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ACADEMIC JOURNAL OF PSYCHOLOGY AND COUNSELING

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Thinking Again And Again: The Link Between Rumination And Creativity With Anxiety As A Mediator

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Keywords:

anxiety; brooding;
creativity;
mediation analysis;
reflective
rumination

Abstract

It is not uncommon to find that many creative people are anxious and ruminative. This study investigated the association between two types of rumination (brooding and reflection) and creativity and the mediating role of anxiety in a general population. This cross-sectional quantitative study involved 135 Filipino adults, whose ages ranged from 18 to 53 years old. The respondents were recruited online using the chain referral technique. Three instruments of measurement were used in facilitating the online data collection namely, Rumination Response Scale – Short Form, Beck Anxiety Inventory (BAI), and Runco Ideational Behavior Scale (RIBS). Mediation analyses were performed using the General Linear Model technique to test the hypotheses of the study. The results showed a positive association between the two types of rumination and creativity. Anxiety also showed a significant positive association with creativity and was a significant mediator between the two types of rumination and creativity. The findings added a new contribution to the existing body of knowledge about the mediating role of anxiety between rumination and creativity. Implications for counseling were offered where rumination and anxiety could be tapped as psychological resources to improve creativity. Future research directions were also offered.

	Abstrak
Kata kunci: kecemasan; merenung; keaktivitas; analisis mediasi; perenungan reflektif	Tidak jarang ditemukan banyak orang kreatif yang cemas dan merenung. Penelitian ini menyelidiki hubungan antara dua jenis perenungan (merenung dan refleksi) dan kreativitas serta peran mediasi kecemasan pada populasi umum. Penelitian kuantitatif cross-sectional ini melibatkan 135 orang dewasa Filipina, yang usianya berkisar antara 18 hingga 53 tahun. Responden direkrut secara online dengan menggunakan teknik rujukan berantai. Tiga instrumen pengukuran yang digunakan dalam memfasilitasi pengumpulan data secara daring, yaitu <i>Rumination Response Scale – Short Form</i> , <i>Beck Anxiety Inventory</i> (BAI) dan <i>Runco Ideational Behavior Scale</i> (RIBS). Analisis mediasi dilakukan dengan menggunakan teknik <i>General Linear Model</i> untuk menguji hipotesis penelitian. Hasilnya menunjukkan hubungan positif antara kedua jenis perenungan dan kreativitas. Kecemasan juga menunjukkan hubungan positif yang signifikan dengan kreativitas dan merupakan mediator yang signifikan antara kedua jenis perenungan dan kreativitas. Temuan ini menambah kontribusi baru pada pengetahuan yang ada tentang peran mediasi kecemasan antara perenungan dan kreativitas. Implikasi untuk konseling ditawarkan di mana perenungan dan kecemasan dapat dimanfaatkan sebagai sumber psikologis untuk meningkatkan kreativitas. Arah penelitian di masa depan juga ditawarkan.

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INTRODUCTION

Background of the Study

Rumination is a type of repetitive thinking in which the individual focuses on bad thoughts, generally from the past or present, and experiences emotional distress as a result of such thinking (Michl, McLaughlin, Shepherd, & Nolen-Hoeksema, 2013). It could be a serious mental health problem, as those who are prone to ruminating thoughts are at a greater risk of developing anxiety and depression (Kalmbach, Pillai, & Ciesla, 2016; Kim, Jin, Jung, Hahn, & Lee, 2017; Ruscio et al., 2015). Despite the negative consequences of rumination, researchers revealed a notable connection between rumination and creativity. More recent studies revealed

that rumination has a positive causal effect on creativity (Jamison, Gerner, Hammen, & Padesky, 1980; Verhaeghen, Joormann, & Aikman, 2014; Yang & Li, 2020) suggesting that not all kinds of rumination have negative outcomes. It was elucidated that rumination allows individuals to hold ideas in their conscious faculties to produce and refine creative ideas and behavior, hence the link between the two constructs (Cohen & Ferrari, 2010; Verhaeghen, Joormann, & Khan, 2005).

According to Nolen-Hoeksema, Wisco, & Lyubomirsky (2008), rumination is distinguished by its thought style rather than its negative substance. This suggests that rumination does not inevitably produce depression, because even healthy individuals exhibit this thought mode, and they do not necessarily focus on negative affects or personal traits. Rumination may be both a protective and a risk factor, helping people to ruminate on positive information, and lowering the likelihood of developing depression symptoms (Harding & Mezulis, 2017).

In this study, rumination is defined as one's inclination to employ negative thinking when in a negative mood (Treynor, Gonzalez, & Nolen-Hoeksema, 2003). Two of the varied forms of rumination are brooding and reflective ruminations. In this study, brooding pertains to the tendency to criticize and negatively evaluate oneself based on certain standards. Reflective rumination in this study refers to active problem-solving directed toward overcoming certain difficulties. Though both types are not considered adaptive, reflective rumination is associated with lower levels of negative emotions than brooding (Ordaz et al., 2017).

Brooding and reflective rumination may have differential impacts on creativity. An earlier study by Cohen & Ferrari (2010) proved that reflective and brooding ruminations have distinct effects on creativity. Reflective rumination was positively associated with creativity while brooding was not significantly related to the creativity measure that was employed in their study. Moreover, Verhaeghen et al. (2014) demonstrated that brooding is connected to dysphoria while reflections are linked to creativity. They concluded that the way a person examines their life is critical to the development of either depression or creativity. To explain the link between rumination and creativity, some researchers reasoned that a reflecting ruminative pattern would keep a certain construct in the conscious mind for a longer

period, enabling further development (Verhaeghen et al., 2005). Rumination allows people to devote more conscious capabilities to producing and improving innovative ideas or actions (Cohen & Ferrari, 2010; Wang, Zhao, Yuan, & Shi, 2020; Xu et al., 2022).

It is also established that rumination is positively linked to anxiety. Rumination has been identified as the passive and repetitive pondering of negative emotions and their possible causes and effects (Michl et al., 2013). This repetitive thinking triggers unpleasant recollections from the past and incites a negative response to the current situation. It can reinforce the feeling of failure and helplessness. Rumination may eventually lead to emotional disorders like depression and anxiety. The repetition and the sense of inadequacy can increase anxiety (Chen, Rapee, & Abbott, 2013).

Rumination is a term frequently used in correspondence with anxiety, but the two are distinctive psychological states. Rumination is more of a cognitive construct while anxiety is an affective construct. Anxiety relates to the preoccupation with perceived threats in the future and how to successfully prevent or cope with them, whereas rumination is more focused on past occurrences (Davey & Wells, 2009). In this study, anxiety refers to the intensity of somatic and cognitive symptoms of anxiety as measured by the Beck Anxiety Inventory (Maust et al., 2012).

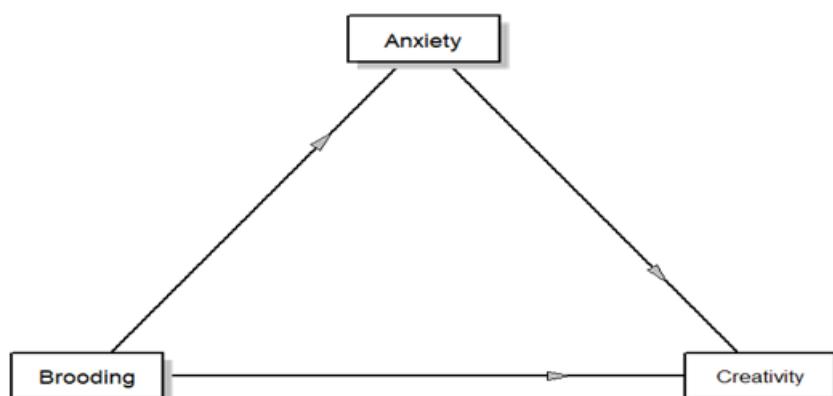


Figure 1. Model 1: Association Between Brooding And Creativity Through Anxiety

While rumination is closely linked with anxiety, anxiety is also found to be related to creativity (Billote et al., 2021; Daker et al., 2023; Rohmah, Sunardi, Irvan, Hobri, & Dewi, 2020; Tabrizi, Talib, & Yaacob, 2011). Anxiety is characterized by feelings of tightness, worrisome thoughts, and physical changes (American Psychiatric Association, 2022). Anxiety may have a devastating impact on life,

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making it difficult for individuals to pay attention, which can hinder social and professional lives. In such situations, anxiety can be deemed maladaptive. However, anxiety can also have a good (excitatory) effect on a person, as it can improve one's ability to notice and escape danger (Beddington et al., 2008).

In line with this, prior studies found an important link between anxiety and creativity (Lifshin et al., 2023; Pavitra, Chandrashekar, & Choudhury, 2007). A study by Little & Wuensch (2015) revealed that facilitating anxiety, rather than devastating anxiety, has a major influence on creative capacity. The authors described facilitating anxiety as a motivating factor while debilitating anxiety is characterized by worry and distraction. The present study, however, did not differentiate between facilitating and debilitating anxiety as it only considered the cognitive and somatic symptoms of anxiety.

Likewise, negative affect may contribute more to creativity than positive emotion (Hennessey & Amabile, 2010). Negative mood bolstered efforts on problems and tasks deemed as serious and important (Friedman, Förster, & Denzler, 2007). Moreover, Rubinstein's (2008) research revealed that people with anxiety tend to display higher divergent-thinking fluency scores, which may explain the link between anxiety and creativity.

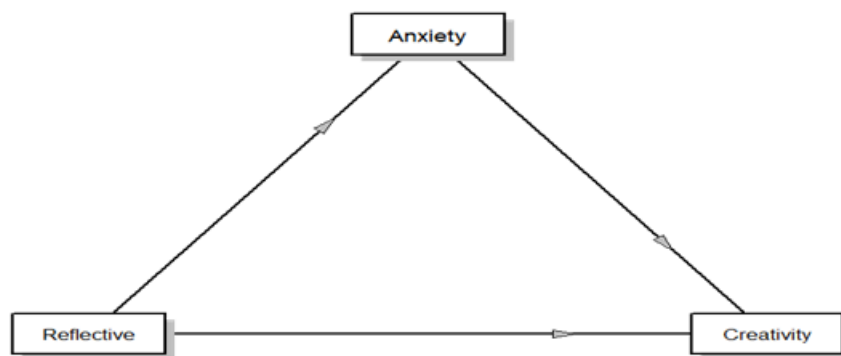


Figure 2. Model 2: Association Between Reflective Rumination And Creativity Through Anxiety

Some theories may be helpful in the deeper understanding of the relationship between anxiety and creativity and the possibility of anxiety as a mediator between rumination and creativity. One explanation is the dual pathway of creativity, which explains how positive and negative emotional states enhance creativity. This model demonstrates that positive mood states stimulate flexibility, which is one pathway *Thinking Again And Again: The Link Between Rumination And Creativity With Anxiety As A Mediator* Divine Grace C. Escobar, Jeannie A. Perez

toward creativity. On the other hand, negative mood, including anxiety, stimulates persistence which is the other pathway to creativity (Nijstad, De Dreu, Rietzschel, & Baas, 2010).

Fedor, Szathmáry, & Öllinger (2015) described the five stages of problem-solving, which is a form of creativity. The first stage is the *constrained search*, where the problem-solver repeatedly attempts to solve a problem but without success. This initial stage is characterized by a conscious search for a solution. Then the second stage is the *impasse*, where incubation and fixation may happen and the emotional correlates at this stage are frustration, “feeling stuck,” and perhaps anxiety. Then the third is the *insight stage*, where representational change unfolds, and the “eureka” moment transpires. Then the fourth and fifth stages are the *extended search* and *solution* stages, respectively. These are the stages where the solution is eventually achieved. Based on these stages of problem-solving, rumination may take place at the first stage or the constrained search. Then, anxiety may then build up as the problem-solving process continues to the second stage, which is the *impasse*. Creativity may then take place from the third to the fifth stages.

Research Gap

Recent studies have shown the complexity and distinctiveness of the rumination-creativity dynamic. Studies involving Chinese samples revealed that intrusive rumination, a negative form of rumination, was positively associated with creativity (Wang et al., 2020; Xu et al., 2022), suggesting that there is yet an indefinite conclusion regarding the relationship between rumination and creativity. These studies were mainly conducted among Chinese undergraduates, and they used a different scale to measure rumination, specifically, the Event Related Rumination Inventory (ERRI). The present study was conducted among Filipino adults and the Rumination Response Scale (RRS) was used to measure rumination.

However, not all findings about the relationship between rumination and creativity have a solid conclusion. Sagggar et al. (2015) found that "overthinking" or ruminating (having to depend only on the brain's relatively high, executive-control regions in the cerebrum) hinders creativity, fresh ideas, and the capacity to think out

of the box. According to [Saggar et al. \(2015\)](#), the activation of the brain's executive control centers is negatively linked with creative task performance.

In connection with this, [Bergland \(2015\)](#) said creativity needs determination and drive but also a certain level of relaxation to give way to a smooth flow of “creative juices.” Hence, he suggested that Type A people need to loosen up and allow themselves to “space out” and daydream to avoid “paralysis by analysis” or the failure to solve a problem within a natural time frame. These seemingly conflicting findings regarding the role of rumination on creativity beg for more research on this topic.

Despite being different constructs, rumination is linked to a greater likelihood of anxiety symptoms ([Dickson, Moberly, & Huntley, 2019](#); [Hankin et al., 2015](#); [Kalmbach et al., 2016](#); [Michl et al., 2013](#)). However, not all types of ruminations result in anxiety ([Lauren, 2006](#)). Previous studies specifically showed that brooding was positively associated with depressive symptoms ([Bastin, Mezulis, Ahles, Raes, & Bijttebier, 2015](#)) and suicide ideation ([Cole et al., 2015](#)). Reflective rumination on the other hand was reported to contribute less to emotion and may even be observed as neutral ([Adrian, McCarty, King, McCauley, & Stoep, 2014](#); [Newman & Nezlek, 2019](#)). [Kim & Kang \(2022\)](#) found a negative link between brooding and well-being, and a positive correlation between reflection and life satisfaction. Rumination, which is not directed at emotion and self, tends to decrease anxious mood. This indicates that it is the content of rumination that perhaps affects anxiety. In earlier studies, ruminators reported that ruminating helped them to cope with their problems, gain self-awareness, and prevent future mistakes ([Papageorgiou & Wells, 2001b, 2001a](#); [Simpson & Papageorgiou, 2003](#)). Interestingly, anxiety is also common among creative people. It is not unusual to discover that musicians, singers, writers, and performers battle with mental health concerns like anxiety ([Loveday, Musgrave, & Gross, 2023](#)).

[Silvia & Kimbrel \(2010\)](#) reported that anxiety predicted little variation in creativity, suggesting that the two constructs were barely linked together. This contradictory finding suggests that there is no consistent conclusion about the underlying mechanisms among the variables under study. Limited studies to date

have tested the mediators of the association between rumination and creativity. Anxiety was tested as a mediator in other psychological variables but the possibility of anxiety as a mediator in the relationship between rumination and anxiety, to the researchers' knowledge is unexplored (Cypryńska & Nezlek, 2020; Egan et al., 2013; Nima, Rosenberg, Archer, & Garcia, 2013; Xu et al., 2022). Previous studies delved into post-traumatic growth, post-traumatic stress disorder, and psychological resilience as mediators between rumination and creativity (Wang et al., 2020; Xu et al., 2021, 2022). Further investigation into the potential mediation role of anxiety between rumination and creativity may help to unravel the relationship between the two.

Rationale Of The Study

While studies on the relationship between rumination and creativity have been conducted among college students (Verhaeghen et al., 2014; Wang et al., 2020; Xu et al., 2021), little research has been done to examine the relationship between the two constructs in the general adult population (Vahle-Hinz, Mauno, de Bloom, & Kinnunen, 2017). This is especially important because the workforce mostly consists of the adult age group. Understanding creativity among adults could help these professionals find ways to better solve problems and discover creative outlets in their work fields. The present study examined the adult Filipino population.

Although researchers have drawn attention to exploring the possible links between rumination and creativity (Wang et al., 2020; Xu et al., 2021), the research field has not yet adequately explored other possible links between them. This present study attempted to explore the mediating role of anxiety between rumination and creativity.

Creativity in this study is defined as the individual's creative ideation or thinking disposition which was measured by the Runco Ideational Behavior Scale (Runco, Plucker, & Lim, 2001). Runco et al. (2001) considered ideas as the outcome of original, divergent, and creative thinking.

Novelty Of The Study

Previous studies examined rumination, creativity and anxiety, for example research conducted by Ohlan (2023); Papageorgiou & Wells (2001b); Liu et al. (2023); Verhaeghen et al. (2005); Verhaeghen et al. (2014); Vahle-Hinz et al. (2017); Xu et al.

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(2021); Wang et al. (2020); Xu et al. (2022); Vidal-Arenas et al. (2022); Kim et al. (2017); Kalmbach et al. (2016); Ruscio et al. (2015); and Cohen & Ferrari (2010). These studies examined rumination, creativity, and anxiety separately, or involved other variables besides these three. Meanwhile, this research attempted to explain the correlation between these three variables simultaneously with anxiety as a mediator.

The next difference between this research and various previous studies lies in the research sample. This research involved Filipino adults, while various previous studies involved samples in other regions, including Europe, America, China, and India.

Purposes/Hypothesis Of The Study

In summary, based on the foregoing literature and arguments it is reasonable to hypothesize that: 1) H1a: Brooding rumination is negatively associated with creativity; 2) H2a: Reflective rumination is positively associated with creativity; 3) H1b: Brooding is positively associated with anxiety; 4) H2b: Reflective rumination is negatively associated with anxiety; 5) Hc: Anxiety is positively associated with creativity; 6) H1d: Anxiety plays a significant mediating role between brooding and creativity; and 7) H2d: Anxiety plays a significant mediating role between reflective rumination and creativity.

METHODS

Research Design

Johnson's (2001) typology of non-experimental quantitative research (NEQR) was employed in the design of the study. In Johnson's (2001) typology, NEQR studies are classified according to two dimensions, time and objective. In terms of the time dimension, NEQR could be retrospective, cross-sectional, or longitudinal. Based on its objective, NEQR could be descriptive, predictive, and explanatory. Specifically, the cross-sectional explanatory research design was used because this study tested a mediational model of hypothesized factors affecting creativity. The model involved testing for direct and indirect effects (mediation). Further, the data were gathered during a single period using self-report instruments.

Sampling And Research Sample

The present study involved 135 Filipino adults. The respondents were all recruited online via social media platforms. The ages varied from 18 to 53 years old, with an average of 30.45 years old ($SD=7.56$). They were predominantly female respondents (55.6%), and the majority (67.4%) identified as Roman Catholics. The participants reported that they were not diagnosed nor under treatment for mental health problems, specifically, anxiety and depression. The G*Power software version 3.1.9.4 (Faul, Erdfelder, Lang, & Buchner, 2007) was used to do an a priori power analysis with an alpha of 0.05. Based on the power analysis result, a sample size of 107 individuals was necessary to reach a power of 0.95 and an alpha of 0.05. The number of respondents exceeded the required number of samples (a priori estimation). Post-hoc power analysis revealed that the study had a power of 0.98 at an alpha of 0.05.

Instruments Of Measurement

The present study used three assessment tools: the Runco Ideational Behavior Scale (RIBS), the Rumination Response Scale–Short Form (RRS-SF), and the Beck Anxiety Inventory (BAI).

Runco Ideational Behavior Scale (RIBS). This scale is a self-report assessment of creativity developed by Mark Runco. According to Kālis & Roke (2013), RIBS is grounded on the assumption that ideas are the outcome of novel, divergent, and creative cognitive activities that a person perceives and analyzes in themselves. It comprises 23 items which are evaluated on a Likert scale, with 1 describing “never” and 5 describing “very often.” Sample items include “*I would rate myself highly in being able to come up with ideas*”. The RIBS verbal interpretations are categorized as follows: very high (4.20-5.00), high (3.40-4.19), moderate (2.60-3.39), low (1.80-2.59), and very low (1.00-1.79). This unidimensional scale is grounded on the notion that certain ideas may arise from creative thinking as a whole, rather than merely being original or divergent (Runco, 2014).

The internal consistency reliability of RIBS was high (Cronbach's $\alpha=0.86$) (Runco et al., 2001). In this study, RIBS yielded a Cronbach's α of 0.96, which is high based on a guideline for evaluating the statistical value (DeVellis, 2016; George & Mallery, 2006).

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Rumination Response Scale–Short Form. The RRS-SF includes ten items from the initial list of 22 items (Treynor et al., 2003). The short form of the scale has a significant level of internal consistency (Cronbach's $\alpha=0.85$) and is well associated with the full version ($r=0.90$). The item is scored on a four-point scale, with 1 being "almost never" and 4 being "almost always". The RRS-Short Form verbal interpretations are categorized as follows: high (3.28-4.00), above average (2.52-3.27), average (1.76-2.51), low (1.00-1.75). Higher scores for the full scale indicate more ruminative symptoms; the total score ranged from 22 to 88 (Lei et al., 2017). The Cronbach's α of the RRS in this study was 0.88, which is interpreted as good (DeVellis, 2016; George & Mallery, 2006).

Beck Anxiety Inventory (BAI). The BAI, which was developed by Aaron Beck, is a 21-item questionnaire with Likert scale ratings that ranged from 0 to 3 and raw values between 0 to 63. The BAI scores are categorized as follows: low anxiety (0-7), mild anxiety (8-15), moderate anxiety (16-25), and severe anxiety (26-50). The items show some anxiety symptoms such as a pounding or racing heart, fear of dying, unsteadiness, and so on. Each item offers the user four options ranging from no symptoms to severe symptoms. For each item, the participant was asked to indicate how they felt in the previous week. It has an internal consistency of 0.92 for all 21 items and an alpha coefficient reliability of 0.92. The BAI has a one-week test-retest reliability of 0.75 (Maust et al., 2012). The BAI had excellent concurrent validity, with correlations ranging from 0.78 to 0.81 with the Hamilton Anxiety Scale, Spielberger's STAI, and SCL-90 Anxiety Subscale (Toledano-Toledano et al., 2020). The BAI had an excellent Cronbach's α of 0.97 in this study (DeVellis, 2016; George & Mallery, 2006).

Data Collection Technique

Online recruitment of the respondents was conducted upon approval from the Institutional Ethics Review Committee. Chain referral sampling was used to recruit participants, a non-probability sampling strategy for creating a pool of volunteers for particular research based on referrals from individuals who shared a common research interest with the target respondents (Crouse & Lowe, 2018). Participants who already answered the survey were encouraged to share the poster/ads. The online

survey was conducted using Google Forms. Researchers recruited respondents on Facebook by distributing invitations to potential research participants. Informed consent was included in the Google Form's introduction. Following the informed consent process on the first page of the survey site, participants were directed to the main online survey page to access the research instruments. It took approximately 20 minutes for participants to respond to items across the three measurements.

Ethical Considerations

This study was granted permission by the Institutional Ethics Review Committee with protocol number DLSU-DERC-2022-23_10-005T2. Ethical considerations were diligently implemented throughout the study. Research participants were fully informed of the nature of the study and their rights to withdraw from the study at any time. Participation was voluntary. They were also ensured of the confidentiality and anonymity of their data.

Data Analysis Technique

All the statistical analyses were performed using the Jamovi software version 2.4. This software performed descriptive statistics, Pearson's correlation, Cronbach's alpha reliability analyses, collinearity analyses, regression analysis, and mediation analyses.

Regression analyses were initially conducted to explore the statistical significance of the tested models while controlling for the effects of the mediator. Then, the General Linear Model in the jAMM module was used to test the mediation hypothesis. The bootstrap percent resample of 1000 was used to test the statistical significance of the path coefficients at a 95% confidence interval. The beta (B) was used as a measure of effect size because it is relatively more stable and unbiased for sample sizes as low as N=50 than the more common measures of effect size such as the proportion and ratio approaches (Miočević, O'Rourke, MacKinnon, & Brown, 2018).

RESULTS AND DISCUSSION

Research Results

As part of the preliminary screening, the variance inflation factor (VIF) and tolerance were inspected. When anxiety and rumination were the predictors and

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creativity were placed as the outcome, the VIF score was 2.26 for both predictors and tolerance was 0.43. When anxiety and brooding were the predictors with creativity as the outcome variable, VIF was 1.81 and tolerance was 0.55. When anxiety and reflective rumination were the predictors and creativity was the outcome variable, the VIF was 2.11 and the tolerance value was 0.47. VIF values greater than 1 but less than 5 indicated a moderate correlation between examined variables (Daoud, 2017). These values suggested that the multicollinearity assumption of mediation analysis was not violated.

Likewise, the Shapiro-Wilk tests of each of the variables indicated that the distributions of the scores were relatively non-normal ($p < 0.01$). Further, this study utilized the bootstrap method with 1000 resamples to estimate the statistical significance of the model (Efron, 1979, 1992). Bootstrap statistics is a non-parametric technique for estimating the statistics of a population by sampling a dataset with replacement from the original dataset.

The reliability of the instruments was also inspected, and they yielded excellent to good reliability characteristics. The Cronbach's alpha ranged from 0.88 to 0.97. George & Mallery (2006), DeVellis (2016), and Kaplan & Saccuzzo (2017) classified Cronbach's alpha of 0.90 and higher as excellent while a Cronbach's alpha between 0.80 and 0.90 is good.

Table 1.

Means, Standard Deviations, And Correlation Coefficients Of The Variables (N=135)

Variable	M	SD	Interpretation	1	2	3	4	5
1 Rumination	2.96	0.87	Above average	-	0.94***	0.92***	0.75***	0.70***
2 Brooding	2.90	0.68	Above average		-	0.74***	0.67***	0.62***
3 Reflective	3.02	0.68	Above average			-	0.73***	0.68***
4 Anxiety	2.67	0.64	Moderate				-	0.74***
5 Creativity	3.76	0.75	High					-

Note: *** $p < 0.01$

As shown in Table 1, the respondents in this study scored above average in rumination, and its subcategories which are brooding and reflective. They were also moderate in anxiety and high in creativity. Notably, the correlations among the

variables were all significant and positive in direction ($p < 0.01$). All the correlation coefficients were large based on the interpretation guidelines of correlation coefficients (Mukaka, 2012).

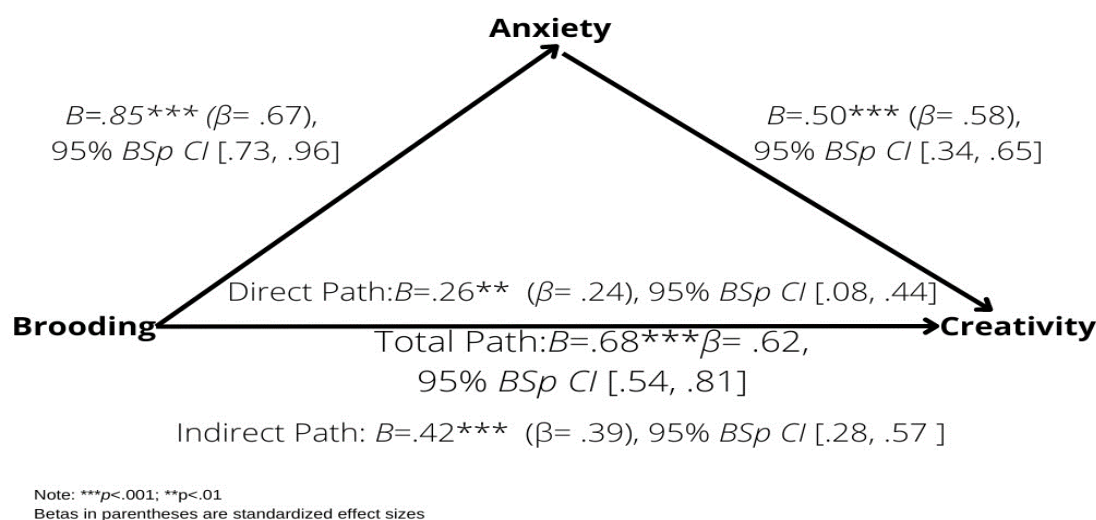


Figure 3. Research Model 1: Unstandardized And Standardized Regression Coefficients For The Relationship Between Brooding And Creativity As Mediated By Anxiety

Figure 3 shows the full regression for Model 1 where 57% ($R^2 = 0.57$, Adj. $R^2 = 0.56$) of the variance in creativity was accounted for by the combination of anxiety and brooding. This demonstrates a significantly large amount of variance explained ($F(2, 132) = 87.8$, $p < 0.01$). According to Cohen (1988), an R^2 of 0.01 is small, 0.09 is medium, and 0.25 is large. Evaluating the specific paths and using 1000 bootstrap percent resamples, there is a significant positive association between brooding and creativity ($\beta = 0.24$, $p < 0.01$), disproving H1a that stated a negative association between brooding and creativity. The path coefficients, which are the unstandardized B and standardized β , indicate the strength of relationships between the predictor and outcome variables. The results also support H1b, which stated that there is a positive association between brooding and anxiety ($\beta = 0.67$, $p < 0.01$). Hc is also supported, there is a significant positive association between anxiety and creativity ($\beta = 0.58$,

$p<0.01$). The indirect effect is significant, supporting H1d that described anxiety as a mediator between brooding and creativity ($\beta=0.39, p<0.01$).

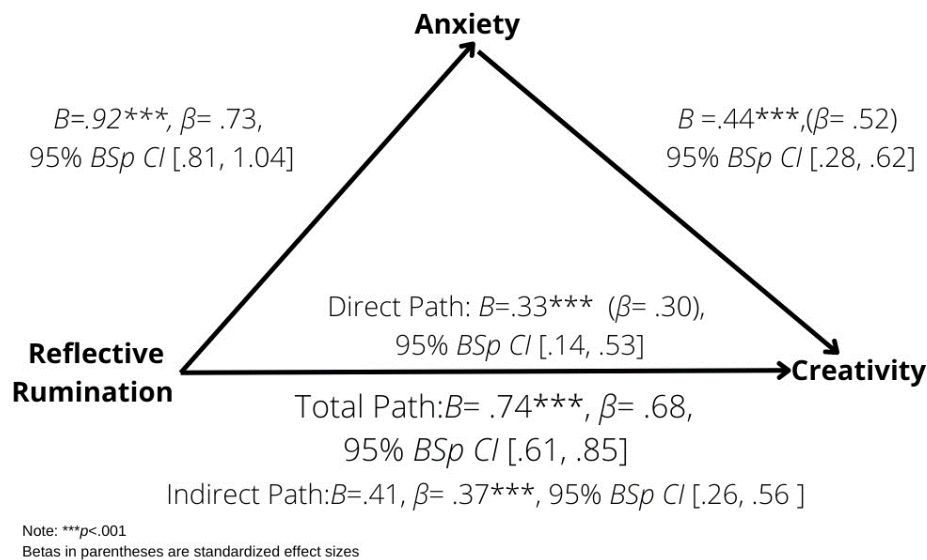


Figure 4. Model 2. Unstandardized And Standardized Regression Coefficients For The Relationship Between Reflective Rumination And Creativity As Mediated By Anxiety

Figure 4 shows the full regression for Model 2 where the combination of anxiety and reflective rumination accounted for 58% ($R^2=0.58$) of the variance in creativity. This also demonstrates a significantly large amount of variance explained ($F(2, 132)=92.3, p<0.01$) (Cohen, 1988). Based on 1000 bootstrap percent resamples, there is a significant positive association between reflective rumination and creativity supporting H2a ($\beta=0.30, p<0.01$). The results do not support H2b stating that there is a negative association between reflective rumination and anxiety ($\beta=0.73, p<0.01$). Hc in Model 2 is also supported, there is a significant positive association between anxiety and creativity ($\beta=0.52, p<0.01$). The indirect effect is significant supporting H2d stating that anxiety mediates between reflective rumination and creativity ($\beta=0.37, p<0.01$).

Discussion

This study aimed to determine whether the two types of rumination are significantly associated with creativity. It also aimed to investigate whether anxiety mediates the relationship between the types of rumination and creativity. The present results are consistent with the previous studies supporting that rumination is a variable that may contribute to creativity (Jamison et al., 1980; Verhaeghen et al., 2014). Mediation of anxiety in this association between the two types of rumination and creativity was also supported.

Specifically, the individuals who scored high in both brooding and reflective ruminations showed high scores in creativity, supporting previous studies (Cohen & Ferrari, 2010; Jamison et al., 1980; Verhaeghen et al., 2014, 2005; Xu et al., 2021, 2022) while contradicting prior findings about rumination inhibits creativity rather than enhancing it (Saggar et al., 2015; Silvia & Kimbrel, 2010). Interestingly, anxiety serves as a mediating variable between rumination and creativity. This important finding shows another pathway that can explain the association between rumination and creativity. Previous studies showed that the association between rumination and creativity was moderated by emotional resilience (Wang et al., 2020), and mediated by psychological resilience and post-traumatic growth (Xu et al., 2021, 2022). The present findings widen our understanding of the relationship between rumination and creativity.

Moreover, the present findings show that both types of rumination have a significant influence on creativity. Brooding, which is supposed to be a maladaptive form of rumination, is just as significant as reflective rumination in its influence on creativity. We expected a negative relationship between brooding and creativity, but in this study, we found a positive relationship between the two, which is in line with prior studies (Wang et al., 2020; Xu et al., 2022). The findings suggest that both brooding and reflections have the same pattern of influence on creativity. They are positively linked with creativity. Moreover, reflective rumination showed a lower effect size than brooding in its association with creativity.

The present findings suggest that rumination can be helpful, as it can help people focus on positive activities and improve creativity (Harding & Mezulis, 2017).

According to [Verhaeghen et al. \(2014\)](#), individuals who ruminate are more likely to be creative. Previous studies revealed that specific kinds of rumination have a positive role in creativity. For example, intrusive rumination enables more mindful involvement in the development and refinement of a creative activity or idea ([Dijksterhuis & Meurs, 2006](#)). Problem-solving rumination has also been linked to increased creativity ([Cohen & Ferrari, 2010](#)). In addition, the present findings showed a direct positive association of reflective rumination, which is considered as containing both maladaptive and adaptive forms of rumination or “neutrally valenced”, with creativity. Reflective rumination is considered a deliberate inward turn to participate in cognitive problem-solving to ease an individual’s depressed feelings ([Treyner et al., 2003](#)). It appears that rumination, whether adaptive or maladaptive, might be helpful for creative cognition ([Verhaeghen et al., 2005](#)).

The results also confirmed that there is a significant relationship between rumination and anxiety. The findings are consistent with previous studies, indicating that rumination increases the prevalence of anxiety symptoms ([Fresco, Frankel, Mennin, Turk, & Heimberg, 2002](#); [Harrington & Blankenship, 2002](#); [Mellings & Alden, 2000](#)). The ruminative response style theory claims that those with ruminative response styles exhibit more depressive and anxiety symptoms ([Sarin, Abela, & Auerbach, 2005](#)). Individuals tend to get trapped when their rumination has an anxiety-based theme because the ideas lead them to seek answers to unanswerable questions and truths to unknowable realities ([Scolan, 2021](#)). Nevertheless, psychopathology may lead individuals to participate in creative activities to ease their suffering and improve their well-being ([Richards, 2007](#)).

Finally, the findings showed that anxiety is closely linked to creativity, and adults who exhibit greater levels of anxiety are likely to have higher creativity. The present finding may be attributed to the high divergent-thinking fluency of the because according to [Rubinstein \(2008\)](#), anxious people typically score high in divergent-thinking fluency. The dual pathway of creativity also proposes that anxiety as a negative emotion may have activated persistence, which is a pathway to creativity.

Likewise, Hennessey & Amabile (2010) explained that negative emotions, rather than positive emotions, can lead to increased creativity. Adversity may give valuable ideas, materials, and motivation for creative undertakings (Forgeard, 2013). Therefore, individuals who have faced anxiety-inducing hardships might gather resources and ideas in a more optimistic frame of mind, thus boosting creative activity. Acts of creativity, whether via real creation or consumption of creative work, are assumed to operate as an adaptive strategy to create and find meaning during crises (Kapoor & Kaufman, 2020).

The findings suggest that anxiety is a potential mediator between rumination and creativity; that is, rumination will strengthen anxiety and, in turn, influence the expression and enhancement of creativity. The five stages of problem-solving outlined by Fedor et al. (2015) seem to be supported by the results. Rumination that happens at the constrained search stage may increase anxiety, which is an emotional correlate of the impasse stage. As anxiety increases, there is also an observed increase in creativity. This increase in creativity may be a means to escape or relieve anxiety as explained by Kapoor & Kaufman (2020), or as a direct product of anxiety through perseverance (Nijstad et al., 2010).

Further, it is also worth noting that the samples of this study did not report psychopathological levels of anxiety. Perhaps, anxiety was found to be linked with creativity because their anxiety level was not pathological up to the point that it could hinder them from generating creative ideas. According to Aysenck (Reddy, Ukrani, Indla, & Ukrani, 2018), creative individuals have psychopathological symptoms that lie between the normal and abnormal ranges but not within the clear-cut psychopathological levels. It is interesting to explore the moderating role of anxiety between rumination and creativity.

This finding may also be explained by the idea that other characteristics may play a role in the link between rumination, anxiety, and creativity. The mediating role of anxiety between rumination and creativity was proven in this present research because creative individuals may possess other characteristics that diminish the effects of psychological symptoms. For example, Barron (Reddy, Ukrani, Indla, & Ukrani, 2018) proposed that creative individuals exhibit ego strength, self-sufficiency,

and strong metacognitive control over their psychopathological symptoms thereby allowing them to utilize bizarre thoughts to create rather than having the said thoughts consuming them.

These present findings give us a new view on rumination and creativity and provide a contribution to the existing body of knowledge about the mediating role of anxiety. The study might also give ideas to counselors and psychologists to tap into psychological resources of rumination and anxiety in their clients to enhance and express creativity. With these, people may channel rumination and anxiety into something positive and adaptive for increased creativity.

Given the limited research on how positive functioning connects to clinical distress, the present study also contributes to the body of knowledge in clinical psychology. This study shows the potential utility of rumination and anxiety in harnessing creativity among people who are experiencing anxiety.

The present research widens the context of this topic by employing Filipino respondents, however, some potential limitations should be noted. The study was conducted on a limited population, mainly focusing on Filipinos aged 18 to 53 years old. Likewise, the chain referral sampling technique that was used to gather participants in the study might have led to the underrepresentation of the population. Also, self-report questionnaires used in the study might have elicited response biases. The study focused on somatic and cognitive symptoms of anxiety. An investigation on the same topic may also use the measure of creativity anxiety, which [Daker, Cortes, Lyons, & Green \(2020\)](#) claimed to be more specifically linked to creative thinking, problem-solving, and arts.

Future studies could further examine other possible mediators between other types of rumination and creativity. A path analysis to investigate the mediating role of perseverance between anxiety and creativity may also extend understanding of the relationship between rumination and creativity. A developmental perspective could also be established by comparing different age groups. To generate a deeper understanding of the topic, a mixed-method approach in future studies may be helpful.

CONCLUSIONS AND SUGGESTIONS

Conclusions

In conclusion, rumination and anxiety have a positive association with creativity. Specifically, brooding and reflective rumination, are positively associated with anxiety and creativity. Likewise, rumination has both direct and indirect associations with creativity. The indirect association is mediated through the presence of anxiety symptoms. These findings have both conceptual and practical implications in psychology and counseling.

Suggestions

Based on the findings of this study, the researchers propose the following recommendations. *First*, for future research. The study focused on somatic and cognitive symptoms of anxiety, but future research could explore creativity anxiety as well. [Daker, Cortes, Lyons, & Green \(2020\)](#) suggested that creativity anxiety is a distinct form of anxiety connected to creative thinking, problem-solving, and arts. Exploring this dimension may provide a nuanced understanding of anxiety's role in creative processes. Additionally, researchers could investigate alternative mediators between various types of rumination and creativity. Employing a path analysis, guided by the dual pathway theory of creativity, to examine the mediating influence of perseverance between anxiety and creativity could further enrich comprehension of the intricate relationship between rumination and creativity. A developmental perspective, comparing age groups, and adopting a mixed-method approach could also offer more comprehensive insights into this complex dynamic.

Second, for counselors and mental health workers. The study's findings can serve as a foundation for developing interventions that leverage rumination and anxiety as potential catalysts for creativity. Counselors may guide clients to reframe their perspective on anxiety and rumination, viewing them as pathways to creativity. Clients could be encouraged to express creativity through the creation or consumption of creative works. Counselors may also support clients in embracing uncertainty, taking gradual steps outside their comfort zones, and reframing worries as challenges to be overcome, ultimately fostering a mindset where anxiety becomes a stepping stone rather than a hindrance to creative expression.

AUTHORS CONTRIBUTION STATEMENT

Divine Grace C. Escobar: Conceptualization; Data Curation; Formal Analysis; Funding Acquisition; Investigation; Methodology; Resources; Writing Original Draft.

Jeannie A. Perez: Conceptualization; Data Curation; Formal Analysis; Investigation; Methodology; Project Administration; Resources; Validation; Visualization; Writing, Review, & Editing.

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