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Hallucinations in the months after a trauma: An investigation of the role of cognitive processing of a physical assault in the occurrence of hallucinatory experiences

Georgina Geddes[a,*], Anke Ehlers[b], Daniel Freeman[a]

[a] Department of Psychiatry, University of Oxford, Warneford Hospital, Oxford OX3 7JX, UK
[b] Department of Experimental Psychology, Tinbergen Building, 9 South Parks Rd, Oxford OX1 3UD, UK

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ABSTRACT

The role that cognitive processing of a recent trauma has in the occurrence of hallucinations has not been examined longitudinally. This study investigated trauma-related cognitive predictors of hallucinations in the months following an interpersonal assault. Four weeks after treatment at an emergency department for interpersonal assault injuries, 106 participants were assessed for peri-traumatic cognitive processing, cognitive responses to trauma memories, negative beliefs about the self, Posttraumatic-stress disorder (PTSD), and hallucinatory experiences. Hallucinatory experiences were reassessed six months later. Cognitive processing during trauma (lack of self-referential processing, and dissociation), beliefs about permanent negative change, self-vulnerability, and self-blame and cognitive response styles (thought suppression, rumination, and numbing) were significant predictors of later hallucinations. The way in which trauma is processed may partly determine the occurrence of hallucinations.

1. Introduction

Many clinical researchers consider childhood trauma as a possible contributory factor in the occurrence of hallucinations, based upon substantial evidence of an association found in retrospective studies (e.g. Read et al., 2005). An alternative, though complementary, perspective suggests that exposure to more proximal 'life events', recent negative occurrences that bring about a substantial change in personal circumstances for the worse, increases the risk in the subsequent weeks of psychotic experiences such as hallucinations (for review see Beards et al., 2013). The implication of trauma in the occurrence of hallucinations has led to cross-sectional studies of trauma-related processes and hallucinations (e.g. Gracie et al., 2007; Morrison and Petersen, 2003). Cognitive processing related to recent trauma in the prediction of subsequent hallucinations has not yet been tested. This paper reports such a test: examining cognitive processing in the aftermath of a recent physical assault in relation to the occurrence of hallucinations.

1.1. Cognitive processing during and in the aftermath of trauma

Cognitive processes during and after trauma have been extensively examined as factors in the development and persistence of post-traumatic stress disorder (PTSD) (e.g. Dunmore et al., 1999; Ehring et al., 2008; Kleim et al., 2007). At the centre of Ehlers and Clark's (2000) model is the idea that PTSD occurs when individuals process the trauma in a way that leads to a sense of current threat. This is thought to result from a combination of problematic information processing during trauma and negative appraisals of the trauma and its consequences. Problematic peri-traumatic cognitive processing, such as predominance of data-driven processing (focussing on sensory impressions), lack of self-referential processing (i.e. insufficient linking of the event to other autobiographical knowledge) and peri-traumatic dissociation results in a poorly elaborated and poorly contextualised memory of the event. As such, these memories are easily and involuntarily triggered into consciousness and have a strong sense of occurring in the present ('nowness', Michael et al., 2005). PTSD is thought to persist because negative appraisals of the trauma and its effects motivate a series of maintaining cognitive and behavioural strategies; these include cognitive responses to the intrusive memories such as rumination and thought suppression (Ehlers and Clark, 2000), persistent dissociation (Murray et al., 2002) and excessive precautions (safety behaviours).

* Corresponding author.
E-mail address: georgina.geddes@psych.ox.ac.uk (G. Geddes).

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1.2. Understanding trauma and hallucinations

A number of ways that trauma may lead to hallucinations have been proposed, five of which are highlighted here. First, the phenomenological overlap between hallucinations and the intrusive images and 'flashback' experiences often considered the hallmark symptoms of PTSD (Ehlers and Steil, 1995) has been noted, leading to suggestions that a minority hallucinations may be simply better understood as re-experiencing phenomena (e.g. McCarthy-Jones and Longden, 2015). Second, a 'weaker' version of the first account is that trauma related intrusive cognitions, including poorly contextualised trauma memories, are the type of low cognitive effort mental events that are most prone to source monitoring errors (e.g.Larøi et al., 2004) and hence lead to an increase in the occurrence of hallucinatory experience. Third, having been found to positively mediate the effect of childhood trauma on hallucination proneness (Varese et al., 2012), dissociation has been considered one explanatory factor. Dissociation may be particularly relevant to hallucinations as it is characterised by a sense of disconnect from reality. However the mechanism through which dissociation might promote hallucinations remains to be clarified. Fourth, exposure to trauma can cause negative changes in thoughts about the self (e.g. Foa et al., 1999), such as the sense of being permanently changed for the worse (e.g.Dunmore et al., 2001), resulting in previous conscious content being experienced as alien (e.g. Morrison, 2001). Finally, maladaptive cognitive responses to intrusive memories and thoughts (e.g. rumination and thought suppression), may amplify the chances of hallucinatory experiences as they not only increase the occurrence of intrusive cognitive events but also increase their intensity (Guastella and Moulds, 2007; Yoshizumi and Murase, 2007).

1.3. Current study

In this study, hallucinations are examined in relation to the processing of a recent interpersonal assault. This secondary analysis of a study focussing primarily on paranoia (Freeman et al., 2013) aimed to investigate associations between trauma-related processing and cognitions, derived from Ehlers and Clark's (2000) model of PTSD, and hallucinations. It was hypothesised that problematic peri-traumatic processing (data-driven processing, lack of self-referential processing and dissociation), negative appraisals of the consequences of trauma (permanent change, vulnerable self, self-blame) and maladaptive cognitive control strategies (thought suppression, rumination and numbing) would all predict the presence and maintenance of hallucinations.

2. Method

For a full description of methods see Freeman et al. (2013). The method used paralleled that of prospective studies of PTSD after assault previously conducted (e.g. Dunmore et al., 2001; Kleim et al., 2007). All individuals attending A & E Department for injuries relating to an interpersonal assault were written to and invited to take part in the study. Participants had an initial assessment between 4 and 6 weeks after the assault and were followed up over the following six months.

2.1. Participants

106 individuals were recruited. In order to meet the inclusion criteria individuals must have experienced a distressing assault within the previous month, attended the Accident and Emergency (A & E) Department at King's College Hospital, London for related injuries, been aged 18–65 years, and been able to attend a baseline assessment between 4 and 6 weeks after the assault. The main exclusion criteria were that the assault was part of on-going abuse, that there was a history of diagnosed severe mental illness, that they had a diagnosed alcohol or drug dependence, or that they had insufficient command of English so that the assessments could not be completed.

Broadly the types of assault experienced were confrontations (n=33), random attacks (n=24), muggings (n=22), one-off attacks from family member or friends (n=19) and attacks in the context of work (n=8). All participants reported sustaining injuries during the assault.

2.2. Measures

The subset of study variables used in this analysis are summarized below.

Hallucinatory experience at baseline was assessed with the self-report Cardiff Anomalous Perceptions Scale (CAPS) (Bell et al., 2006) and the interviewer-rated hallucinatory behaviour item of the Positive and Negative Symptoms Scale (PANSS) (Kay et al., 1987). At the 6 month follow up only the hallucinatory behaviour item of the PANSS was used. The interrater reliability of the two assessors (postgraduate psychologists) for the PANSS positive items was assessed using 12 audiotapes of the assessments. The intra-class correlation coefficient (0.92) indicated very high levels of reliability.

PTSD severity at baseline and at 6 months was measured with self-report Posttraumatic Diagnostic Scale (PDS) (Foa et al., 1999) and the interviewer versions of the PTSD symptom scale (PSSI) (Foa et al., 1993), combined with the PTSD section of the structured Clinical Interview for DSM-IV (SCID; First et al., 1996). Re-experiencing was assessed with the first 5 items of the PDS.

For assessment of peri-traumatic cognitive processing the Thoughts and Feelings During the Assault scale (Halligan et al., 2003, 2002); Mental Defeat Scale (Dunmore et al., 1999) and Cognitive Processing Questionnaire (Halligan et al., 2003, 2002) were used. Trauma appraisals were assessed with an updated version of the Posttraumatic Cognitions Inventory (Foa et al., 1999) and cognitive responses to trauma memories were assessed with the Response to Intrusions Questionnaire (Clohessy and Ehlers, 1999; Murray et al., 2002). Affective symptoms were assessed using the Depression Anxiety Stress Scales (Lovibond, 1995).

2.3. Statistical analysis

All analyses were carried out using SPSS version 13. A similar analytic strategy to Freeman et al. (2013) was used for comparability. The first stage was to provide a description of levels of hallucinatory experience within the participant group in the months following an assault. The patterns of correlation between PTSD re-experiencing and hallucinatory experience were then examined. The third stage used a series of simple univariate linear regressions to examine the prediction of hallucinatory experience at baseline and at 6 months. Finally predictor variables were assessed again after controlling for the baseline score of the dependent variable.

3. Results

3.1. Demographic details

There were more male than female participants (79 men and 27 women); the mean age was 34.4 years (S.D.=11.6 years).

3.2. Presence of hallucinations/anomalous experience

Mean scores of the hallucination and re-experiencing measures are displayed in Table 1.

There was a high correlation between the total scores for the self-report (CAPS) and the interviewer-rated (PANSS) hallucination assessments at baseline, $r=0.54$, $p < 0.001$. Seven people (6.6%) were rated as having mild to moderate hallucinatory behaviour as measured by the