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Recall of threat material is modulated by self or other referencing in people with high or low levels of non-clinical paranoia

J. Greer [a], D. Smailes [b], H. Spencer [c], M. Freeston [a], R. Dudley [b, c, *]

[a] Institute of Neuroscience, Doctorate of Clinical Psychology, Ridley Building, Newcastle University, Newcastle, United Kingdom
[b] Doctorate of Clinical Psychology, School of Psychology, Ridley Building, Newcastle University, Newcastle, United Kingdom
[c] South of Tyne Early Intervention in Psychosis Service, Northumberland Tyne and Wear Foundation NHS Trust, United Kingdom

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ABSTRACT

Background and objectives: Biased processing of negatively valenced, and particularly threat-related material plays an important role in the development of paranoid thinking. This has been demonstrated by superior memory for threat-related information in patients with persecutory delusions and in non-clinical paranoia-prone participants. This study examined how emotional material was recalled having been encoded in relation to one self or to another person, in people high or low in paranoid ideation. It was predicted that people high in paranoia would recall more threat related material about others than people low in paranoia owing to being particularly alert to threats from other people.
Methods: Participants who reported high ($N = 30$) or low ($N = 30$) levels of sub-clinical paranoid thinking were presented with a series of threat-related and positive words and were asked to process them in terms of the self, or in terms of a fictional character.
Results: As predicted, when words were processed in terms of another person, the high paranoia group recalled more threat-related words than positive words, but when words had been processed in terms of the self, recall of threat-related and positive words did not differ. In contrast, there was no interaction between word-valence and referent in the low paranoia group.
Limitations: These findings are drawn from an analogue sample. Replication in a sample of clinical participants who report persecutory delusions is required.
Conclusions: People high in sub-clinical paranoid ideation recalled threat preferentially in relation to other people. Such information processing biases may help understand the development and maintenance of persecutory beliefs.

1. Introduction

Paranoia is characterised by suspicion and mistrust of other people (Freeman & Garety, 1999; Manschreck & Khan, 2006). It is a common experience, with a third or more of people reporting mistrust of those around them (Freeman, 2007). It has been argued that paranoid thoughts are part of a hierarchy or continuum of paranoia (Freeman et al., 2005), with sub-clinical paranoid thoughts representing a milder, attenuated form of the persecutory delusions reported by people who have mental health problems (Fengistein & Vanable, 1992; Freeman, 2007). However, while sub-clinical paranoid thoughts are less distressing and pertain to less improbable events than persecutory delusions (Bentall & Udachina, 2013), many of the factors (e.g., reasoning biases, cannabis use, social adversity) that play a role in the development of persecutory delusions also appear to play a role in the development of paranoid thinking (e.g., Davies, Coltheart, Langdon, & Breen, 2001; Fine, Gardner, Craigie, & Gold, 2007; Kelleher & Cannon, 2011; Woodward, Mizrahi, Menon, & Christensen, 2009). Thus, much can be learned about the development of persecutory delusions through the study of paranoid thinking in non-clinical participants.

Cognitive models of paranoia and persecutory beliefs specifically recognise a role for biased processing of threat-related material in the genesis and maintenance of these ideas (e.g., Bentall, Corcoran, Howard, Blackwood, & Kinderman, 2001; Freeman, Garety, Kuipers, Fowler, & Bebbington, 2002). A number of studies have demonstrated that paranoia is associated with biases

* Corresponding author. Doctorate of Clinical Psychology, Newcastle University, Ridley Building, Newcastle, NE1 7RU, United Kingdom. Tel.: +44 0191 222 7925; fax: +44 0191 222 7520.
E-mail address: r.e.j.dudley@ncl.ac.uk (R. Dudley).

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in attention towards threat-related information (see Green & Phillips, 2004; for a review). Meanwhile, another set of studies have demonstrated that paranoia is associated with memory biases for threat-related material. For example, Bentall, Kaney, and Bowen-Jones (1995) presented participants with a list of 36 words, which were threat-related, depression-related, or neutral. Control participants recalled more neutral words than threat-related words (recall for depression-related words fell between recall for threat-related and neutral words, and was not significantly different from either). In contrast, participants with persecutory delusions recalled more threat-related words than neutral words (again, recall for depression-related words fell between recall for threat-related and neutral words, and was not significantly different from either). Similarly, Kaney, Wolfenden, Dewey, and Bentall (1992) asked participants to read passages of prose that contained a mixture of threat-related and neutral propositions. When subsequently tested participants with persecutory delusions recalled fewer propositions overall than control participants. However, participants with persecutory delusions recalled more threat-related propositions than did control participants. This tendency towards better memory for threat-related material has also been demonstrated in non-clinical, paranoia-prone participants. For example, Larøi, D'Argembaue, and Van der Linden (2006) reported that non-clinical, paranoia-prone participants performed similarly to control participants when they were asked to recognise faces that had previously been presented to them with a happy expression. However, paranoia-prone participants were better than controls at recognising faces that had previously been presented to them with an angry expression.

Thus, in both clinical and non-clinical samples, paranoid thinking appears to be associated with biases involving remembering threat-related material. One variable that has not yet been examined in these studies is whether the to-be-remembered material is processed with reference to oneself or with reference to another person. This is important because (a) memory performance is modulated by whether a person processes information in terms of the self, or in terms of another person, (b) memory performance can be modulated by a person's beliefs, and (c) negative beliefs about the threat posed by others are at the heart of the experience of paranoid thinking.

Numerous studies in non-clinical participants have reliably shown that stimuli that are processed with reference to the self are more likely to be recalled than are stimuli that are processed with reference to another person (the self-reference effect; Rogers, Kuiper, & Kirker, 1977; Symons & Johnson, 1997). For example, in typical self-referencing studies, participants are presented with a series of trait adjectives (e.g., intelligent, shy) and, in separate conditions are asked whether that trait describes their own personality or whether that trait describes another person's (e.g., their best friend, their mother, the head of state) personality. Importantly, some studies have suggested that the emotional valence of the to-be-remembered stimuli interacts with this effect. For example, Miall (1986) reported that while participants who had been asked to process stimuli with reference to the self recalled more negative than positive phrases, participants who had been asked to process stimuli with reference to another person recalled more positive than negative phrases. Given that material that is consistent with a person's pre-existing beliefs is more likely to be recalled than is material that is inconsistent with such beliefs (e.g., Story, 1998; Swann & Read, 1981) the bias towards better recall of negative material in relation to the self was explained in terms of the task promoting self-evaluation and causing individuals to focus on their short-comings. Meanwhile, the bias towards better recall of positive material in relation to another (in this case, a friend) can be explained in terms of people generally holding positive beliefs about others. The pattern of results reported by Miall have not, however, been consistently replicated (e.g., Herbert, Pauli, & Herbert, 2010). This suggests that the effect is complex and may be modulated by a number of factors, including the identity of the other person that the to-be-recalled stimuli are processed with reference to. For example, if the 'other' is a familiar person—as in Bower and Gilligan's (1979) study, where the 'other' was the participant's mother—then participants may show the effect reported by Miall. This is likely to be because the majority of participants' beliefs about that other person can be accurately inferred (i.e., most participants will have positive beliefs about their mother). In contrast, when the 'other' is an unfamiliar, famous person (e.g., a politician), then participants may show a different response pattern, and this may be because participants' beliefs about that person are more difficult to infer.

The present study examined the association between sub-clinical paranoid thinking and memory biases for threat-related material and how this might be modulated by whether stimuli are processed in terms of the self, or in terms of another person. This was done using a memory paradigm in which a series of threat-related and positive words had to be processed with reference to the self or with reference to an 'other' who was a fictional, neutral character (referred to as 'the stranger' in the Method section). Given that paranoid thinking is strongly associated with negative, threat-related beliefs about others (e.g., that others are untrustworthy and hostile; Fowler et al., 2006), participants high in paranoid thinking should have negative, threat-related beliefs about a novel stranger, while participants who report low levels of paranoid thinking should not hold such beliefs about the same stranger. As in many other studies, we expected participants to demonstrate the self-reference effect. However, we also expected that, in paranoia-prone participants, there would be an interaction between word valence and referent (i.e., whether the word was processed in terms of the self, or in terms of another person). More specifically, we predicted that, when words had been processed in terms of the novel stranger, paranoia-prone participants would recall more threat-related than positive words, but that when words had been processed in terms of the self, paranoia-prone participants would recall a similar number of threat-related and positive words. In contrast, we predicted that no such interaction would be found in the control participants (i.e., those who report low levels of paranoid thinking). This was because the 'other' employed in the present study was a fictional stranger, about whom participants who report low levels of paranoid thinking were unlikely to have strongly valenced beliefs.

2. Method

2.1. Participants

Participants were 123 university and college students (19 males, 102 females) aged between 18 and 58 years ($M = 24.70$, $SD = 4.71$). While all participants completed the tasks and questionnaires described below, data analysis refers only to those participants who scored in the top and bottom quartiles on a measure of paranoid thinking (Fengistein & Vanable, 1992, Paranoia Scale; described in more detail in subsection 2.3.2). The low paranoia group consisted of 30 participants (4 males, 26 females) aged between 18 and 35 years ($M = 24.60$, $SD = 4.16$). The high paranoia group consisted of 30 participants (3 males, 27 females) aged between 18 and 32 years ($M = 23.06$, $SD = 3.45$). The two groups did not differ in terms of gender ($p = .69$) or age ($p = .24$).

2.2. Design

A mixed between- and within-subjects design was used. Independent variables were paranoia group (high or low on a measure