



## Evaluating the role of repetitive negative thinking in the maintenance of social appearance anxiety: An experimental manipulation



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### ABSTRACT

Social appearance anxiety (SAA), or fear of having one's appearance negatively evaluated by others, is a risk factor for eating pathology and social anxiety, but maintenance processes for SAA remain unclear. The current study evaluated repetitive negative thinking (RNT) as a process through which SAA is maintained over time. Undergraduates ( $N = 126$ ) completed self-report measurements, made an impromptu speech task to induce SAA, and were randomized to either engage in RNT or distraction following the speech task. Participants then attended a second appointment one day later and were asked to make a second speech. Results indicated positive associations between self-reported trait SAA and RNT. Individuals asked to engage in RNT following the appointment 1 speech task reported significantly higher state SAA than those who engaged in distraction. Findings indicated no significant effect of group on appointment 2 SAA, but post-hoc analyses suggested that naturally-occurring RNT may have accounted for increases in SAA across appointments. Overall, results provide support for the importance of RNT in maintaining various internalizing symptoms.

### 1. Introduction

Social appearance anxiety (SAA), which refers to fears that one will be negatively evaluated by others regarding their appearance, has received attention as a shared vulnerability factor for social anxiety disorder and eating disorders (EDs) (e.g., Hart et al., 2008; Levinson & Rodebaugh, 2011). However, the processes through which SAA develops and is maintained over time remain unexplored.

#### 1.1. Repetitive negative thinking as a common maintenance process in EDs and social anxiety

Repetitive negative thinking (RNT), which is characterized as thoughts that are repetitive, passive, uncontrollable, and focused on negative content (Ehring & Watkins, 2008), represents a potential maintenance process for SAA. RNT is present across a range of diagnostic categories (e.g., depression, generalized anxiety) and may represent a transdiagnostic treatment target (Ehring & Watkins, 2008). Cognitive-behavioral models of social anxiety hypothesize that RNT is a central maintenance process for social anxiety disorder (e.g., Hofmann, 2007). Experimental work suggests that engaging in RNT following a social stressor—in comparison with distraction—results in greater

negative thinking and fewer positive beliefs about performance (Kocovski, MacKenzie, & Rector, 2011), greater anxiety (Rowa, Antony, Swinson, & McCabe, 2014; Wong & Moulds, 2009), engagement in avoidance behaviors (Hofmann, 2007; Rachman, Gruter-Andrew, & Shafran, 2000), and increases in later RNT (Rowa et al., 2014).

Recently, researchers have begun to evaluate the role of RNT in EDs. Existing work indicates a positive association between rumination and eating pathology, both within non-clinical (Cowardrey & Park, 2012; Rawal, Park, & Williams, 2010) and clinical samples of women (Cowardrey & Park, 2012; Rawal et al., 2010; Sassaroli et al., 2005). Additionally, one prospective study established an association between rumination and later ED symptoms in a sample of adolescent girls (Nolen-Hoeksema, Stice, Wade, & Bohon, 2007). Findings from initial experimental investigations suggest that compared with distraction, engagement in rumination is associated with increases in body dissatisfaction, general negative affect, anxiety, and intentions to engage in ED behaviors (Etu & Gray, 2010; Naumann, Tuschen-Caffier, Voderholzer, Caffier, & Svaldi, 2015; Rawal et al., 2010).

#### 1.2. Limitations of existing research on RNT

In comparison with well-developed lines of research into worry and

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rumination (e.g., Blagden & Craske, 1996; Morrow & Nolen-Hoeksema, 1990), there is a lack of work evaluating RNT within EDs experimentally. Additionally, experimental work within social anxiety has focused on proximal, rather than long-term, effects of RNT. Investigation into longer-term effects of RNT is particularly important in light of theoretical assertions that RNT may interfere with corrective learning (Hofmann, 2007) and maintain anxiety for future stressors over time (Brozovich & Heimberg, 2008). Thus far, only two investigations in social anxiety have evaluated either the effects of RNT outside of one in-lab appointment or have tested the influence of RNT on responding to a later stressor. First, Kocovski et al. (2011) found that socially anxious individuals that engaged in distraction following a speech reported more positive thoughts in the week after than those that engaged in RNT. Blackie and Kocovski (2016) found that among a sample of individuals with elevated social anxiety, engagement in distraction, as compared to RNT and control conditions, was associated with less RNT and decreased anticipatory anxiety for another speech, one day later. Experimental study elucidating a link between RNT and anxiety for later stressors may explain why some individuals with social anxiety or EDs may experience repeated exposure to feared stimuli or situations without a decrease in subjective or objective anxiety (Brozovich & Heimberg, 2008).

### 1.3. The current study

The first aim of the current study was to extend existing research by evaluating links between SAA and RNT in a sample of female undergraduates. To do so, we evaluated relations between trait SAA and trait RNT, hypothesizing that there would be a significant, positive association between SAA and RNT. Additionally, given that much of existing research on SAA has been cross-sectional in nature, we evaluated the influence of an RNT induction on state SAA, following an appearance-related speech task. Based on prior research, we hypothesized that individuals instructed to engage in RNT following the speech task would report higher levels of state SAA, as compared with individuals who engaged in a distraction task.

Second, previous research has suggested that RNT maintains anxiety-related symptoms over time; however, few studies have tested this assertion directly. The second aim of the study was to test whether engaging in RNT following an appearance-related speech task influenced anticipatory SAA for an identical speech task, one day later. Based on theoretical models that hypothesize that RNT interferes with corrective learning, we hypothesized that individuals instructed to engage in RNT would report higher anxiety prior to the same task one day later, as compared with individuals that engaged in distraction.

## 2. Methods

### 2.1. Participants

Participants ( $N = 126$ ) were female undergraduate students at a medium-sized university in the northeastern United States. We chose to only include females due to the fact that all prior work in RNT within EDs (e.g., Etu & Gray, 2010; Naumann et al., 2015), as well as the SAA experimental manipulation employed in the current study (Levinson & Rodebaugh, 2014), has focused exclusively on females. Subjects for the study were recruited using the university's research pool and were required to not endorse suicidality or hopelessness in a screening measurement. The mean age of the sample was 18.79 ( $SD = 1.14$ ), and the mean BMI was 23.63 ( $SD = 4.17$ ). In terms of race and ethnicity, 32.5% ( $n = 41$ ) of subjects self-identified as "White," 25.4% ( $n = 32$ ) identified as "Black or African-American," 19.8% ( $n = 25$ ) as "Hispanic or Latino," 11.9% ( $n = 15$ ) as "Asian or Asian-American," 7.1% ( $n = 9$ ) as "Multi-racial," and 3.1% ( $n = 4$ ) indicated their racial and ethnic identity as "Other."

### 2.2. Measures and materials

**Social Appearance Anxiety Scale (SAAS; Hart et al., 2008; Cronbach's  $\alpha = 0.96$ ).** The SAAS is a 16-item measure developed to assess fear of negative evaluation specific to appearance.

**Perseverative Thinking Questionnaire (PTQ; Ehring et al., 2011; Cronbach's  $\alpha = 0.95$ ).** The PTQ is a 15-item measurement of general RNT. The scale has three subscales; however, in our sample, we used the total score as an indicator of general trait RNT.

**Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996; Cronbach's  $\alpha = 0.90$ ).** The BDI-II is a commonly-used, 21-item measure of depression.

**State Social Appearance Anxiety (Levinson & Rodebaugh, 2014).** To assess state SAA throughout both appointments, participants completed a 6-item measurement of state SAA used in a previous experimental study (Levinson & Rodebaugh, 2014). The state SAA scale was adopted from the trait version of the SAAS (Hart et al., 2008), but items were reworded to apply to the current moment. The measurement was completed by study participants throughout both appointments and had excellent internal consistency (Cronbach's  $\alpha$ 's = 0.87–0.93). We examined shifts in state SAA related to experimental tasks through evaluating baseline SAA, pre-speech SAA (i.e., as a measurement of stress in response to the speech task), and post-cognitive task SAA (i.e., as a measure of stress in response to the cognitive task).<sup>1</sup>

**Social Evaluation Task.** Participants were required to complete an impromptu speech task to induce SAA, which was similar in format to traditional in-lab speech tasks (Kirschbaum, Pirke, & Hellhammer, 1993). To elicit SAA rather than generalized social anxiety, we followed the procedures outlined in a prior study that successfully manipulated SAA in a sample of female undergraduates (Levinson & Rodebaugh, 2014). Participants were told by a female experimenter that the study was investigating how individuals make appearance-related judgments and the effects of such judgments. They were told that they were required to give a videotaped six-minute speech, which would be rated by a peer judge (they were not aware of the gender of the judge) based on the participant's physical appearance during the speech. They were not told whether or not they would receive feedback regarding their performance at a later date. Across all appointments, there were two experimenters present in the laboratory—one male and one female. The female experimenter delivered all instructions for the study and was the only person in the room during the preparation and execution of the speech tasks.

**RNT and Distraction Tasks.** The RNT and distraction tasks were adapted from a widely-used task to promote worry and rumination (Blagden & Craske, 1996; Morrow & Nolen-Hoeksema, 1990). Participants were presented with an "imagination task" wherein they were asked to focus on a series of statements placed on index cards. The general content of the RNT index cards was taken from the traditional rumination task referenced above, but was tailored to the speech stressor used in the current study, as has been done in previous work (e.g., Wong & Moulds, 2011). Example items include, "Think about: the expectations that the peer judge may have had for your body." Participants randomly assigned to the distraction condition were handed a set of notecards with phrases unrelated to the task on them, such as "Think of the baggage claim area at the airport."

<sup>1</sup> The current study was part of a larger project which included an additional measurement of state SAA following the speech, as well as psychophysiological measurements; however, due to equipment issues, there was significant missing data across Appointments 1–2 and we chose not to include this data within the current manuscript. For details regarding our rationale in choosing this measurement within analyses and alternative analyses using this data point, please see the Supplement.

<sup>2</sup> For alternative analyses using post-speech data, please see the Supplement.

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