = 0.025, t(245) = 7.93, p < .001, 95% CI [0.148, 0.246]). SCC remained a significant negative predictor of GAD, indicating a residual direct effect even after accounting for the mediator and covariates (b = -0.065, SE = 0.021, t(245) = -3.17, p = .002, 95% CI [-0.106, -0.025]). The model accounted for 37.86% of the variance in GAD (R^2 = .379, F(6, 245) = 24.87, p < .001). None of the covariates significantly predicted GAD: age (b = 0.275, p = .111, 95% CI [-0.063, 0.613]), gender (b = -0.602, p = .224, 95% CI [-1.575, 0.371]), demographics (b = 0.587, p = .081, 95% CI [-0.074, 1.247]), and education (b = -0.309, p = .554, 95% CI [-1.337, 0.719]), see Figure 2.

The indirect effect of SCC on GAD through rumination was significant (b = -0.081, BootSE = 0.014, 95% percentile bootstrap CI [-0.110, -0.055]), indicating that lower SCC was associated with higher rumination, which in turn was associated with higher GAD symptoms. The presence of both a significant indirect effect and a remaining significant direct effect was interpreted as a pattern consistent with mediation between SCC and GAD via rumination after adjustment for the covariates, see Table 3 for standardized coefficients.

Table 2. Zero-Order Correlations Among Study Variables

	1	2	3
SCC	-		
GAD	-.44***	-	
Rumination	-.51***	.58***	-

Note: Values are Pearson's r (two-tailed). SCC = self-concept clarity. GAD = generalized anxiety disorder symptoms.
*p < .05; **p < .01; ***p < .001

DISCUSSION

The present findings extend prior work by offering insight into the cognitive mechanisms through which low SCC may contribute to GAD symptomatology. Although previous research has consistently demonstrated that low SCC is associated with elevated anxiety symptoms (Cicero, 2017; Kusec et al., 2016), the psychological processes underlying this association have remained relatively underexplored. The present study extends this literature by examining rumination as a potential intervening process in the association between SCC and GAD symptoms. The study links SCC with ruminative thinking through which self-related uncertainty may be sustained and contribute to greater GAD symptom severity. This integrated account provides a basis for investigating both self-concept clarity and responses to self-uncertainty, rather than examining their associations with anxiety separately.

Correlational analyses indicated that lower SCC was associated with higher rumination and greater GAD symptoms, while rumination was strongly positively associated with GAD symptoms. The mediation analyses showed that rumination mediated the relationship between SCC and GAD, i.e., lower SCC was associated with greater rumination, which in turn predicted higher GAD symptoms, which remained statistically significant after adjustment for age, gender, education level, and socioeconomic status.

The significant indirect association is consistent with the proposed account that rumination may help explain the relationship between lower SCC and greater GAD symptoms. This finding is consistent with control ac-

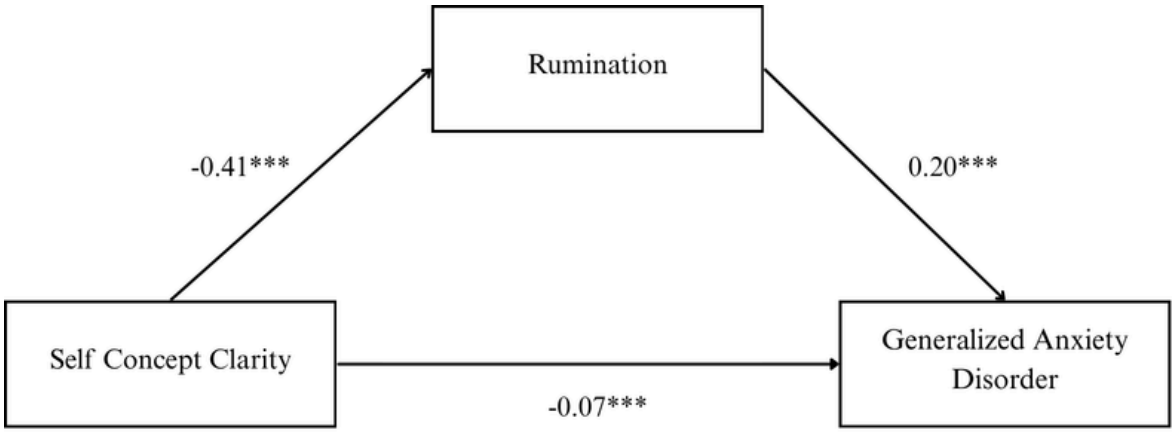

Figure 2. Estimated Mediation Model of Rumination in the Relationship Between Self-Concept Clarity and Generalized Anxiety Disorder Symptoms.

Note: Unstandardized path coefficients are displayed. Solid lines indicate significant paths ($p < .05$); dashed lines indicate non-significant paths. $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

Table 3. Direct, Indirect, and Total Effects of SCC on GAD via Rumination

		Bootstrap 95% CI		
Model Pathways	Effect	LL	UL	Effect Amount
SCC → GAD	-.188	-.305	-.071	
SCC → Rumination → GAD	-.234	-.307	-.164	.554
Total Effect	-.422			

Note: Effects are provided in standardized coefficients (*b*). BootLLCI and BootULCI are the lower and upper bounds of the 95% bias-corrected bootstrap confidence interval for the indirect effect. The effect amount denotes the proportion mediated. SCC = self-concept clarity. GAD = generalized anxiety disorder symptoms. CI = confidence interval; LL = lower limit; UL = upper limit.

counts of rumination, which posit that rumination is triggered by discrepancies between an individual's current state and a desired goal state (Martin & Tesser, 2006). In the present context, the discrepancy between the goal of a coherent and stable self and the experience of an unclear or fragmented self may initiate ruminative thinking. Ruminative thinking may, hence, reallocate cognitive resources to resolve the issue and establish a coherent sense of self (Kusec et al., 2016). Rumination cycle continues as the individuals fail to attain their goal (Martin & Tesser, 2006). When a coherent sense of self is not established, the ruminative cycle may ensue, and repetitive self-focused thinking may become more rigid. Such sustained engagement in negative, self-referential thought may, over time, increase vulnerability to generalized anxiety by maintaining a chronic sense of uncertainty, threat, and cognitive inflexibility (Aldao & Nolen-Hoeksema, 2010; Nolen-Hoeksema et al., 2008; Roberts et al., 2013; Watkins, 2008). Given the central role of rumination in emotion regulation (Lask et al., 2021), executive functioning (Bruning et al., 2023), and reward and avoidance learning (Rutherford et al., 2023), persistent disturbances in the self may give rise to broader functional impairments, reduce approach-oriented behavior, and increase avoidance behavior, thereby further entrenching psychopathology.

These findings suggest that SCC is consequential for therapeutic change, for it supports core treatment processes, and it may protect against repetitive negative thinking. When SCC is low, clients may struggle to commit to change, define problems, identify valued targets, and update self-schemas (Leite & Kuiper, 2008). These difficulties may lead to and be further amplified by rumination, suggesting a clinically relevant question for assessment and case formulation: whether repetitive negative thinking occurs in the context of self-uncertainty. For example, clinicians could explore whether thinking about personal characteristics, values, or decisions helps individuals understand themselves more clearly or becomes a repetitive inquiry that leaves them feeling equally or more uncertain. Such an assessment would distinguish the content of self-related concerns from the manner in which individuals respond to them.

The attentional scope model proposes that ruminative cycling narrows attention toward goal-relevant threat cues and away from task-irrelevant information (Whitmer & Gotlib, 2013), thereby reducing cognitive flexibility and constricting behavioral repertoires (Rutherford et al., 2023). Since rumination typically subsides when individuals make progress toward a goal, attain it, or disengage from it (Martin & Tesser, 2006), interventions may benefit from either helping clients develop a clearer and more coherent sense of self or from fostering greater acceptance of a self that is flexible, evolving, and not contingent on absolute certainty.

The latter approach aligns closely with principles of Acceptance and Commitment Therapy (ACT), particularly the concept of self-as-context, which refers to an observing perspective from which internal experiences can be noticed without being rigidly defined by specific self-concepts (Hayes et al., 2012). This perspective may allow individuals to acknowledge uncertainty or inconsistency in their self-understanding without treating it as a problem that must be fully resolved before they can move forward. The therapeutic emphasis would therefore be on

developing a more flexible relationship with self-related uncertainty, rather than achieving absolute certainty about the self. By reducing the perceived need for repetitive self-analysis, this approach may help attenuate rumination and associated GAD symptoms. However, whether these processes alter the association between SCC, rumination, and anxiety requires investigation in intervention studies.

The study has several limitations: The present study employed a cross-sectional design; thus, we cannot establish temporal precedence or causal direction among SCC, rumination, and anxiety. Although our model posits that low SCC increases vulnerability to rumination, which then contributes to GAD symptoms, bidirectional pathways are plausible and supported by prior work (Blanke et al., 2022; Hertel et al., 2024; Katz, 2016). In GAD, additionally, elevated intolerance of uncertainty may heighten attention to self-related ambiguity, prompting rumination about decisions and their implications, which can further erode SCC and sustain a repetitive negative thinking cycle (Kusec et al., 2016). Longitudinal and experimental studies are needed to test temporal ordering and whether changes in SCC prospectively predict changes in rumination and anxiety.

The sample was non-clinical young adults, predominantly women and undergraduate educated, limiting generalizability to clinical and community populations. These characteristics limit generalizability to other age groups, educational backgrounds, and clinical populations. Covariate adjustment addresses measured demographic variation within the sample but does not correct its limited representativeness. Replication in diagnostically characterized samples with elevated anxiety is needed. GAD symptoms were assessed by self-report rather than a diagnostic interview, so the results concern symptom severity rather than confirmed GAD diagnoses.

All measures were self-reported; shared method variance and response biases may have inflated associations; future work is encouraged to incorporate multi-method assessment. Adjustment for demographic characteristics also does not rule out alternative explanations involving unmeasured psychological variables, such as depressive symptoms, self-esteem, and intolerance of uncertainty (Kusec et al., 2016; Zaw & Baldwin, 2023). Because the study did not compare multiple symptom outcomes, it cannot establish whether the observed indirect association is specific to GAD symptoms or reflects a broader and transdiagnostic relationship with psychological distress (Aldao & Nolen-Hoeksema, 2010; Watkins, 2008). Future research should assess competing explanations and combine self-reports with repeated daily-life assessments and independent clinical evaluations.

Conclusions

Despite limitations, the present study sheds light on how structural aspects of self-concept, i.e., SCC, influence transdiagnostic factors like rumination, identifying potential targets for anxiety interventions. SCC constitutes an essential protective factor to focus on to reduce rumination and, consequently, GAD. High SCC, with persistent links to low levels of anxiety (Glezakis et al., 2024; Hertel et al., 2024; Kusec et al., 2016) and GAD (Cicero, 2017), may work against the emergence and maintenance of psychopathology (Glezakis et al., 2024; Stopa, 2009). The current study highlights that SCC may be effective in reducing repetitive negative thinking patterns regarding GAD. Therapeutic interventions should target the formation of a coherent and transcendent sense of self to break the repetitive negative thought loops and concomitantly reduce GAD symptoms.

DECLARATIONS

Ethics Committee Approval: The study was approved by the Çankaya University Social Sciences and Humanities Scientific Research and Publication Ethics Committee (Decision No: 154; Date: 02/11/2025). All procedures were conducted in accordance with the ethical standards of the institutional and/or national research committee, the 1964 Declaration of Helsinki and its later amendments, or comparable ethical standards.

Conflict of Interest: The authors declare that they have no competing interests.

Informed Consent: This study involved human participants. All participants provided informed consent prior to participation.

Project/Funding: No external funding was received to support this research.

Data Sharing/Availability: The dataset of the current study is available from the corresponding author upon request.

Authors' Contributions: The project was developed by IHB, with CG contributing to the study design. CG and IHB conducted the statistical analyses. Both authors contributed to the writing of the manuscript.

Use of Artificial Intelligence: This study used artificial intelligence to check grammar and improve flow.

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