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An investigation into the jumping-to-conclusions bias in social anxiety

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ABSTRACT

'Jumping-to-Conclusions' (JTC) is a data-gathering bias characterised by hasty decision-making, and is typically seen in individuals with high levels of delusions or paranoia. JTC has also been found in people with high trait and state anxiety. The present study aimed to explore the relationship between JTC and trait social anxiety and state anxiety, given paranoia is common in both social anxiety and psychotic disorders. One-hundred-and-eighty-six undergraduate students were allocated to a manipulation or control condition, and classified as high or low socially anxious. All participants completed the 'beads task' to assess JTC, and the State-Trait Anxiety Inventory (state subscale) to assess state anxiety. Participants in the manipulation condition were given an anxiety-inducing situation. Although the manipulation was effective in inducing state anxiety, there was no significant correlation between JTC and trait or state social anxiety. High socially anxious individuals showed more conservative decision-making than controls over time, which was posited to be caused by inhibited working memory resulting from increased state anxiety.

1. Introduction

The 'Jumping-to-Conclusions' (JTC) bias is a well-documented phenomenon that is typically observed in people with high levels of delusions or paranoid ideations (Huq, Garety, & Hemsley, 1988). According to cognitive models of delusional beliefs (Freeman, 2007; Garety & Freeman, 2013), when an individual jumps to a conclusion based on less information, it increases their risk of drawing incorrect conclusions, which could result in delusional explanations (McLean, Mattiske, & Balzan, 2016). Once an individual becomes biased, it facilitates the maintenance of these delusional beliefs as not only are they less likely to process additional information once they have made a decision, they also tend to show a high level of confidence in their judgements (Warman, Lysaker, Martin, Davis, & Haudenschield, 2007).

The most common method of measuring JTC is by using a probabilistic reasoning task called the beads task (Huq et al., 1988). This task involves participants viewing two containers, each of which contains beads of opposite colours at opposing ratios (e.g., 85:15 green and pink beads). The containers are hidden from the participants' view and the participant is then shown a series of beads being drawn one at a time from the same container, in a predetermined order. The participant is asked to make a decision as to which container the beads are being drawn. JTC is commonly measured by calculating the number of draws it takes to reach a confident decision (i.e., draws to decision). Research has consistently found individuals with schizophrenia spectrum disorders, where persecutory delusions and paranoia are common symptoms, show an

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increased JTC bias when compared to healthy and non-psychosis psychiatric controls (McLean et al., 2016). Moreover, this tendency increases with delusional severity, and has been associated with high levels of delusion-proneness in sub-clinical populations (McLean et al., 2016; Ross, McKay, Coltheart, & Langdon, 2015).

While delusional severity and paranoia are often found to be associated with an increased JTC bias, recent studies have investigated other contextual factors that might also be influencing the tendency to make hastier decisions. One line of enquiry has suggested that JTC may be heightened when individuals are exposed to stressful and/or anxiety-provoking situations (Ellett, Freeman, & Garety, 2008; Keefe & Warman, 2011; Lincoln, Lange, Burau, Exner, & Moritz, 2010), and may even be more pronounced in people with high trait anxiety (Bensi & Giusberti, 2007). It has been suggested that in situations of uncertainty, such as when performing decision-making tasks, highly anxious individuals overestimate the likelihood of a negative event occurring, leading to feelings of discomfort (Bensi & Giusberti, 2007). Therefore, these individuals may "ju mp-to-conclusions" in an effort to reduce these feelings of discomfort (Bensi & Giusberti, 2007). Furthermore, a number of studies have identified that individuals with anxiety commonly experience persecutory delusions (Fowler et al., 2006; Martin & Penn, 2001) and paranoia (Freeman et al., 2013). Consequently, it makes sense to investigate the JTC bias within specific anxiety disorders, such as social anxiety disorder (SAD), where high levels of anxiety and/or paranoia are common features.

It has been suggested that there is considerable overlap in the psychological processes of SAD and persecutory delusions (Gilbert, Boxall, Cheung, & Irons, 2005). A major feature of SAD and persecutory delusions is a fear of others and a tendency to perceive social situations as threats (Taylor & Stopa, 2013). When individuals with SAD are faced with a social situation in which they may be evaluated by others, they automatically perceive others to evaluate them negatively, resulting in them being embarrassed or humiliated (Clark & Wells, 1995). People with persecutory delusions also typically experience a fear of others and social situations, however, this fear is due to believing that others will cause them physical and/or psychological harm (Taylor & Stopa, 2013).

SAD and persecutory ideations/delusions are also both characterised by a strong self-referencing bias; a belief that they are the object of other peoples' attention (Gilbert et al., 2005); and increased self-consciousness when in social situations (Clark & Wells, 1995), a factor that has been found to lead to an increase in paranoia (Fenigstein & Vanable, 1992). This increased paranoia then triggers these individuals to become increasingly attentive to cues which may confirm their negative beliefs, and results in increased cognitive arousal, fear, anxiety and stress (Stopa, Denton, Wingfield, & Taylor, 2013). Overall, the abnormal evaluation of environmental cues that has been suggested as a potential cause of JTC in people with persecutory delusions/paranoia (Menon, Pomarol-Clotet, McKenna, & McCarthy, 2006) is also seen in individuals with SAD. As such, it is possible to suggest that JTC may also be elevated in people with SAD, even if not to the same extent as it is found in people with persecutory delusions.

Although there is no clear description of JTC in current models of SAD, several concepts address biases that are similar to JTC. For example, Clark and Wells (1995) explain how people with SAD tend to interpret ambiguous social events as negative, and mildly negative social events as catastrophic. Individuals with SAD also prefer negative interpretation without considering the positive or neutral interpretations when they are presented with ambiguous, self-related social scenarios (Amir, Foa, & Coles, 1998). This suggests that when faced with self-related social situations, individuals with SAD are likely to jump to negative conclusions without taking into account all the information presented. This is a typical characteristic of JTC, whereby individuals come to conclusions without having sufficient evidence to support their decision (McLean et al., 2016).

Another cognitive behavioural model of SAD by Heimberg, Brozovich, and Rapee (2014) proposed that individuals with SAD commonly experience a judgement bias. That is, these individuals tend to overestimate the probability and cost of being negatively evaluated by others when in a social situation, expecting the outcome of present or future social events to be negative (Heimberg et al., 2014). It is suggested that such a judgment bias is influenced by biased attentional focus, where socially anxious individuals detect threat cues quickly (e.g., Gilboa-Schechtman, Foa, & Amir, 1999; Juth, Lundqvist, Karlsson, & Ohman, 2005; Miskovic & Schmidt 2012; Mogg, Philippot, & Bradley, 2004; Pishyar, Harris, & Menzies, 2004) or have difficulties disengaging their attention from potential threat cues (e.g., Amir, Elias, Klumpp, & Przeworski, 2003). This is similar to what was proposed in one theory of JTC, which indicated JTC occurs as a result of the abnormal salience of evidence that supports a belief or hypothesis (Balzan, Delfabbro, Galletly, & Woodward, 2012; Speechley, Whitman, & Woodward, 2010). That is, individuals with persecutory delusions are attracted to the salient threat cues and make decisions quickly without judging the evidence appropriately. It is therefore likely that socially anxious individuals jump to the conclusion that negative evaluations are likely and extremely detrimental without processing sufficient information as they only focus on the salient threat cues detected to support their assumptions.

Lincoln, Salzmann, Ziegler, and Westermann (2011) investigated the relationship between trait social anxiety and JTC in a non-clinical sample. They found participants with varying levels of delusion proneness and social anxiety to request less information when dealing with scenarios that were self-relevant and delusion-relevant, compared to non-self-relevant scenarios. However, those with high social anxiety did not differ in their JTC bias when compared to those with medium or low social anxiety, indicating that trait social anxiety did not affect JTC. A subsequent study by Schlier, Helbig-Lang, and Lincoln (2015) investigated whether individuals with SAD were more likely to jump-to-conclusions in neutral and socially threatening situations compared to a control condition. JTC was assessed using the original beads task and a socially-orientated version of the task. It was found that those with SAD were actually *less* likely to jump-to-conclusions when compared to healthy controls.