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Within the mind's eye: Negative mental imagery activates different emotion regulation strategies in high versus low socially anxious individuals

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ABSTRACT

Background and objectives: The link between social anxiety (SA) and maladaptive emotion regulation has been clearly established, but little is known about the spontaneous regulation strategies that may be activated during social stress by negative involuntary mental images and whether the nature of such strategies might distinguish individuals with high vs. low trait SA.
Methods: Participants with high ($n = 33$) or low ($n = 33$) trait SA performed an evaluative speech and reported whether they experienced an involuntary negative mental image during the task. They also rated their negative affect (NA) and positive affect (PA) and the extent to which they viewed their image as being controllable and malleable. Finally, they described the types of strategies they spontaneously used to try to control or change their image intrusions. Reported strategies were then subjected to a content analysis and categorized by blinded coders.
Results: Among high SA participants, image controllability was both diminished overall and positively correlated with PA. Whereas 90% of low SA individuals reported that they spontaneously self-regulated by altering the content or perceptual features of their images, only about half of the high SA participants used this strategy, with the other 50% reporting that they either suppressed their images or succumbed passively to them in whatever form they took.
Limitations and conclusions: Although these initial findings require replication in future experimental studies on clinical samples, they also help to enrich our understanding of the strategies that are commonly used by high and low SA individuals to manage their image intrusions during in-vivo stress and suggest potential avenues for future research on the role of imagery in adaptive and maladaptive emotion regulation.

Most people, including both high and low trait socially anxious individuals, experience involuntary negative mental images in anxiety-provoking social situations (Chiupka, Moscovitch, & Bielak, 2012; Moscovitch, Gavric, Merrifield, Bielak, & Moscovitch, 2011). Such images are often derived from autobiographical memories of past negative events (see Brewin, Gregory, Lipton, & Burgess, 2010; Morgan, 2010) and may be experienced as highly symbolic visual scenes in which one "sees" oneself from an observer's perspective behaving in an embarrassing or unacceptable manner (e.g., Hackmann, Clark, & McManus, 2000; Hackmann, Surawy, & Clark, 1998).

Although research has shown that the majority of people experience such images, studies also indicate that the *impact* of these images – across cognitive, emotional, and behavioral domains – may be considerably more toxic for those with higher levels of trait social anxiety (SA). Indeed, image intrusions in anxiety-provoking social situations have a much greater negative influence on high than low SA individuals' views of themselves, others, and the world, even though the objective negative content of these images is virtually indistinguishable between the two groups (Moscovitch et al., 2011). Moreover, when high SA individuals or those with a clinical diagnosis of social anxiety disorder (SAD) are instructed to hold negative self-images in mind, they experience significant elevations in anxiety, increases in perceived visible symptoms of arousal, heightened self-critical appraisals, and greater social performance impairments compared to when they visualize control images (Hirsch, Clark, Matthews, & Williams, 2003; Hirsch, Meynen, & Clark, 2004; Stopa & Jenkins, 2007). In contrast, negative self-images may not impact low SA participants

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differently than control images (e.g., Vassilopoulos, 2005; but see also Makkar & Grisham, 2011).

What might account for the differential influence of negative images in high vs. low SA individuals? According to the *combined cognitive biases hypothesis* (Hirsch, Clark, & Mathews, 2006), one reason that high trait SA might exacerbate the impact of negative images is that imagery interacts with people's existing cognitive biases to amplify their detrimental consequences. From this perspective, it is understandable that high SA individuals, who believe that they are socially awkward and undesirable across a number of different domains (Moscovitch, 2009; Moscovitch, Orr, Rowa, Gehring-Reimer, & Antony, 2009), would be negatively affected by mental image intrusions in which they appear socially incompetent or visibly anxious. In contrast, low SA individuals, who experience similar image intrusions, are likely more capable of recognizing them in the moment as being negatively biased self-representations that do not correspond to how they actually appear to others (or to themselves).

Thus, it seems that one critical difference between high and low SA individuals might be the extent to which they tend to appraise their images as being accurate self-representations that convey something meaningful about themselves and how they come across to others in social situations (see Clark & Wells, 1995). It is logical, therefore, that *imagery rescripting* (IR), a cognitive-behavioral intervention for SAD (Nilsson, Lundh, & Viborg, 2012; Wild & Clark, 2011; Wild, Hackmann, & Clark, 2007) and other psychological problems (see Arntz, 2012), is hypothesized to work by instilling a "meta-cognitive shift [in patients] towards seeing the distressing self as being the product of their own mind rather than mirroring reality" (Wild et al., 2007, p. 399). In essence, IR guides patients through an elaborate reappraisal process in which they are instructed to recount the earlier autobiographical memories upon which their images are based while adopting a "wiser" (i.e., a more balanced or realistic) and more self-compassionate present-day perspective. Through this process, patients are encouraged to gain greater objective distance from their negative images and to update their meaning (and that of the memories in which they are rooted) by actively transforming their content or features into a more benign form.

Although additional controlled studies are needed to conclude more definitively that IR is clearly efficacious in the treatment of SAD, the reappraisal processes which lie at the core of the intervention appear to be crucial for reducing the impact of negative autobiographical imagery in SA. Following this premise, it is intriguing to ponder the types of self-regulatory strategies that individuals who have never received IR might use when their images intrude during social encounters. Because people both high and low in trait SA are generally quite motivated to make a positive impression on others in social situations, it is reasonable to assume that most, if not all, individuals would attempt to use some kind of compensatory strategy to cope with their image intrusions when they arise while they simultaneously try to stay engaged in the social encounter. Moreover, since people are generally motivated to experience positive emotions – and negative image intrusions have been shown in experimental studies to amplify and maintain negative affect and distress (see Holmes & Mathews, 2010) – it is likely that people who typically experience such intrusions have learned to use certain emotion regulation strategies to cope with them, even in the absence of any treatment. Cognitive reappraisal and expressive suppression are two such strategies that have received much attention in the literature (Gross, 1999). Research studies have consistently demonstrated that suppression, relative to reappraisal, is associated with greater negative affect, less positive affect, increased physiological arousal, poorer life satisfaction, higher levels of depression symptoms, and more interpersonal difficulties (Gross & John, 2003; Haga, Kraft, & Corby, 2009; Harris, 2001; Kashdan & Steger, 2006; Moore, Zoellner, & Mollenholt, 2008).

It is of interest, therefore, to investigate the nature and efficacy of these strategies in relation to negative imagery, and how they might distinguish high from low SA individuals. It is possible, for example, that low SA individuals might habitually initiate reappraisal processes to cope with their negative images that resemble those that characterize IR, whereas high SA individuals might be more likely to attempt to suppress or avoid their intrusive images when they arise, as they tend to do vis-à-vis their internal emotional responses within socially threatening contexts (see Werner, Goldin, Ball, Heimberg, & Gross, 2011), with deleterious consequences (Hofmann, Heering, Sawyer, & Asnaani, 2009).

Here, we present a preliminary study – to our knowledge, the first of its kind – which, was designed to investigate: (a) the extent to which high and low SA individuals perceive their image intrusions as being controllable or malleable; (b) whether perceptions of image controllability are associated with experiences of positive and negative affect during social stress; and (c) the types of strategies participants report using in order to manage, control, or change spontaneous negative mental image intrusions when they arise during an in-vivo social task. Since socially anxious individuals are prone to perceiving social stress and their reactions to it as being relatively uncontrollable (see Hofmann, 2007), we hypothesized, first, that participants with high trait SA would also view their image intrusions as being less controllable or malleable than their low SA counterparts. Second, we predicted that across both groups of participants, increased image controllability would be associated with increased positive and decreased negative affect but that such associations would be particularly pronounced among high SA individuals. Third, we hypothesized that participants would report using a variety of self-regulatory strategies to manage their negative image intrusions that could be classified reliably into distinct categories, but that the nature of such strategies would distinguish high from low SA participants. Specifically, because high SA individuals habitually use maladaptive emotion regulation strategies to cope with social stress (see Hofmann, Sawyer, Fang, & Asnaani, 2012; Werner et al., 2011), we expected that they would be less likely than low SA participants to reappraise their images spontaneously and more likely to try to suppress or avoid them.

1. Method

1.1. Participants

Participants in the present study were among the 85 (39 high SA and 46 low SA) individuals who participated in a previously published study that investigated the retrieval properties of negative mental images and associated autobiographical memories accessed during an in-vivo speech task (Chiupka et al., 2012). Sixteen of these participants (18.8%) were initially excluded from the current study, including 4 from the high SA group and 12 from the low SA group, because they did not report experiencing an image during the speech task. Of the remaining 69 participants who did endorse experiencing an image during the task, an additional 3 were excluded because they failed to answer (i.e., left blank) the questions about the nature of their spontaneous image coping strategies. Thus, our final sample for the present study consisted of 66 individuals (33 high and 33 low SA participants; comprising 77.6% of the original study sample).

Fifty (76%) of the participants in the present study were female, with a mean age of 19.18 (SD = 1.73; range = 17–27). Thirty (45.5%) participants identified their ethnic or racial background as Caucasian and 23 (34.8%) identified as Asian, with the remaining 13