

# **The mediating role of self-compassion and forgiveness in the effect of negative metacognitive beliefs on repetitive negative thinking in those with PTSD symptoms.**

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## **Abstract**

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*The experience of traumatic events such as extreme violence, sexual abuse, war, or natural disasters can cause heightened anxiety and the development of a variety of mental health disorders such as post-traumatic stress disorder (PTSD). The study aimed to investigate the mediating role of self-compassion and forgiveness in the effect of negative metacognitive beliefs on repetitive negative thinking in those with PTSD symptoms. There was a total of 74 participants consisting of males (n = 43), females (n = 28), and gender neutral (n = 3) aged 18 and over (Age; males, M = 30.63, SD = 7.027, females, M = 30.14, SD = 9.671, and gender neutral, M = 46.00, SD = 0.000) who were clinical patients receiving treatments for posttraumatic stress disorders. Participants completed a short demographic questionnaire, the self-compassion scale - Short Form (SCS-SF), Metacognitive Questionnaire (MCQ-30), Bolton Forgiveness Scale (BFS), and Repetitive Thinking Questionnaire-10 (RTQ-10). The results revealed that negative metacognitive beliefs predicted RNT with a positive correlation ( $p < .001$ ), forgiveness predicted RNT with an inverse relationship ( $p < .001$ ), and self-compassion was a negative correlate of RNT ( $p < .001$ ). Furthermore, forgiveness mediated the effect of negative metacognitive beliefs on RNT ( $p < .001$ ). This study has provided insight that becoming more forgiving may weaken the impact of negative metacognitive beliefs on RNT in individuals with PTSD or posttraumatic stress symptoms, and self-compassion may well have a reductive effect on RNT.*

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Keywords: Repetitive negative thinking; Forgiveness; Self-compassion; PTSD, Negative meta-cognitive beliefs.

## Introduction

The experience of traumatic events such as extreme violence, sexual abuse, war, or natural disasters can cause heightened anxiety, and can lead to the development of a variety of mental health disorders such as posttraumatic stress disorder (PTSD). The World Health Organisation presented a projection that 70% of the world's population will experience traumatic events at some point in their lives, while approximately 6% of such population is estimated to develop PTSD later on in life (Kessler, Aguilar-Gaxiola, Alonso, Benjet, Bromet, ... & Koenen, 2017; Koenen, Ratanatharathorn, McLaughlin, Bromet, Stein, ... & Kessler, 2017; WHO, 2024). In addition, there is about 4% to 6% of global population who had previously experienced PTSD (Koenen et al., 2017). In the United Kingdom (UK), the prevalence of PTSD prior to the pandemic was approximately 4.4% with no significant gender differences. The development of PTSD symptoms is associated with heightened level of distress and can significantly impede the ability to function adequately (Megnin-Viggars, Mavranouzouli, Greenberg, Hajioff, & Leach, 2019).

There is the need to examine contributory factors to the development and maintenance of mental health disorders such as PTSD (Hummel, Trautmann, Venz, Thomas, & Schäfer, 2021). Several factors have been identified to be linked to PTSD, especially repetitive negative thinking (RNT). For example, there is the concept that RNT is a transdiagnostic process that is characterised by the excessive rumination over past events and worry over the present and future (Ehring, 2021), and that rumination and worry are contributory factors to the development and management of PTSD (Michael, Halligan, Clark, & Ehlers, 2007; Roley, Claycomb, Contractor, Dranger, Armour, & Elhai, 2015; Pugach, Campbell, & Wisco, 2020; Moulds, Bisby, Wild, & Bryant, 2020). Some studies have shown that rumination is a predictor of

PTSD symptoms (Michael et al., 2007; Ehring et al., 2008; Roley et al., 2015). RNT is a cognitive process relating to perseverative, prolonged, and uncontrollable thoughts that are distinguishable by extreme and unwarranted pondering on negative thoughts, images, and events regarding previous, present, and imminent negative outcomes (Wahl, Ehring, Kley, Lieb, ... & Schönfeld, 2019). In a 4 years longitudinal study, Spinhoven, Penninx, Kremenliou, van Hemert, and Elzinga (2015) examined rumination and worry in those exposed to traumatic events using a sample of 2981. Based on their findings, Spinhoven et al. (2015) concluded that RNT in the form of rumination poses a risk for the development of PTSD.

## Metacognitive beliefs

Since the inclusion of PTSD in the Diagnostic Statistical Manual (DSM), there have been several theories and models intending to understand contributory factors in both the development and persistence of PTSD such as the cognitive model and the metacognitive model. Unlike the cognitive model that focuses on dysfunctional autobiographical memory for the trauma, cognitive disturbances, and maladaptive behaviour maintaining symptoms of trauma (Nordahl, Johnson, & Hjemdal, 2024), metacognitive model proposes that metacognitive beliefs are key in the development and maintenance of trauma-related symptoms (see Wells & Mathew, 1994; Wells & Sembi, 2004; Nordahl, Johnson, & Hjemdal, 2024). In addition, metacognitive model proposes that when the Cognitive-Attentional Syndrome (CAS), characterised by worry, rumination, threat focusing, and coping strategies such as avoidant behaviour and thought suppression is activated, it would usually result to psychological disorders (Wells, 2000). Bailey and Wells (2015) highlighted in their study that psychological distress or disorders are associated with metacognitive beliefs.

Metacognitive model proposes that positive and negative metacognitive beliefs as response types. Positive metacognitive beliefs contribute to adaptive response styles such as the perception that worries and repetitive thinking about a traumatic event is useful in improving coping and averting threat. Whereas negative metacognitive beliefs exacerbate worries and fear; for example, the belief that the experience of symptoms such as thoughts about trauma is unhelpful and confirms psychological instability. Consequently, worsening the experience of anxiety and the perception of threat, thus, heightening catastrophic misinterpretation (Roussis & Wells, 2006).

### Self-compassion

Self-compassion is conceptualised as compassion towards the self (Neff, 2003; 2007) and a positive mental state that is associated with mindfulness (Garcia-Campayo, Navarro-Gil, Andrés, Montero-Marín, López-Artal, & Demarzo, 2014). A characteristic of self-compassion includes the aptitude for the internalisation of compassionate affect with care, kindness, tenderness, including the longing help the self (Wetterneck, Lee, Smith, & Hart, 2013). Self-compassion is a facilitator of resilience, a mediator of positive change in Mindfulness-Based Interventions, and consistently predicts positive outcomes in several mental disorders such as anxiety disorders and depression (e.g., Smeets, Neff, Alberts, & Peters, 2014; Garcia-Campayo et al., 2014; Van Dam, Sheppard, Forsyth, & Earleywine, 2011; Egan, Rees, Delalande, ... & Finlay-Jones, 2022).

Currently, little is known about the contributions of self-compassion in the development or maintenance of RNT in people with PTSD. Nevertheless, self-compassion has some association with rumination (e.g., Beaumont, Galpin, & Jenkins, 2012), unwanted intrusive thoughts (Omoregie & Carson, 2023), disorders that are characterised by RNT such as PTSD (e.g.,

Van Dam, Sheppard, Forsyth, & Earleywine, 2011; Wetterneck, Lee, Smith, & Hart, 2013; Germer & Neff, 2015; Tran, Vo-Thanh, Soliman, Ha, & Van Pham, 2024), and the reduction of maladaptive cognitions (Leary, Tate, Adams, Batts Allen, & Hancock, 2007). For example, Beaumont, Galpin, and Jenkins (2012) examined Compassionate Mind Training (CMT) and Cognitive Behaviour Therapy (CBT) in a 12-session intervention using 32 clinical participants with trauma, and they found that CBT and CMT, a self-compassion-based intervention were linked to a reduction of anxiety, depression, symptoms of trauma, and cognitive intrusions. In another study, Dodds, Pace, Bell, Fiero, Negi, Raison, and Weihs (2015) examined cognitively based compassion training (CBCT), a self-compassion intervention among 33 survivors of breast cancer, and Dodds and colleagues found that CBCT reduced avoidance of trauma-related thoughts and the fear of recurrence. Other studies have shown that self-compassion has a negative association with anxiety (Raes, 2010; Van Dam, Sheppard, Forsyth, & Earleywine, 2011; Hoge, Hölzel, Marques, Metcalf, Brach, Lazar, & Simon, 2013) and can stabilise dysfunctional thoughts/thinking (Raes, 2010).

### Forgiveness

There is a consistent exploration of predictors of mental health and wellbeing in psychological studies, and one of these predictive variables is forgiveness (Mróz & Kaleta, 2023). There is no consensus definition for forgiveness (Amanze & Carson, 2019), nevertheless, McCullough et al. (1998) conceptualised it as a reduction of negative emotion towards the offender. It is characterised by the reduction of negative emotion, cognition, and behaviour, while improving positive emotion, cognition, and behaviour (e.g., Enright, 1991; Miceli & Castelfranchi, 2011). Currently, the association between forgiveness and wellbeing is gaining traction with cumulative empirical evidence of their link (Green, DeCourville, & Sadava, 2012; Kaleta & Mróz, 2020). Worthington and Scherer (2004)

proposed that forgiveness helps in coping with harmful experiences. On the other hand, Chung (2016) study demonstrated that unforgiveness was linked with depression. Berry and colleagues researched forgivingness, vengeful rumination, and affective traits, and their findings revealed a link between forgiveness and the reduction of rumination; this signifies that forgiveness may play a reductive role in repetitive negative thinking (Berry, Worthington Jr, O'Connor, Parrott III, & Wade, 2005).

### **Aim and hypothesis:**

To investigate the mediating role of self-compassion and forgiveness in the effect of negative metacognitive beliefs on repetitive negative thinking in those with PTSD symptoms. It was hypothesised that; self-compassion and forgiveness are predicted to mediate the relationship between negative metacognitive beliefs and repetitive negative thinking.

## **Methods**

### **Participants**

In this study, there was a total of 74 participants consisting of males ( $n = 43$ ), females ( $n = 28$ ), and gender neutral ( $n = 3$ ) aged 18 and over (Age; males,  $M = 30.63$ ,  $SD = 7.027$ , females,  $M = 30.14$ ,  $SD = 9.671$ , and gender neutral,  $M = 46.00$ ,  $SD = 0.000$ ). Participants consisted of clinical patients who self-reported to be receiving treatments for posttraumatic stress disorders. Participants were recruited through convenient sampling, online platforms, communities such as anxiety disorders websites, and through snowballing.

### **Materials**

#### **Demographic Information**

This demographic questionnaire adapted from Omoregie and Carson (2023) study. The demographic information consists of socio-demographic data such as age, gender, ethnicity, education, employment status, and clinical diagnoses.

#### **Self-Compassion Scale – Short Form (SCS-SF: Raes, Pommier, Neff, & Van Gucht, 2011)**

The SCS (Neff, 2003) is a self-report scale consisting of 26 items measuring self-compassion when an individual experiences distress. There are six subscales within the SCS including isolation, mindfulness, self-kindness, common humanity, self-judgment, and over-identification. The SCS has good psychometric properties, reliability, and consistency (Neff, 2003; Neff et al., 2007; Costa et al., 2016). Baer et al. (2006) showed that the SCS was characterised by 0.92 internal consistency and a .93 test-retest reliability. When tested in different culture, Chen, J., Yan and Zhou (2011) found the Cronbach's  $\alpha$  coefficients of the SCS = 0.84, and test-retest reliability = 0.89. The SCS used in this study is the SCS-SF (Raes et al., 2011), a 12-item scale, is a shorter version of the 26-item scale. The SCS-SF has been shown to have similar psychometric properties; Cronbach's  $\alpha$ ,  $\alpha = 0.68$  to  $0.76$  (Bratt & Fagerström, 2020),  $\alpha = 0.85$  to  $0.86$  (Kelly, Carter, Zuroff, & Borairi, 2013; Raes et al., 2011), and  $\alpha = 0.79$  to  $0.86$  (Kotera & Sheffield, 2020) with good validity and reliability (Hayes, Lockard, Janis, & Locke, 2016).

#### **Metacognitive Questionnaire (MCQ-30: Wells & Cartwright-Hatton, 2004)**

The MCQ-30, a self-reported measure is designed to assess five domains of metacognitive beliefs (i.e., beliefs about own thinking). The domains are depicted in the following subscales: (i) cognitive self-consciousness, (ii) positive beliefs about worry, (iii) cognitive confidence (the lack of), (iv) negative beliefs about uncontrollability and danger, and (v) negative beliefs about the consequences of not controlling thoughts. Items in the MCQ-30 are rated on a 4-point scale (1= "Do not agree", 2= "Agree slightly", 3 = "Agree moderately", and 4= "Agree very much"). The scale has been documented to consist of good internal consistency ( $r \geq .72$  to  $r .92$ ) and test retest reliability ( $r = .59$  up to  $.87$ ) through sub-

scale and total score (Wells and Cartwright-Hatton, 2004). Several other studies have also shown that the MCQ-30 has good psychometric properties and reliability (McEvoy, Mahoney, & Moulds, 2010; McEvoy, Moulds, & Mahoney, 2013; Watkins et al., 2005).

### ***Bolton Forgiveness Scale (BFS: Amanze & Carson, 2019)***

The BFS (Amanze & Carson, 2019) is a scale that measures forgiveness; it consists of 15 items that assess three dimensions of forgiveness including “coming to terms with and letting go”, “developing positive feelings”, and “giving benefit of the doubt”. Items on the BFS are rated on a 6 point scale from 1= “always false of me” to 6= “always true of me”. The BFS (Amanze & Carson, 2019) is characterised by good psychometric properties with high Cronbach’s alpha ( $\alpha = 0.82$ ) and .86 test–retest reliability. The BFS was validated in a study conducted in India (n= 813) by Mehta, Vyas, and Shah (2024) with findings showing high internal consistency ( $\alpha = 0.847$ ) suggesting validity across culture.

### ***Repetitive Thinking Questionnaire-10 (RTQ-10, McEvoy, Mahoney, & Moulds, 2010)***

The RTQ-10, a short version of the original RTQ 31 item scale designed to assess transdiagnostic repetitive thinking. The RTQ-10 consists of 10 items with the highest factor loadings obtained from the original RTQ-31 (McEvoy, Thibodeau, & Asmundson, 2014), and the items are measured on a 5-point scale (1 = “Not true at all”, 2 = “Not true”, 3 = “Somewhat true”, 4 = “True”, and 5 = “Very true”). When tested, the RNT-10 was highly correlated with the original 27-item subscale ( $r \geq .95$  and  $\leq .96$ ) and characterised with high internal consistency ( $\alpha s \geq .89$  and  $\leq .91$ ), and the scale has association with psychological distress such as depression and anxiety

(McEvoy, Mahoney, & Moulds, 2010). Previous versions of the RTQ-10 slightly differ in wording; one version asked respondents to address the ten-items in view of past distresses (e.g., McEvoy, Mahoney, & Moulds, 2010) and another version prompted responses in view of future distresses (e.g., McEvoy, Moulds, & Mahoney, 2013). For this research, the RTQ items were slightly modified to help participants engage better with the items; all items were consistently worded replacing the “you” pronoun with the “I” pronoun.

### **Procedure**

Participants were sent the link to the questionnaire via Qualtrics, an online data collection, management, and analytic tool that allows respondents to provide responses that are completely anonymised. Qualtrics tool was programmed to ensure that participants would provide informed consent before having access to the questionnaires including Demographic Information, SCS-SF, BFS, MCQ-30, and RNT-10 consecutively.

### **Data Analytic Strategy**

Data collected were used to determine mediation effects for the outcome variables (RNT). PROCESS Macro (Hayes, 2012), a Statistical Package for the Social Science (SPSS) plugin was used to test mediational hypothesis whether self-compassion and forgiveness would mediate the relationship between metacognitive beliefs and repetitive negative thinking. PROCESS Macro was developed to compute the total effect and the direct effect of the independent variable (IV) on the dependent/outcome variable (DV), the direct effect of the independent variables on the outcome variable. It also computes the total indirect effect through all mediating variables, as well as individual indirect effects for individual mediating variable with 95% confidence intervals (CI).

## Results

RNT, negative metacognitive beliefs, forgiveness, and self-compassion were checked to establish their state of relationships using a Pearson correlation analysis. In this study, forgiveness, self-compassion, and negative metacognitive beliefs were predicted to correlate RNT.

**Table 1: Correlation Matrix for all scaled variables, V1 – V4 (n = 74)**

| Correlation Matrix |     |        |             |         |
|--------------------|-----|--------|-------------|---------|
| Variables          | RNT | NMCB   | Forgiveness | SC      |
| RNT                |     | .805** | -.647**     | -.663** |
| NMCB               |     |        | -.532**     | -.605** |
| Forgiveness        |     |        |             | .836    |

\*\* . Correlation is significant at the 0.001 level (2-tailed), n = sample size.

V= variable; RNT= repetitive negative thinking; NMCB= negative metacognitive beliefs; SC= self-compassion.

The correlation matrix table suggests that forgiveness and self-compassion were statistically strong negative significant correlates of RNT while negative metacognitive beliefs was characterised by strong positive relationship: (1) There was a strong negative correlation between forgiveness and RNT; suggesting that the experience of RNT reduces when there is an increase in forgiveness,  $r = -.647$ ,  $P < .001$  (2-tailed). (2) Self-compassion was found to have a strong negative correlation with RNT; indicating that higher self-compassion is linked to lesser experience of RNT,  $r = -.663$ ,  $P < .001$  (2-tailed). (3) There was a strong positive correlation between negative metacognitive beliefs and RNT; suggesting that the experience of RNT would increase as negative metacognitive beliefs increases,  $r = .805$ ,  $P < .001$  (2-tailed).

## Stepwise Multiple Linear Regression (SMLR) Analysis

A stepwise multiple linear regression analysis was conducted to test whether negative metacognitive beliefs, forgiveness, and self-compassion will predict RNT. The SMLR analysis will provide a process of structured and ordered iteration of different models of regression that allows the evaluation of each variable's statistical significance and decides which one is included in the final model. It was predicted that negative metacognitive beliefs, forgiveness, and self-compassion may be predictors of RNT. RNT was the dependant variable while negative metacognitive beliefs, forgiveness, and self-compassion were the predictor variables. Age was not included in the regression model because there was no association with RNT. Stepwise Regression Coefficient is presented in table 2.

**Table 2: Stepwise Regression Model****Coefficients of RNT (N= 168)**

|       |                                  | Unstandardized Coefficients |      | Standardized Coefficients |        | 95.0% CI for B |             |             |
|-------|----------------------------------|-----------------------------|------|---------------------------|--------|----------------|-------------|-------------|
| Model |                                  | B                           | S. E | Beta                      | t      | Sig.           | Lower Bound | Upper Bound |
| 1     | NMCB                             | .685                        | .059 | .805                      | 11.519 | <.001          | .566        | .804        |
|       | <b>R<sup>2</sup></b>             |                             |      | <b>.648</b>               |        |                |             |             |
|       | <b>F change in R<sup>2</sup></b> |                             |      | <b>132.678***</b>         |        |                |             |             |
| 2     | NMCB                             | .547                        | .064 | .643                      | 8.589  | .000           | .420        | .674        |
|       | Forgiveness                      | -.115                       | .028 | -.305                     | -4.074 | .000           | -.171       | -.059       |
|       | <b>R<sup>2</sup></b>             |                             |      | <b>.715</b>               |        |                |             |             |
|       | <b>F change in R<sup>2</sup></b> |                             |      | <b>16.595***</b>          |        |                |             |             |

Dependent Variable: Repetitive Negative Thinking, \*\*\*: &lt;.001, CI= confidence interval.

To investigate whether forgiveness, self-compassion, and negative metacognitive beliefs would predict the reduction of the experience of RNT, they were loaded at once in a regression model for a stepwise operation. Regression equations were obtained from model 1; negative metacognitive beliefs (NMCB) significantly predicted RNT ( $\beta = .685$ ,  $p < .001$ ), ANOVA results were significant,  $F(1, 72) = 132.678$ ,  $p < .001$ , and the regression equation line is  $Y' (\text{the level of RNT}) = 16.931 + 0.685 \times \text{level of NMCB}$ .

Stepwise included forgiveness in model 2 and it predicted RNT ( $\beta = -.115$ ,  $p < .001$ ),  $R^2 = .715$  indicates that 71.50% of the variance in the experience of RNT is explained by the levels of NMCB and forgiveness. The entrance of forgiveness in the final model caused an increase in the R-squared value

from 64.80% to 71.50% (adjusted R-square= 70.70%) representing a 6.70% R-square increase. ANOVA was significant,  $F(2, 71) = 89.006$ ,  $p < .001$ , regression equation line is  $Y' (\text{the level of RNT}) = 26.146 + -0.115 \times \text{level of forgiveness} + -0.547 \times \text{level of NMCB}$ ; thus rejects the null hypothesis that the regression line is zero.

Although, self-compassion was excluded from both models, however, in the first model, self-compassion was a significant predictor of RNT ( $\beta = -.277$ ,  $p < .01$ ). The exclusion from model 1 was because it was the smallest predictor in comparison with the other variables.

The regression also revealed that when forgiveness was included in the equation in model 2, the predictive effect of NMCB on

RNT reduced .805 to .643, that is, from 80.50% to 64.30%. This result indicates that forgiveness may reduce the strength of the link between negative metacognitive belief and RNT.

### Mediation Analysis

A mediation model was conducted to examine the mediating roles of forgiveness (M1) in the relationship between NMCB (X) and RNT (Y) using Hayes' Macro PROCESS Model 4 on SPSS. The results revealed that the overall model was significant ( $F(1, 72.000) = 28.447$ ,  $p < .001$ ). NMCB was a significant predictor of the mediator; NMCB was negatively associated to forgiveness  $b = -1.201$ ,  $SE = .225$ ,  $t(1) = -5.334$ ,  $p < .001$ , indicating that for every one-unit increase in NMCB, Forgiveness decreases by 1.201 units. NMCB was a

positive predictor of RNT;  $b = .547$ ,  $SE = .064$ ,  $t(2) = 8.589$ ,  $p < .001$ , indicating that RNT increases when NMCB increases. In addition, forgiveness was negatively linked with RNT,  $b = -.115$ ,  $SE = .028$ ,  $t(3) = -4.074$ ,  $p < .001$ , indicating an inverse relationship.

Before forgiveness was entered, the total effect of NMCB on RNT was significant  $b = .685$ ,  $SE = .059$ ,  $t(1) = 11.519$ ,  $p < .001$ . However, the effect of NMCB on RNT was dampened when forgiveness was entered into the model  $b = .547$ ,  $SE = .064$ ,  $t(1) = 8.589$ ,  $p < .001$ , making the total indirect effect 0.138 and significant. The results indicate that forgiveness is a mediator of the effect of NMCB on RNT in a PTSD sample. This suggests that forgiveness may potentially reduce the impact of NMCB on RNT.

**Table 3: Indirect Effects of NMCB on RNT through forgiveness.**

|                       | Effect (b) | SE   | LLCI | ULCI |
|-----------------------|------------|------|------|------|
| Total Indirect Effect | .685       | .059 | .566 | .804 |
| Direct Effect         | .547       | .064 | .420 | .674 |

  

| Indirect Effect | Effect (b) | BootSE | BootLLCI | BootULCI |
|-----------------|------------|--------|----------|----------|
| Forgiveness     | .138       | .050   | .056     | .250     |

NMCB = Negative metacognitive beliefs; RNT = Repetitive negative thinking; Level of confidence for all CIs = 95.0000; No. of bootstrap samples for percentile bootstrap CIs = 5000

The mediation model utilised 5000 bootstrapped samples in deriving the significance of the indirect effects with 95% Confident Intervals (CI); these were determined via the examination of the upper and lower bounds of the CIs. The indirect effects were significant where the CIs did not include 0. Table 3 presents indirect effects and their corresponding 95% Confidence Intervals, indicating statistical significance.

### Discussion

The aim of the current study was to investigate the mediating role of self-compassion and forgiveness in the effect of negative metacognitive beliefs on repetitive negative thinking in those with PTSD symptoms. Thus, it was hypothesised that

self-compassion and forgiveness may mediate the relationship between negative metacognitive beliefs and repetitive negative thinking. The results revealed that forgiveness significantly predicted RNT with an inverse relationship. This is the first time (to the best of the authors' knowledge) the link between

forgiveness and RNT has been established. Nevertheless, forgiveness has been linked with wellbeing (Mróz & Kaleta, 2023), positive emotion (e.g., Enright, 1991; Miceli & Castelfranchi, 2011), and inversely linked with depression (Chung, 2016) and rumination (Berry et al., 2005).

The results showed that self-compassion was a negative correlate of RNT; that is, RNT reduces as self-compassion increases. This finding has been established in a doctoral thesis by Omoregie (2025) who identified self-compassion as a reductive mechanism for RNT. Currently, little is known about the contributions of self-compassion in the development or maintenance of RNT in people with PTSD. Nevertheless, self-compassion has some association with rumination (e.g., Beaumont, Galpin, & Jenkins, 2012), unwanted intrusive thoughts (Omoregie & Carson, 2023), and the reduction of maladaptive cognitions (Leary, Tate, Adams, Batts Allen, & Hancock, 2007; Beaumont, Galpin, & Jenkins, 2012; Dodds et al., 2015).

Negative metacognitive beliefs predicted RNT with a positive correlation. This link has been established by Bailey and Wells (2015) who maintained that psychological distress or disorders are associated with metacognitive beliefs. Roussis and Wells (2006) also alluded that negative metacognitive beliefs exacerbate worries and fear, thus, worsening the experience of anxiety.

Forgiveness was found to mediate the effect of negative metacognitive beliefs on RNT. This was shown in Stepwise Regression equations and confirmed in a PROCESS HAY Mediation analysis; the effect of negative metacognitive beliefs on RNT was dampened when forgiveness was entered into the model, indicating that forgiveness may potentially reduce the impact of negative metacognitive beliefs on RNT. Prior to this study, not much was known about the mediating role of forgiveness on the effect of negative

metacognitive on RNT. This study has provided evidence that becoming more forgiving may water-down the impact of negative metacognitive beliefs on RNT in individuals with PTSD or posttraumatic stress symptoms.

### **Limitations and future study**

This research may have benefitted from using a clinical sample of those with PTSD diagnosis, nevertheless, it is not free of limitations, thus caution must be considered while making generalisation. For instance, a limitation of the study is that participants were not further screened for psychological distress; they were self-reports of PTSD. This may have impacted on the findings of the study. Thus, future research should conduct additional screening for psychological distress such as (1) the Clinician Administered PTSD Scale (CAPS-5), a 30-item structured interview for diagnosing PTSD, (2) the PTSD Checklist for DSM-5 (PCL-5), a 20-item self-report measure for assessing PTSD symptoms, or (3) the Davidson Trauma Scale (DTS), a 17-item, Likert-scale, self-report instrument for assessing the frequency and a severity of PTSD symptoms. Another limitation is the over-reliance on quantitative data. Future studies should consider the use of mixed methods in examining RNT in PTSD patients, as mixed method offsets the limitations of quantitative method (Brannen, 2017; Mayoh and Onwuegbuzie, 2015).

### **Conclusion**

This study has provided insights to the potential role of self-compassion and forgiveness in the reduction or management of PTSD symptoms. Findings from the current study imply that becoming more forgiving may interact with meta-cognition to reduce RNT. Additionally, improving self-compassion may reduce negative metacognitive beliefs and RNT. Finally, embedding self-compassion and forgiveness in PTSD interventions may potentially help in

the reduction or management of PTSD symptoms.

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