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and Trait Anxiety**

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## **Self-Compassion as a Mediator of the Relationship between Rumination and Trait Anxiety**

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### **Abstract**

The purpose of the study was to examine whether self-compassion mediated the relationship between rumination and trait anxiety. The sample of the study consisted of 205 individuals (136 females and 69 males) from Turkey. Participants provided their demographics and responded to the Ruminative Response Scale, short version (Treynor, Gonzalez, & Nolen-Hoeksema, 2003), Self-Compassion Scale (Neff, 2003) and State-trait Anxiety Inventory, trait version (Spielberger, Gorsuch & Luschene, 1970). In order to test whether self-compassion mediated the relationship between rumination and anxiety, the mediation analysis was conducted with bootstrapping (Preacher & Hayes, 2008). According to the results, self-compassion partly mediates the relationship between rumination and anxiety. In other words, rumination was statistically significantly related to trait anxiety and this relationship was strengthened by the mediator role of self-compassion.

**Keywords:** Rumination, Self-compassion, Anxiety

## Introduction

Although anxiety can alert the human being against the physical and social environment and facilitates the adaptation process (Greenberger & Padesky, 1995), it may prevent logical and clear thinking (Jones-Coofer, 2008) and increase other negative emotions. Some people have a higher tendency to be anxious; consequently, they are more likely to experience difficulties. The related literature points out links between anxiety and poor academic performance (Seipp, 1991) suicide risk (Apter, Plutchik, & van Praag, 1993), depression (Kennedy & Rogers, 2000), and sleeping problems (Spoormaker & van den Bout, 2004). Then it is important to understand what makes anxiety more difficult to cope with for some people? One line of research suggests that some other trait characteristics may exacerbate the poor coping with anxiety. Rumination and self-compassion appear to be two of those characteristics that found to be correlated to anxiety.

Rumination is described as repetitive thinking that engages in symptoms of distress in a passive way without taking an action to solve a problem (Nolen-Hoeksema, 1998). Ruminative people are more likely to be pessimistic (Ward, Lyubomirsky, Sousa, & Nolen-Hoeksema, 2003), feel stuck in and engage in repetitive thought patterns which increase their depressive and anxious mood (Lyubomirsky, Tucker, Caldwell, & Berg, 1999). Therefore, anxiety is anticipated by rumination (Blagden & Craske, 1996; Nolen-Hoeksema, 2000). Moreover, ruminators are poor problem solvers. That is, ruminators may have maladaptive strategies to handle the ongoing distress (Lyubomirsky & Nolen-Hoeksema, 1995). Repetitive thinking and being unable to solve problems may also cause feeling of inadequacy and in turn, their anxiety may be increased. As they get more anxious they may engage in more rumination. This cyclical pattern perpetuates the development of psychological problems, especially, in the face of adverse life events (Hong, 2007). Therefore, for the present study, it is expected that rumination will be closely related to anxiety.

While rumination has a potential to be a risk factor for anxiety, self-compassion may have a buffering effect. Self-compassion was described as “being open to and moved by one’s own suffering, experiencing feelings of caring and kindness toward oneself, taking an understanding, nonjudgmental attitude toward one’s inadequacies and failures, and recognizing that one’s experience is part of the common human experience” (Neff, 2003, p. 224). It lets individuals to have a larger perspective on themselves and their lives (Germer & Neff, 2013). The self-compassion has a positive relationship with better physical and psychological well-being (Alink, Cicchetti, Kim, & Rogosh, 2012; Danese, Pariante, Caspi, Taylor, & Poulton, 2007; Neff, 2003, 2009). It helps people to tackle the problems with common humanity, kindness and mindfulness; because of self-compassion’s three factors (self-kindness, common humanity, and mindfulness) (Neff, 2003). Individuals with self-compassion approach themselves with these three factors and with recruit of these factors accept own weakness (Neff, 2003).

A relatively new literature offers cumulating evidences that rumination may be dealt with self-compassion. This literature suggests that self-compassion has a potential to weaken and/or strengthen the relationship between rumination and anxiety mood. This study aims to provide evidences to understand whether self-compassion may indeed play a determining role in the linkage between rumination and anxiety. The motivation for the study comes from the earlier

research findings that higher self-compassion is related to not only lower anxiety and depression but also rumination (Neff, Kirkpatrick, & Rude, 2007). Lower rumination is one of the advantages of self-compassion (Raes, 2010). People with high self-compassionate ruminate less than people with low self-compassion tendency (Neff, Kirkpatrick, & Rude, 2007). Moreover, Raes (2010) found on a study that rumination mediates the relationship between self-compassion and depression and anxiety. Neff, Kirkpatrick and Rude (2007) pointed that self-compassion is related negatively to both rumination and anxiety. The relationship between self-compassion and anxiety had been tested in different studies. The results of those studies showed that the people with high self-compassion have low anxiety. Self-compassion was found as a reducing agent for depression and anxiety (Pauley & McPherson, 2010). Moreover, the previous studies show that self-compassion and anxiety have a negative relationship; when self-compassion increases, anxiety decreases (Neff, Kirkpatrick, & Rude, 2007; Neff, 2003) because self-compassion consists to be kind to oneself and to be nonjudgmental to inadequacies of oneself (Neff, 2003). Therefore, in this study, it was predicted that self-compassion may play determining role in the relationship between rumination and anxiety.

In short, separate line of research reported the relationships among the variables of rumination, anxiety, and self-compassion yet underlying mechanism among such relationships is yet to be better understood. A study by Raes (2010) examined the mediator role of rumination with its two factors (brooding and reflection) on the relationship between self-compassion and anxiety and reported that brooding indeed acts as mediator and reflection does not. However, one alternative mediation model may also be possible. Self-compassion may also be considered as mediator between rumination and anxiety. This study attempted to test whether the relationship between rumination and anxiety may be explained with the help of self-compassion. Therefore, the current study tried to find an answer to that main question: "Does self-compassion play a significant mediator role in explaining the relationship between rumination and anxiety?". Answering this question should have certain implications for professionals who are working in area of psychology, the researchers and for individuals who are suffering from anxiety or rumination. The expected result of the study is to find that people with low rumination would have high self-compassion; therefore, they would have low anxiety.

## **Method**

### *Research Design, Participants & Procedure*

The design of the research was cross-sectional survey. The data were collected online over a one-week time period. Participants were from Turkey and represented a sample of convenience. Of the 205 participants who completed the survey, 136 were female (66.3%) and 69 were male (33.7%) and their age varied between 20 and 63 ( $M = 31.8$ ,  $SD = 7.8$ ). More than the half of the participants 57.1% had undergraduate degree, 22.4% of the participants had

master, and 17,6% of the participants had a doctorate degree. Finally, the rest of the participants reported to have a high school degree. All the participants reported to have a career/job.

Prior to data collection, the Research Center for Applied Ethics Committee of METU approved the research. At the beginning of online questionnaire, the purpose of the study was explained and the questionnaires were administered to volunteer participants. Administration took approximately 15 minutes.

### *Instruments*

A demographic information form and three instruments were utilized State-Trait Anxiety Inventory, trait version (STAI-T), the Ruminative Response Scale (RRS) and Self-compassion Scale (SCS).

#### Demographic Information Form

A short demographic form was utilized and it included; gender, age, education level and vocation.

#### State-Trait Anxiety Inventory, Trait Version (STAI-T)

The STAI-T was developed by Spielberger, Gorsuch and Luschene (1970). Although it is a dated questionnaire, one of the best set anxiety measures is STAI which have been used in many researches (McDowell, 2006). According to Piotrowski's study (1999) it is most cited inventory than the measures of anxiety. It is a 20-item self-report scale which measures the trait anxiety. STAI-T is a 4 -point Likert-scale (1 "Almost Never" to 4 "Almost Always") and higher scores means higher anxiety. Spielberger, Gorsuch and Luschene (1970) reported that the internal consistency of the scale ranging between .89 and .90 and test-retest reliability showed a range from .73 to .86; furthermore, one-week retest reliability scores showed a range between .78 and .83 for trait anxiety scores (as cited in McDowell, 2006). The validity of the scale was confirmed (Metzger, 1976). Öner and Le Compte (1983) adapted the questionnaire to Turkish language. The internal consistency reliability of the Turkish version was found as ranging between .83 and .87. Test-retest reliability coefficients were reported as ranging between .71 and .86 (Öner & Le Compte, 1983). In the current study, the Cronbach's alphas of the scale were found as .91.

Confirmatory Factor Analysis (CFA) was utilized to verify the factor structure and provide construct validity of the scale. Item parceling could be used on CFA with questionnaires which have more than 5 items (Kline, 2011). In the model testing four item parcels were created according to means of the items. Therefore, in the present study STAI-T was used with four indicators and each of them had five items. The results of CFA showed a good fitting model ( $\chi^2(2) = 3.92, p > .05$ ) and  $\chi^2/df = 1.96$ . Other fit indexes were RMSEA value .07,  $pClose > .05$ , CFI value .99, TLI value .99, and SRMR value .01 were found. Standardized estimates ranged between .76 and .92.

Ruminative Response Scale (RRS)

Treynor, Gonzalez, and Nolen-Hoeksema (2003) created a 10 items scale with two factors (brooding and reflection) which is a 4-point rating scale (1 “almost never” to 4 “almost always”). The coefficient alpha of the Reflection subscale and Brooding subscales were found as .72 and .77, respectively and one year test-retest reliability showed the correlation of .60 and .62, respectively (Treynor et al., 2003). Erdur-Baker and Bugay (2012) adapted the short version of the Ruminative Response Scale to the Turkish. They reported Cronbach’s alpha of the short version RRS as .85 and for the subscales as .77 and .75. Erdur-Baker and Bugay (2012) reported that one factor structure may be used as these two sub factors correlated to the outcome variables (depression) in a same direction. In the present study, two factors were found correlated, therefore, one factor structure of the short version RRS was used. In the current study the Cronbach’s alphas for the one factor structure of RRS were found as .83.

To verify the factor structure and provide construct validity of the scale Confirmatory Factor Analysis (CFA) was used. The results of CFA showed a poor fitting model with the fit indexes ( $\chi^2(35) = 101.52, p < .05$ ) and  $\chi^2/df = 2.90$ , RMSEA value .10,  $pClose > .05$ , CFI value .89, TLI value .86, and SRMR value .07 were found. Therefore, modification indexes were checked and seen the error covariance of items 5-10, 6-7 and 7-8 were freely estimated. Then, covariance of errors of these parcels was related. Then, it showed a good fitting model ( $\chi^2(32) = 58.96, p < .05$ ) and  $\chi^2/df = 1.84$ . Other fit indexes were RMSEA value .06,  $pClose > .05$ , CFI value .96, TLI value .94, and SRMR value .05 were found. Standardized estimates ranged between .33 and .80.

Self-compassion Scale (SCS)

Self-Compassion Scale (SCS) was developed by Neff (2003). It is a 26 item with 5-point Likert scale ranging from *almost never (1)* to *almost always (5)*. SCS has six subscales which are self-kindness, self-judgment, awareness of common humanity, isolation, mindfulness and over-identification. Cronbach’s alpha coefficient for the overall scale was .92, and for the subscales .78, .77, .80, .79, .75, .81, respectively. Test-retest reliability coefficient for the overall scale was .93, and for the subscales .88, .88, .80, .85, .85, .88, respectively (Neff, 2003). The Turkish adaptation of the scale was conducted by Deniz, Kesici and Sümer (2008). According to adaptation study, the scale has one factor structure with 24 items. The internal consistency coefficient of the scale was reported as .89 and the test-retest reliability coefficients were found as .83 with an interval of three weeks (Deniz, Kesici & Sümer, 2008). In the present study, the Cronbach’s alphas for the SCS were found as .94.

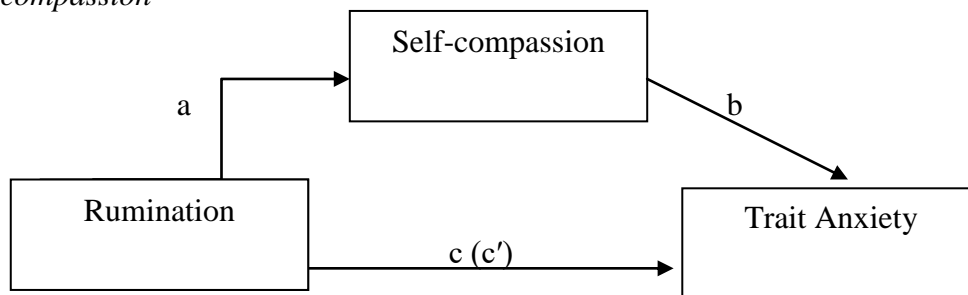
CFA was used to test one factor structure SCS. According to Kline (2011), item parceling on CFA can be used with questionnaires which have more than 5 items; therefore, for SCS item parceling was used. In the model testing five item parcels were created according to mean scores of the items of the scale. Therefore, in the present study SCS was used with five indicators and four of

them with five items and one of them with 4 items. It showed a poor fitting model  $\chi^2(5) = 17.06$ ,  $p < .05$  and  $\chi^2/df = 3.41$ , RMSEA = .11,  $p_{Close} < .05$ , CFI= .99, TLI=.98, and SRMR =.01. Then, modification indexes were checked and seen the error covariance of parcel 1- parcel 4 were freely estimated. Therefore, covariance of errors of these parcels was related. After that CFA was repeated and the results showed a good fit model  $\chi^2(4) = 4.79$ ,  $p > .05$  and  $\chi^2/df = 1.20$ , RMSEA=.03,  $p_{Close} > .05$ , CFI= .99, TLI= .99, and SRMR =.01. Standardized estimates ranged between .85 and .93.

*Data Analysis*

In the beginning, the descriptive statistics were employed to examine the characteristics of the sample and the variables of the study. Secondly, the correlation coefficients between pairs of variables and the reliability scores (Cronbach’s alphas) of each instrument were examined. Then, Confirmatory Factor Analyses (CFA) were utilized to verify the factor structure of each **measurement** instrument and provide their construct validity for the current sample via AMOS 18. The reliability scores of the instruments and CFA were written below of each instrument’s title. Before conducting the main analysis, the missing values and assumptions of the Regression Analysis were checked. Lastly, mediation analysis with the bootstrapping approach which is a regression based approach, recommended by Preacher and Hayes (2008), was used to examine the main research question which was the mediator role of self-compassion on the relationship between rumination and trait anxiety via PASW 18 (Figure1) with the macro Process. In figure, “path a” showed rumination predicts self compassion and “path b” showed self-compassion predicts trait anxiety. On “path c” rumination predicts trait anxiety and on “path c’” rumination variable no longer predicts or is lessened predicting trait anxiety were shown.

**Figure 1.** *Mediation model for Rumination on Trait Anxiety through Self-compassion*



**Results**

As a first step, descriptive analyses were conducted. The mean scores and standard deviations of the variables were shown on the Table 1. The mean score for the “Rumination Response Scale” was 22.47 (SD = 5.31), and for the



“Self-compassion Scale” was 76.15 ( $SD = 18.04$ ) and for the “Trait Anxiety Inventory” was  $M = 45.88$  ( $SD = 10.72$ ). Moreover, as they reported in the method title, the Cronbach’s alphas values of the scales showed the reliability and the Confirmatory Factor Analyses (CFA) results showed the construct validity of each measurement instrument for the current sample.

Before conducting mediation analysis, correlation coefficients between pairs of variables were computed. Results showed that all of the variables were significantly correlated with each other; rumination and trait anxiety had a positive correlation, self compassion had a negative correlation with rumination and trait anxiety. Correlation coefficients between pairs of variables were shown on the Table 1.

**Table 1.** Means, Standard Deviations of the Variables and Bivariate Correlations among the Variables

Measure	M	SD	Rumination	Self-compassion	Trait anxiety
Rumination	22.47	5.31	-		
Self-compassion	76.15	18.04	-.535**	-	
Trait anxiety	45.88	10.72	.611**	-.762**	-

\*\* $p < .01$

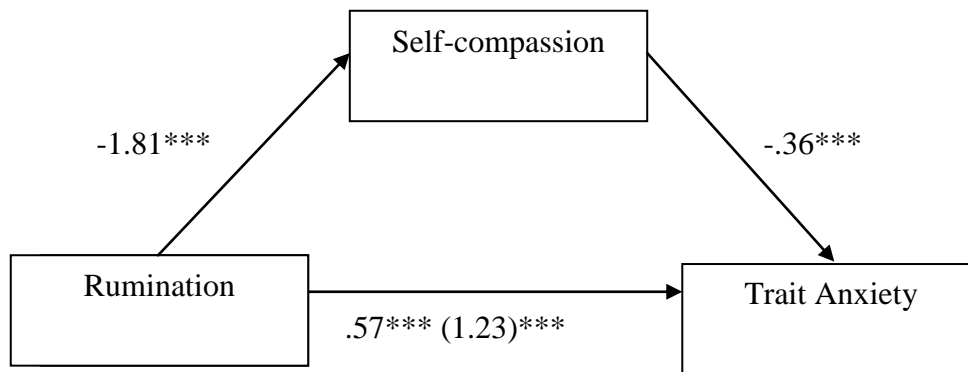
Although the number of missing values did not exceed 5% for any of the variables and followed a random pattern (Tabachnick & Fidell 2007), Expectation Maximization (EM) algorithm were used to impute the missing values (Tabachnick & Fidell 2007). After checking the missing values, the required assumptions (linearity, homoscedasticity, normality, outliers, multicollinearity) were examined.

In order to examine linearity and homoscedasticity, residual plots and bivariate scatter plots were used. Residuals did not show any pattern. Because of oval-shaped array was shown on inspection of bivariate scatter plots that means variances were homogeneously distributed. Normality was checked by histograms, skewness and kurtosis values. Histograms showed a normally distribution. Skewness and kurtosis values were in the range of -3 and +3 which is an indicator of normality (Tabachnick & Fidell, 2007). Mahalanobis Distances was used to check multivariate outliers. Only one of the cases was outlier. The main analysis was repeated without and with the outlier. Because there was no difference, the outlier case was not erased. Examining the results of assumption check analyses revealed no gross violation.

Regression analyses with bootstrapping as recommended by Preacher and Hayes (2008) were conducted to test the total and indirect effects of the self-compassion on the relationship between rumination and trait anxiety which is the mediation model, represented in Figure 1. *Bootstrapping* is a computer intensive that can use to handle with non-normal samples. In a study of Hayes (2009) mediation with bootstrapping method was described with its advantages against to Baron and Kenny steps and in another study of Hayes, Montoya, and Rockwood (2017) against to Structural Equalization Model.

The overall results of the model was significant  $F(1,203) = 120.85, p = .00, R^2 = .37$ . Results showed statistically significant regression coefficients for each path shown in Figure 1. Rumination predicted trait anxiety ( $b = 1.23, t(203) = 10.99, p = .00$ ); rumination predicted self-compassion ( $b = -1.81, t(203) = -9.03, p = .00$ ), and self-compassion, the mediator variable, predicted trait anxiety ( $b = -.36, t(203) = -12.16, p = .00$ ). The bootstrapping method with bias-corrected confidence estimates were used to measure mediation analyses, because both the a-path and b-path were significant (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2004). In the current study, bootstrapping analysis with 5000 resamples attempted and 95% confidence interval of the indirect effects was gotten (Preacher & Hayes, 2008). The indirect effect between rumination and trait anxiety was found ( $b = .1.23, t(203) = 10.99, p = .00$ ). According to the results of the mediation analysis, self-compassion was found as a partial mediator of the relationship between rumination and trait anxiety the difference between total and direct effect was ( $b = .66; CI = .48$  to  $.85$ ) because the direct effect of rumination on trait anxiety was significant ( $b = .57, t(203) = 5.68, p = .00$ ) by controlling for self-compassion (Figure 2).

**Figure 2.** *Indirect Effect of Rumination on Trait Anxiety through Self-compassion*



Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

## Discussion and Conclusion

The purpose of this research was to evaluate the mediating relationship of self-compassion on the relationship of rumination and trait anxiety. All the direct relationships of rumination to trait anxiety, rumination to self-compassion, and self-compassion to trait anxiety showed statistically significant relationships. Rumination was positively related to trait anxiety suggesting that higher levels of rumination related to higher levels of trait anxiety. Additionally, there were inverse relationships between rumination and self-compassion and self-compassion and trait anxiety suggesting that higher level of rumination was related to lower levels of self-compassion and that lower levels of self-compassion was related to higher levels of trait anxiety. The results suggested that the self-compassion mediated the relationships between rumination and trait anxiety. Rumination was a predictor of trait anxiety. Self-compassion was a predictor of

trait anxiety; and rumination was a predictor of self-compassion. Self-compassion was partially mediating because when self-compassion was considered as a mediator on the relationship between rumination and anxiety, it was determined that the relationship between rumination and trait anxiety became stronger.

The present findings show that self-compassion mediated the relationship between rumination on anxiety. The predictor role of rumination on anxiety was expected, because the positive relationship between these two negative moods was studied (e.g. Hong, 2007; Wood, Saltzberg, Neale, Stone, & Rachmiel, 1990). The earlier reports show that self-compassion and anxiety have a negative relationship; when self-compassion increases, anxiety decreases (Neff, Kirkpatrick, & Rude, 2007; Neff, 2003); therefore, it was not surprising to find that self-compassion mediated the relationship between rumination and anxiety. This study showed that although being ruminative is a risk factor for anxiety, low self-compassion raising the risk of experiencing anxiety.

As a contribution to the literature, the present study found the mediator role of self-compassion on the relationship between rumination and trait anxiety. The results supported the idea that having high anxiety was not only related with high rumination, but also low self-compassion is a key point. As an implication of the study, the trainings which are for raising self-compassion could be a part of the prevention or struggle trainings of anxiety and rumination. Therefore, the findings of the current study can be useful to professionals in the psychology area, the researchers and individuals who are suffering from anxiety or rumination. The professionals may utilize the mediator role of self-compassion on the relationship between rumination and anxiety that can be useful with clients who have rumination or anxiety. The improvements of the clients to handle with anxiety are like that cognitive therapy was 76 %, anxiety management 49 % and analytic therapy 42% (Durham, Murphy, Allan, Richard, Treiving, & Fenton, 1994). Besides, increasing self-compassion can use as a prevention method. Empowering the self-compassion of the clients can help clients while dealing with their anxiety or rumination. Mindful Self-Compassion training (MSC), Mindfulness-based Cognitive therapy (MBCT) and Mindfulness-based Stress Reduction (MBSR) (Germer & Neff, 2013) can be useful to professionals to help their clients or individuals who want to empower their self-compassion. Anxiety and rumination are negative moods they can make the life of the individuals difficult. However, self-compassion is helpful to reduce them. Mental health professionals can use effectively the help of the self-compassion.

The current study has some limitations that need to be mentioned. The convenient sampling method limits the generalizability of the results. Other limitations of the study are; data were gathered only with online data collection and the cross-sectional design. Moreover, causal statements about these variables cannot be made, even though the relationships showed statistically significant results. By considering above limitations the suggestions for the further studies are; by employing a larger sample with diversity of properties and using random sampling to raise generalizability. It is important to say that because self-compassion is a partial mediator it does not mean only the self-compassion is mediating that relationship between rumination and anxiety. There could be

other variables that can mediate this relationship. For example, Yu, Chen, Liu, Yu, & Zhao (2015) found that dispositional optimism has a mediating effect on the relationship between rumination and anxiety. This study suggests testing other variables which can mediate this relationship. Moreover, cross-cultural studies could be helpful to see the differences of macro-societal factors. Alongside the limitations, up to our knowledge, the current study has been the first study that had examined the mediator role of self-compassion on the relationship between rumination and trait anxiety.

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