A systematic review and empirical study investigating cognitive and social models of voice-hearing

A thesis submitted to The University of Manchester for the Degree of Doctor of Clinical Psychology (ClinPsyD) in the Faculty of Biology, Medicine and Health

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Thesis Abstract

This thesis was completed by Samantha Wong for the degree of Doctor of Clinical Psychology (ClinPsyD) at The University of Manchester. The thesis title is 'A systematic review and empirical study investigating cognitive and social models of voice-hearing'. This thesis was submitted on the 14th of July 2016 and is comprised of three papers. Papers 1 and 2 have been prepared for submission to Clinical Psychology Review and Psychosis respectively.

Paper 1 presents a systematic review on the evidence for the relationship between appraisals of auditory verbal hallucinations and voice-related distress in psychosis. A literature search was conducted using the following electronic databases: Web of Science, PsycINFO, Embase and Pubmed. Twenty-four studies were identified that satisfied inclusion criteria for the review. Several types of appraisals were found to be associated with distress in voice-hearers: malevolence, control, power, origin of voices and benevolence beliefs. Evidence for an association was particularly strong for malevolence and control appraisals, indicating that these may be important to target in interventions. Overall findings generally supported that modification of voice appraisals, particularly malevolence, power and control appraisals, in cognitive therapy is associated with a reduction in voice-related distress.

Paper 2 presents an experimental study which explored whether people who are exposed to stressful material are more likely to report hearing voices when they are not present (i.e. false alarms). Factors that may predict or moderate voice-hearing were also explored. A non-clinical sample ($N = 130$) completed measures of trauma history, hallucination proneness, dissociation, affect and attachment styles, before being allocated to view pictures depicting stressful interpersonal scenarios or pictures with neutral interpersonal scenarios. Participants then completed a voice detection task. False alarms were recorded as a proxy measure of voice-hearing. Participants in the stressful group reported significantly higher levels of stress than in the neutral group. No differences were found in false alarms. Physical abuse history and depersonalisation significantly correlated with false alarms. This study indicates that people with physical abuse history and dissociative tendencies may be more vulnerable to hearing voices; clinically, these factors should therefore be assessed. However, findings of this study should be interpreted tentatively due to lack of diversity within the sample.

Paper 3 is a critical reflection of the systematic review, the empirical paper and the research process as a whole. Strengths and limitations of the presented research are discussed as well as directions for future research.

Declaration

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

Copyright and Ownership Statement

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I would like to extend my thanks to my supervisors, Dr Katherine Berry and Dr Sandra Bucci, for their patience, support and guidance throughout the research process. I would also like to thank Paul Fleming his for assistance with data collection and input, and Dr Samantha Hartley for her involvement in the planning of the empirical study.

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The relationship between voice appraisals and distress:

A systematic review

The following paper has been prepared for submission to 'Clinical Psychology Review'. The guidelines for authors can be found in Appendix A.

Abstract

Objectives:

Cognitive theory is the most well-established theory of voice-hearing. According to the cognitive model of psychosis, appraisals of auditory hallucinations are the most important factor in determining voice-related distress and modifying appraisals will lead to reductions in voice-related distress. This paper examines this fundamental tenant of cognitive theory by systematically reviewing evidence for the relationship between appraisals of auditory verbal hallucinations and voice-related distress in psychosis.

Methods:

A systematic review was conducted using electronic databases Web of Science, PsycINFO, Embase and Pubmed. Twenty-four studies met inclusion criteria and were included in the review.

Results:

Several types of appraisals were found to be associated with distress in voice-hearers: malevolence, control, power, omnipotence and benevolence beliefs. Evidence for an association was particularly strong for malevolence and control appraisals. Findings also generally supported that modifying voice appraisals is associated with a change in voice-related distress.

Conclusions:

There is evidence supporting the association between voice appraisals and voice-related distress, consistent with the cognitive model of voice-hearing. Further investigation is required to develop a greater understanding of potential mediating and moderating variables within the appraisal-distress relationship, such as coping, social functioning, insight and chronicity of symptoms. Additionally, as the majority of the studies were cross-sectional by design, it is recommended future research to include randomised controlled trials with a view to exploring directional effects.

Introduction

Auditory verbal hallucinations (AVH), most commonly experienced as voice-hearing, can be defined as a sensory experience in the absence of any external stimulation whilst in a fully conscious state (Beck & Rector, 2003). Although AVH are a key symptom in psychotic disorders such as schizophrenia, there is evidence that they also occur in general population samples consistent with a continuum conceptualization of psychosis (van Os, Hanssen, Bijl, & Ravelli, 2000).

De Leede-Smith & Barkus (2013) conducted a comprehensive review comparing the lifetime prevalence, correlates and mechanisms in non-clinical and clinical voice-hearers. One of the most notable differences found was the higher reports of distress associated with voice-hearing in clinical groups. Only in a few cases did non-clinical voice hearers report that their voices caused them distress or impacted on their daily functioning (Sommer et al., 2010; Daalman, et al., 2011). Additionally, a pattern emerged, whereby distress was a determining factor for need for care in clinical groups. From the evidence considered, the authors purported that non-clinical voice-hearing may become pathological when they persisted and that it is not the experience of voice-hearing in and of itself that leads to a decline in functioning, rather the associated distress.

Cognitive models have been applied to our understanding and treatment of AVHs. What is common to cognitive models of psychosis (Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001; Morrison, 2001; Chadwick & Birchwood, 1994) is that appraisals, or the way that people interpret AVHs, determine associated distress and functioning. These appraisals result from schemas that develop in the context of their life. As such, according to these models, modifying voice appraisals, which is the aim of many cognitive behaviour therapies for psychosis (CBTp) interventions, would lead to a reduction in distress. Different cognitive models of voice-hearing have identified different types of voice appraisals as important. Distress has been hypothesised to result from appraisals of voices as malevolent and powerful (Chadwick & Birchwood, 1994), as external to the self (Garety et al. 2001) or as uncontrollable, dangerous and unacceptable to the individual's culture (Morrison, 2001).

The central importance of individuals' appraisals of AVH as powerful was observed first by Bauer (1970). He reported how AVH can be imbued with a "terrifying and compelling

quality" and individuals can feel "caught in a voice's power" (p. 169). Chadwick and Birchwood's (1994) explored this concept of voices appraised as powerful in their model of voice-hearing. They described how beliefs about voices' power and intentions (e.g. malevolent) predicted subsequent affective responses better than voice content or topography (Birchwood &Chadwick 1997; Soppitt & Birchwood 1997; van der Gaag, Hageman & Birchwood, 2003). Their model suggested that beliefs about voices are informed by interpersonal schemata that are influenced by life experiences. Thus, an individual who has experienced early trauma could develop interpersonal schemata that posit other people as dominant and threatening and the self as subordinate and vulnerable. This might cause the individual to be wary about relationships, whether these are with people or with their voices. This has been supported in studies demonstrating that voice-hearers' perceptions of power and social rank differences between themselves and their voices are mirrored by their perceptions of power and social rank differences between themselves and others in their social world (Birchwood and Chadwick 1997; Birchwood et al. 2004). Andrew and colleagues (Andrew, Gray & Snowden, 2008) examined this model in clinical and non-clinical voice-hearers by looking at differences in voice appraisals between these two groups. Their findings showed that the clinical group believed that their voices had more negative intentions (malevolence) and more power to carry out their negative intentions (omnipotence) compared to the non-clinical group, supporting the cognitive model of voices (Birchwood& Chadwick, 1997).

Morrison, Haddock, and Tarrier (1995) and Wells and Butler (1997) suggested that meta-cognitive beliefs about voices will also influence emotional and behavioural responses to them. Morrison, Haddock and Tarrier's (1995) heuristic model of AVH suggested that voices may be experienced when intrusive thoughts are attributed to an external source, in order to reduce cognitive dissonance. They hypothesised that this dissonance is caused by the incompatibility of certain intrusive thoughts and metacognitive beliefs (in particular, beliefs about voices' controllability). Morrison's (2001) integrative model purports that AVH can be conceptualized as intrusions into awareness and that it is the interpretation of these intrusions that causes the associated distress. AVH may become distressing when appraised as uncontrollable and dangerous. It is suggested that these intrusions and their interpretations are maintained by mood, physiology (e.g. effects of sleep deprivation and substances), and cognitive and behavioural responses (including selective attention, safety behaviours and counterproductive control strategies).

Mawson, Cohen, & Berry (2010) systematically reviewed the literature investigating the relationship between different appraisals of voices and voice-related distress. Twenty-six studies were included in the review. Several types of appraisals were found to be linked to higher levels of distress, including voices that were appraised as malevolent, supreme and as having a personal acquaintance with the voice-hearer. However, outcome from intervention studies indicated that CBTp did not consistently reduce distress in voice-hearers. In the Mawson et al. (2010) review, distress was defined as any degree of negative affect such as depression, anxiety and voice-related distress and these concepts were not examined separately in relation to voice appraisals. Of the twenty-six studies, distress was considered as voice-related distress in eleven studies (42.3%), depression in ten studies (41.7%), anxiety in three studies (11.5%), sadness and worry in one study (3.8%) and negative affect in one study (3.8%). This makes it difficult to ascertain what the effect of modifying voice appraisals were on 'distress' when concluding the review.

The term 'distress' has been used interchangeably in many studies to describe a wide range of constructs including depression, anxiety, self- esteem, tension, stress, anger, and negative affect (e.g. Brockman, Kieman, Brakoulias, & Murrell, 2014; Morris, Garety, & Peters, 2014; (Thomas, McLeod, & Brewin, 2009), making it a difficult concept to operationalise. In cognitive models of AVH, voice-related distress has been considered to be a different concept to emotional distress, such as depression and anxiety. In fact, since the Mawson et al. (2010) review, voice-related distress has been recognised as an important concept and factor in its own right.

Since the Mawson et al. (2010) search was conducted in 2008, a considerable amount of relevant studies have been published. Given the centrality of appraisals in cognitive models of psychosis and its hypothesised impact on distress, it is timely to systematically update the field in order to present a current and comprehensive assessment of the evidence for the relationship between appraisals of voices and distress. The current review adopts a new focused approach by examining the studies that have specifically measured the concept of distress in the context of voice-hearing. Therefore, the overarching aim of this review is to systematically evaluate the evidence for the relationship between appraisals of AVH and voice-related distress. Specific aims of this review are to (i) investigate which voice appraisals are associated with voice-related distress, and (ii) examine whether modifying voice appraisals are associated with a change in voice-related distress.

Methods

Eligibility criteria

Eligible criteria included the following: (i) published journal article, (ii) published from 1990 onwards (iii) written in English language, (iv) used a quantitative methodology, (v) examined the association between voice-hearer distress and subjective appraisals of voices in relation to the cognitive model of voices, and (vi) participants either received a diagnosis of a psychosis-related disorder or experienced AVHs for which they were receiving psychiatric services. Studies were excluded if they were case studies or of a qualitative design. Studies which aimed to modify voice appraisals not drawing on the cognitive model (e.g. relating therapy, mindfulness and imagery rescripting) were excluded. Interventions involving metacognitive processes, which are considered a transdiagnostic process in some cognitive models of psychosis (Morrison et al., 2004) were included only if they aimed to modify voice-related appraisals. The research team decided whether articles met the inclusion criteria and carried out discussions until agreement was reached.

'Voice appraisal' was defined as the interpretation of, or beliefs about, AVHs. Example domains of beliefs about voices include power, malevolence, benevolence and control, all of which are fundamental concepts of cognitive models of voices (e.g. Garety et al., 2001; Morrison, 2001; Chadwick & Birchwood, 1994). Experiential and physical characteristics of voices (e.g. clarity, loudness, duration and frequency) were not considered to be cognitive appraisals and were excluded in the current review. Our inclusion of voice appraisals differed somewhat from the review by Mawson et al. (2010). For example, voices that were perceived as being either pleasurable (e.g. Sanjuan, Gonzalez, Aguilar, Leal, & van Os, 2004) or intrusive were not considered to be a direct appraisal as these concepts are more similar to voice topography or descriptors of voice-hearing. Additionally, attitudes of disapproval towards voices were not considered to be voice appraisals relevant to cognitive models of voice-hearing and were thus excluded from the review. Measures commonly used to assess voice-related appraisals include the Voice and You [VAY] (Hayward, Denney, Vaughan, & Fowler, 2008) and Beliefs About Voices Questionnaire Revised [BAVQ-R] (Chadwick, Lees, & Birchwood, 2000).

The term 'distress' has been used in many studies examining psychosis to describe a wide range of constructs including depression, anxiety, self-esteem, tension, stress, anger, and negative affect (e.g. Brockman et al., 2014; Morris et al., 2014; Thomas et al., 2009). Distress has increasingly been recognised as a concept in its own right and specifically linked to the cognitive model of psychosis. For the current review, a more focused approach was adopted and 'distress' was operationalised as measurement of voice-related distress only. This allows for more clarity when examining the distress-appraisal relationship, as constructs such as depression, anxiety and low self-esteem may not be directly associated with AVHs and may be confounded with other aspects of psychosis, such as delusions and other psychotic symptoms. Common measures of voice-specific distress include the Psychotic Symptom Rating Scale (PSYRATS; Haddock, McCarron, Tarrier, & Faragher, 1999) and the distress scale of the Voice Topography Scale (Hustig & Hagner, 1990). Studies with measures that did not specifically assess voice-related distress were excluded. For example, Brockman et al. (2014) used the Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995) to assess distress, which also includes domains for anxiety, depression and stress. Thomas et al. (2009) used the Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1992) which included questions relating to depression, tension and anger.

Search Procedure

The current review was conducted in accordance with the 'Preferred Reporting Items for Systematic Reviews and Meta-Analyses' (PRISMA) guidelines, a protocol used to evaluate systematic reviews (Moher et al., 2015). It comprises twenty-seven evidence-based minimum set of items for reporting in systematic reviews. The items are divided into three main sections including administrative information, introduction, and methods.

An electronic database search of Web of Science, PsycINFO, Embase and Pubmed was conducted. Three search sets were linked with the Boolean operator 'AND'. The first search set related to appraisal of voices and included the terms 'belief* OR attribut* OR attitude* OR interpretat* OR apprai* OR relationship* OR perception* OR evaluat* OR cognit*'. The second search set related to auditory hallucinations and included the terms 'voice* OR auditory hallucin* OR command hallucin*'. The third and final search set related to psychosis and included the terms 'psychosis OR schizophren* OR psychotic'. Terms were entered for search in 'Topic' for Web of Science, 'Abstract' for PsycINFO

and Embase and 'Title/Abstract' for Pubmed. Limits were set to only include journal articles that were published in English language.

Figure 1 shows a PRISMA diagram detailing the flow of studies through the different stages of the search. In total, the database search produced 4,989 articles, which reduced to 2,996 after duplicates were removed. Of these, 2764 were excluded at the title/abstract level. An independent assessor screened 10% of studies at title/abstract level with substantial levels of agreement (κ =0.73) (Landis & Koch, 1977). Any disagreements were resolved through discussion between the raters until agreement was reached about their inclusion/exclusion. Full-texts of articles were reviewed and 205 papers were excluded for not meeting the inclusion criteria, with agreement of the research team. Reference lists of included articles were reviewed for additional papers. Authors were also contacted for additional findings if the study was published within the last ten years.

Quality Assessment

The methodological quality of the studies was assessed to identify strengths and weaknesses in order to determine whether the results of the studies had been influenced by the study's design or conduct (National Health Service Centre for Reviews, 2009). Deeks, Dinnes, D'Amico, & Sowden (2003) reviewed 182 quality assessment tools and identified the Downs and Black instrument (Downs & Black, 1998) as one of the most useful for use in systematic reviews of both randomised and non-randomised studies. In the current view, we adapted this tool to ensure it was appropriate for a range of designs including cross sectional, case series, randomised control studies and quasi-experimental as recommended by Kennelly (2011). A 'not applicable' option was added to the scoring options so that questions that were not appropriate to some studies could be excluded from the total score. For example, questions about randomisation, blinding and intervention groups are not applicable to cross sectional designs. As such, overall score was calculated as percentage to account for this. A question relating to adverse reactions was also removed as it was considered irrelevant for our study topic. Five domains were assessed: (i) reporting, (ii) external validity, (iii) internal validity- bias, (iv) internal validity- confounds, and (v) power. A percentage score (see Table 2) was calculated for each domain and an overall score (score for paper/total possible score $\times$ 100). In order for comparisons to be made between papers, quality was assumed to be on a continuum (e.g. a score of 60% inidicates higher quality than a score of 20%). Categories were not

assigned to percentage scores as the measure was arbitrary. To ensure inter-rater reliability 20% of the papers were rated by a researcher independent to the study, with substantial levels of agreement (κ =0.67) found (Landis & Koch, 1977). Any disagreements were discussed and until agreement was reached.

Results

Overview of reviewed studies

Table 1 provides an overview of the included studies, which details the study characteristics. Study designs included cross-sectional (n= 11), randomised control trial (RCT) (n=5), case series (n=2), waiting list control design with repeated measures (n=2), pre-test/post-test design (n=3) and experience sampling method (n=1). The majority of studies reviewed were conducted in the United Kingdom (n= 21). Total sample size range for studies were from six participants (Bentall, Haddock, & Slade, 1994) to 217 participants (Birchwood et al., 2014).

Nine measures of distress were used, of which the Psychotic Symptom Rating Scale (PSYRATS; Haddock et al., 1999) was the most common, followed by a 5-point rating scale from 1 (very distressing) to 5 (very comforting) from the Topography of Voices Rating Scale (Hustig & Hafner, 1990). Other measures of distress included a variety of non-validated rating scales, the Modified version of the Personal Questionnaire Rapid Scaling Technique (PQRST; Mulhall, 1978) and the Personal Questionnaires (PQs; Brett-Jones, Garety, & Hemsley, 1987). Eighteen measures of voice-related appraisals were used, with Beliefs About Voices Questionnaire (BAVQ; Chadwick & Birchwood, 1995), Beliefs About Voices Questionnaire Revised (BAVQ- R; Chadwick, Lees, & Birchwood, 2000) and Voice Power Differential Scale (VPD; Birchwood, Meaden, Trower, Gilbert, & Plaistow, 2000) being the most common.

There were eighteen measures of cognitive voice appraisals used, including Beliefs About Voices Questionnaire (BAVQ; Chadwick & Birchwood, 1995), Beliefs About Voices Questionnaire Revised (BAVQ- R; Chadwick, Lees, & Birchwood, 2000), Voice Power Differential Scale (VPD; Birchwood et al., 2000), Cognitive Assessment Schedule (CAS; Chadwick & Birchwood, 1995; Chadwick & Lowe, 1990), Social Power Differential Scale (SPD; Birchwood et al., 2000), PSYRATS (Haddock, McCarron, Tarrier, & Faragher, 1999), Omniscience Scale (OS; Birchwood et al., 2000), Voice and You (VAY; Hayward, Denney, Vaughan, & Fowler, 2008), Modified PRRST (Mulhall, 1978), Open ended semi- structured interview based on the Schedules for Clinical Assessment in Neuropsychiatry (SCAN; World Health Organization, 1992b), Voice Rank Scale (VRS; Birchwood et al., 2000), Couples Relating to Each Other Questionnaire (CRTEQ;

Birtchnell, 1994), Cognitive Assessment of Voices Interview Schedule (CAVIS; Chadwick & Birchwood, 1994; Close & Garety, 1998), Interpretation of Voices Inventory (IVI; Morrison, Wells, & Nothard, 2002) and a variety of non-validated rating scales.

Quality of studies

Table 2 provides an overview of the quality ratings of published articles. The quality of the studies varied widely from 33% (Ruddle, et al., 2014) to 88% (Trower et al., 2004) with higher percentage indicating better quality. Of twelve intervention studies, only five studies had a control group (Jenner, Nienhuis, Wiersma, & van de Willige, 2004, Trower et al., 2004, McLeod, Morris, Birchwood, Dovey, 2007, Shawyer et al., 2012, Birchwood et al., 2014). Only eight studies mentioned conducting a power calculation for sample size (Hacker, Birchwood, Tudway, Meaden, & Amphlett, 2008, Brunet, Birchwood, Upthegrove, Michail, & Ross, 2012, Dannahy et al., 2011, Trower et al., 2004, Birchwood et al., 2014, Jenner et al., 2004, Shawyer et al., 2012, Newton et al., 2005).

Relationship between voice appraisals and distress

Voice appraisals from the included studies were synthesised into associated categories and described in the following sections. Appraisal categories were derived from the cognitive models of voice hearing (Garety et al., 2001; Morrison, 2001; Chadwick & Birchwood, 1994). Malevolence, benevolence and power are key appraisals in Chadwick and Birchwood's model of voice-hearing (Chadwick & Birchwood, 1994). Appraisal of controllability of voices is central in Morrison's model (Morrison, 2001) and appraisal of voices origin is important in Garety's model of voice-hearing (Garety et al., 2001).

Malevolence

Ten studies investigated the relationship between malevolent voice appraisals and distress. Six included a cross-sectional design (Morris et al., 2014; Brunet, Birchwood, Upthegrove, Michail, & Ross, 2012; Peters, Williams, Cooke, & Kuipers, 2012a; (Birchwood & Chadwick, 1997); Soppitt & Birchwood, 1997; Vaughan & Fowler, 2004), two were case series (Bentall, Haddock, & Slade, 1994 ; Ruddle, et al., 2014) and two were randomised control trials (Birchwood, et al., 2014; Trower, et al, 2004). Malevolence appraisals involves voices perceived as evil or wanting to harm as measured

on the malevolence scale of the BAVQ (Chadwick & Birchwood, 1995) and BAVQ-R (Chadwick, Lees, & Birchwood, 2000) or rated as 'mostly hostile' on a non-validated rating scale (Bentall et al., 1994).

All six cross-sectional studies found positive relationships between malevolent voice appraisals and distress. Five of these studies which looked at correlational data found moderate to strong positive correlations (Evans, 1996) ranging from r= 0.40 to r= 0.67 (Brunet et al., 2012; Morris et al., 2014; Soppitt & Birchwood, 1997; Peters et al., 2012a; Vaughan & Fowler, 2004). Brunet et al. (2012) also explored malevolence and benevolence appraisals as predictors in a regression model and only malevolence was found to be a significant predictor of distress, accounting for 13% of the variance. Birchwood & Chadwick (1997) explored whether voice appraisals, topography (e.g. frequency, loudness, clarity) and form (e.g. commands, advice and commentary) were related to distress. They found that participants with malevolent appraisals experienced significantly higher levels of distress than those with benign and benevolent appraisals. No association was found between distress and voice topography and form.

Two case series design studies examined the relationship between distress and malevolent appraisals. Bentall et al. (1994) found very strong positive correlations (ranging from r= 0.91 to r= 0.97) between distress and malevolent appraisals for all six participants. However, they were unable to conclude whether the intervention used impacted on malevolent appraisals as it only focused on modifying beliefs about the voices' origins. Another case series evaluated a CBT intervention for AVHs (Ruddle et al., 2014). Seventy-five percent of the participants whose distress reduced also had reduced 'negative beliefs' (combination of malevolence and omnipotence appraisals) and there was evidence that these changes occurred in synchrony. However, as malevolent appraisals were not singled out, it is not possible to ascertain whether malevolence specifically was associated with distress. The generalisability of findings for both studies is questionable due to the small sample sizes and lack of control groups.

Two RCTs compared cognitive therapy to reduce harmful compliance with command hallucinations (CTCH) with treatment as usual (TAU). CTCH aimed to modify beliefs that voices have absolute power and control (e.g. there will be punishment if voices' commands are not complied with), the voices' identities (e.g. the devil) and meaning attached to the voices. Trower et al. (2004) found that those in the CTCH group had

significantly reduced levels of distress compared to those in the TAU group, but there were no significant changes in strength of the malevolent appraisals. There were, however, significant reductions in appraisals of voices' power and control in the CTCH group compared to TAU. In a follow up study, Birchwood et al. (2014) found significant treatment effects for power appraisals, but not for distress, malevolence, benevolence and omnipotence appraisals. As CTCH focuses on modifying power appraisals, it is no surprise that there were no treatment effects on malevolence in both studies. As the direct association between distress and malevolent appraisals were not assessed, it is not possible to draw firm conclusions regarding their relationship in these two RCTs. However it is appears that a fall in distress does not necessary coincide with a reduction in appraisals of the voices' malevolent intentions.

Overall, the majority of studies found significant positive associations between malevolent voice appraisals of voices and distress. Of the ten studies reviewed, six found a significant association. Voices appraised as being more malevolent was associated with higher voice-related distress. Two intervention studies indicated that modifying beliefs did not lead to a change in voice-related distress, but the main aim of these interventions was to modify power appraisals. A further two interventions were inconclusive. Further research is required to assess whether modifying malevolent beliefs about voices may contribute to a change in distress and whether the relationship may be moderated or mediated by other voice appraisal factors, such as control and omnipotence.

Power

The central importance of individuals' appraisals of voices as powerful was observed first by Bauer (1970). This concept of power was further conceptualised in Birchwood and Chadwick's (1997) cognitive model of voice-hearing. Authors later developed the BAVQ omnipotence subscale (Chadwick & Birchwood, 1995) to assess this concept of power. Omnipotence has hitherto been used as concept equivalent to that of 'power' in psychosis research (Chadwick, Lees, & Birchwood, 2000). Later measures developed were the VPD (Birchwood et al., 2000) and revised BAVQ-R (Chadwick, Lees, & Birchwood, 2000). Voice dominance was measured by the Voice And You scale (VAY; Hayward et al., 2008) and refers the individuals appraisal of their voices as being in a dominant position in relation to themselves. Voices social rank was measured by the Voice Rank Scale

(VRS; Birchwood et al., 2000) and refers to the individuals' evaluation of the social position of themselves relative to the voices.

The link between appraisals of the voices' power and voice-related distress was the most researched appraisal compared to other voice appraisal types, with seventeen studies included. These were seven cross-sectional studies (Morris et al., 2014; Birchwood et al., 2000; Birchwood et al., 2004; Brunet et al., 2012; Peters et al,, 2012a; Hacker, Birchwood, Tudway, Meaden, & Amphlett, 2008; Vaughan & Fowler, 2004), four RCTs (Shawyer et al., 2012; Birchwood et al., 2014; McLeod, Morris, Birchwood, & Dovey, 2007b; Trower et al., 2004), two pre-test/post-test (Chadwick, Sambrooke, Rasch, & Davies, 2000; Dannahy et al., 2011), two waiting list control (Newton et al., 2005; (Wykes, Parr, & Landau, 1999)), one case series (Ruddle et al., 2014) and one experience sampling study (Peters et al., 2012b).

An experience sampling method study (Peters et al., 2012b) aimed to assess relationships between appraisals of AVH and distress in twelve outpatient participants. Voice power appraisals were found to be independently significantly associated with voice-related distress. Appraisals of voices having more power was related to greater levels of distress. Four cross sectional studies assessed the correlation between power and voice related distress. Two found no significant correlation (Morris et al., 2014; Brunet et al., 2012) and two found significant positive correlations (r=0.62, Peters et al., 2012a; r=0.48, Hacker et al., 2008). The latter study also found that power appraisals significantly predicted distress and mediated the relationship between safety behaviours and distress (β= 0.513, P=0.55). The inconsistencies in findings across the cross sectional studies may partly be attributed to lack of variation in distress scores. In the Morris et al. (2014) study, eligibility criteria for participation included high levels of voice-related distress. In the Brunet et al. (2012) study, participants also had higher levels of voice-related distress as they were recruited during the acute phase of a first episode of psychosis. As variability in scores decreased, the magnitude of the correlation coefficient tended toward zero (Goodwin & Leech, 2006). On the contrary, Peters et al. (2012a) and Hacker et al. (2008) used broader eligibility criteria and therefore may have found more heterogeneity in distress scores. In both the Morris et al. (2014) and Brunet et al. (2012) studies, voice-related distress was positively associated with appraisals of voices' malevolence, possibly indicating that malevolent appraisals are more salient during times of high levels of

distress. Further research is required to examine the interactions between chronicity of voice-hearing, voice appraisals and distress.

Two cross-sectional studies assessed the relationship between distress, voice rank and voice power. Birchwood et al. (2000) found that there were no differences in levels of distress in participants who appraised their voices as having high levels of power compared to low power. However, they did find that participants who appraised the voice as having higher social rank than themselves were more distressed by them. Voice social rank and voice power also significantly positively correlated (r=0.41). In the Birchwood et al. (2004) study, structural equation modelling suggested that social rank led to the appraisal of voice power and distress. Participants who appraised the voice as having higher power and social rank were significantly more distressed by their voices. Further research would be required to assess appraisals of social rank and explore whether it may moderate the relationship between appraisals of voices' power and distress.

Two studies assessed the appraisal of voice dominance and distress. A cross sectional study (Vaughan & Fowler, 2004) found a strong positive correlation (r=0.77). However, another study (Dannahy et al., 2011), which evaluated person-based cognitive therapy (PBCT) which aimed to modify beliefs about voices' power, found that distress significantly reduced over time, whilst there were no significant changes in appraisals of voice dominance.

Eight studies (four RCTs, two waiting list control design, one pre-test/post-test design and one case series) examined the impact of a CBT intervention on voice-related distress and appraisals of voices' power. In a case series (Ruddle et al., 2014), 75% of participants whose distress reduced after CBT also had reduced 'negative beliefs'. The CBT targeted participants' explanations of voices and included experiments to test beliefs about voices' power and control. However, findings were inconclusive as the omnipotence appraisal scores were not isolated in the analysis. In a waiting list control study, Newton et al. (2005) found a significant positive correlation between perceived voice power and distress before (r=0.54) and after (r=0.74) the intervention. Similarly, there was a significant positive correlation between the change in perceived power and the post-intervention levels of distress after controlling for pre-intervention levels of distress (r=0.63) in the Wykes et al. (1999) study. One pre-test/post-test design study (Chadwick, Sambrooke, Rasch, & Davies, 2000) involved a CBT group-based intervention that aimed

to weaken beliefs about omnipotence and increase a sense of personal control over voices. Findings showed significantly reduced beliefs about voices' power, but there were no significant changes in distress scores from baseline. One of the limitations of this study was that CBT groups commenced at the earliest point rather than following a controlled baseline period. Additionally, distress scores were only measured at the first and last session and change in distress was only assessed via visual inspection of scores.

Two RCTs evaluated the effects of CTCH compared with TAU (Trower et al., 2004; Birchwood et al., 2014). In the Trower et al. (2004) study, there were significant positive correlations between voice related distress and appraisals of voice power (r= 0.55) and omniscience (r= 0.47). Both beliefs in voices' omniscience and voice related distress fell significantly in the CTCH group at the end of the intervention and at twelve month follow-up, but there was no change in the TAU group, suggesting modifying appraisals may have an impact on distress. Perceived control over voices only improved in the CTCH group after intervention and at follow up. There was no impact of CTCH on the perceived malevolence of voices, but as previously mentioned, CTCH focuses on modifying power appraisals. The Birchwood et al. (2014) study also compared BAVQ-R scores between the CTCH group and TAU group, and found no difference on BAVQ-R scores and distress between groups. The treatment effect for distress and voice omniscience was not significant, whereas the treatment effect for power alone was significant. Differences in findings may partially be accounted for by differences in sample sizes, which were notably smaller in the Trower et al. (2004) study (CTCH n= 18, TAU n=20) compared to the Birchwood et al. (2014) study (CTCH n= 98, TAU n=99). Additionally, in the Birchwood et al. (2014) study, most of the symptoms measured at baseline were likely at peak distress levels as eligibility criteria included recent compliance with command hallucinations that led to major episodes of harm to self or others.

In the third RCT, which compared an acceptance based CBT intervention for command hallucinations with befriending, there was no evidence indicating any association between distress and voice omnipotence (Shawyer et al., 2012). Whilst both groups showed reduction in voice omnipotence, only the befriending group showed a reduction in voice-related distress. The intervention aimed to modify beliefs that 'hooked' clients into compliance to voice, cultivate the capacity to notice voices and associated thoughts rather than believe and act on them and to encourage the acceptance of voices. The befriending

group involved friendly social conversations that focused on neutral topics of interest with an explicit avoidance of discussion of symptoms. It was uncertain how much of the intervention weighted on modifying beliefs as opposed to acceptance based techniques. Additionally, for a substantial proportion of participants (43%) in this study, other issues were viewed as more important than command hallucinations at baseline and not all command hallucinations were deemed harmful. Finally, McLeod et al. (2007b) allocated participants to receive either CBT group therapy, which targeted beliefs about voice malevolence, control, power and origin, or TAU for treatment of AVH. The CBT group showed significant reductions in power appraisals and frequency of AVH compared to controls. Whilst not significant, there was a trend towards a reduction in the level of distress in the CBT group. This trend was less in TAU group.

Overall, the majority of studies found a significant relationship between appraisals of voices' power and voice-related distress. Nine of seventeen studies showed significant associations, six studies did not find an association and two studies were inconclusive. Voices appraised as being more powerful was associated with higher voice-related distress. Of the nine intervention studies, four found that modification of voice appraisals led to a reduction in distress, three studies found that change in appraisals did not significantly change distress and two studies were inconclusive. Due to the inconsistency in findings, further research is warranted to further establish this relationship. Other factors should also be explored such as presence or absence of command hallucinations, intentions of voices (e.g. harmful), severity of symptoms at study baseline, and voices' social rank, as these may impact on the relationship between voice-related distress and appraisals of voice power.

Control

Nine studies examined appraisals of the voices' control and distress. These included one experience sampling method (Peters et al., 2012b), three pre-test/post-test designs (Chadwick, Sambrooke, Rasch, & Davies, 2000; Dannahy et al., 2011; Gottlieb, Romeo, Penn, Mueser, & Chiko, 2013), two cross sectional designs (Varese, et al., 2016; Nayani & David, 1996), two RCTS (Jenner, Nienhuis, Wiersma, & van de Willige, 2004; Trower et al., 2004) and one waiting list control design (Newton, et al., 2005). Appraisal of the voices' control was measured by the IVI (Morrison, Wells, & Nothard, 2002), SCAN (World Health Organization, 1992b), non-validated visual analogue scales, BAVQ

(Chadwick & Birchwood, 1995), BAVQ-R (Chadwick, Lees, & Birchwood, 2000), VPD (Birchwood et al., 2000) and VAY (Hayward et al., 2008). When a voice has been appraised as having high control over the voice-hearer, this corresponds to the individual feeling they themselves have little control over their own thought and actions and that the voices can be in command of what they do and think (e.g. "They control the way I think", "they mean I lose control over my behaviour"; Morrison, Wells, & Nothard, 2002). The majority of studies found that voices appraised as having higher control were significantly associated with higher voice-related distress (Peters et al., 2012b; Varese et al., 2016; Nayani & David, 1996; Trower et al., 2004; Dannahy et al., 2011; Jenner et al, 2004; Newton et al., 2005). Two of these studies found significant positive correlations (r=0.30, Varese et al., 2016; r=0.61, Newton et al., 2005). Four of these studies found that distress and voices' controllability appraisal reduced after interventions targeting voice appraisals (Trower et al., 2004; Dannahy et al., 2011; Jenner et al, 2004; and Newton et al., 2005).

Associations between distress and control appraisals were inconclusive in two studies. In a pre-test/post-test design assessing web-based CBT for psychosis, Gottlieb et al. (2013) found that there was no significant change in voice- related distress or appraisals of voices' control from baseline to post treatment, although there was a significant reduction in depression scores and psychosis symptom scores. However, although voice appraisals were challenged in the intervention, the type of particular voice appraisals targeted was not specified. Chadwick, Sambrooke, Rasch, & Davies (2000) found that a CBT intervention significantly reduced beliefs about voices' controllability and power, but there were no changes in distress. This may partly be due to the brevity of the intervention (eight sessions). Additionally, distress scores may not be reliable as they were only assessed via visual inspection and only at the first and last session.

In summary, seven of the nine studies found a significant association between voice-related distress and appraisals of the voices' control. Voices appraised as having more control was associated with higher voice-related distress. Four intervention studies found that modifying appraisals of voices led to a reduction in distress. Two intervention studies were inconclusive.

Benevolence and benign appraisals

Benevolence and benign voice appraisals were measured by the BAVQ (Chadwick & Birchwood, 1995), BAVQ-R (Chadwick, Lees, & Birchwood, 2000), IVI (Morrison et al., 2002) and CAS (Chadwick & Birchwood, 1995; Chadwick & Lowe, 1990) and were defined as voices having good intentions or being harmless. Six studies assessed the relationship between benevolence or benign voice appraisals and voice-related distress. These included five cross sectional studies (Birchwood & Chadwick, 1997; Soppitt & Birchwood, 1997; Brunet et al., 2012; Morris et al., 2014; Varese et al., 2016) and one RCT (Birchwood et al., 2014).

Three out of five cross-sectional studies found that higher distress was significantly associated with lower levels of benevolence or benign appraisals of voices (Brunet et al., 2012; Morris et al, 2014; Birchwood & Chadwick, 1997). Two cross sectional studies did not find any significant relationship between distress and benevolence appraisals (Soppitt & Birchwood, 1997; Varese et al., 2016). One RCT (Birchwood et al., 2014) comparing a CTCH intervention with TAU found significant treatment effects for power appraisals, but not for distress, malevolence, benevolence and omnipotence appraisals. However, CTCH focused on modifying power appraisals were not targeted. Overall, the majority of cross sectional studies supported a significant negative correlation between voice-related distress and benevolent voice appraisals.

Origin

One case series design (Bentall et al., 1994) assessed the relationship between changes in attributions about voices' origin (i.e. whether voices are self- generated or external) and distress using the PQRST (Mulhall, 1978). The intervention focused on encouraging participants to examine the evidence for differences between self-generated thoughts and voices. Out of six participants, only three showed a trend towards self-attributing voices as therapy progressed. This study had a small sample size, and lacked stable baseline data and a control group. Further research is required to assess the relationship between appraisals of voices' origin and distress using more robust designs before clear conclusions can be drawn regarding this relationship.

Discussion

Summary of findings

The aims of this review were to systematically review the literature to examine the relationship between voice appraisals and voice-related distress and to examine whether modifying voice appraisals were accompanied by an associated change in voice-related distress. The review identified 24 studies, which largely supported an association between voice appraisals and voice-related distress. Voice appraisals that were associated with voice-related distress included control (supported by seven of nine studies), malevolence (supported by six of ten studies), power (supported by nine of seventeen studies), benevolence and benign (supported by three of six studies) and origin (supported by one study). Overall, evidence from this review also supported that weakening voice appraisals were associated with reduced voice-related distress. For interventions modifying appraisals of power, findings from four studies found an associated change in distress, three studies did not find any significant change and two studies were inconclusive. For interventions modifying appraisals of control, two studies found an associated change in distress and two were inconclusive. Similarly, when modifying appraisals of malevolence, two studies found an associated change in distress and two studies were inconclusive. Only one study assessed appraisals of voices origin and found that changing appraisals led to a reduction in distress. None of the interventions in the included studies aimed to modify benevolent voice appraisals, as this is not generally targeted in the cognitive models of voice-hearing. For a number of studies, conclusions were inconclusive due to methodological weaknesses or because interventions did not aim to modify the specific voice appraisal of interest.

There was some overlap between Mawson et al. (2010) review and the current review in regards to studies included. Nine out of the twenty-four studies (approximately 37.5%) included in the current review were also included in Mawson's review. This is partly attributed to different focus of the reviews, with the current review centered on voice-related distress only. Similarly in both reviews, appraisals of voices' as being powerful and having malevolent intentions were generally positively associated with distress. However, results from CBT interventions did not consistently report significant improvements in distress post-intervention.

Methodological limitations of studies

There were some limitations to studies reviewed. The inconsistent findings across intervention studies may be related to low sample sizes and lack of robust designs. The majority of studies were cross-sectional with data collected at a single time point, which lacks ability to infer causality. Of the 24 studies reviewed, only five were RCTs. Four of the five RCTS had low sample sizes ranging from ten (McLeod et al., 2007b) to 37 (Jenner et al., 2004) participants in the intervention group and ten (McLeod et al., 2007b) to 39 (Jenner et al., 2004) in the control group. Smaller sample sizes may lead to insufficient power to detect differences in studies. Only one RCT had a larger sample size of 98 participants in the intervention group and 99 in the control group (Birchwood et al., 2014). Studies evaluating interventions also had different eligibility criteria, evaluated various therapy modalities (i.e. group, individual and web-based), varied in the amount of sessions offered (eight to 25 sessions) and had different follow up periods; all which may impact on effect size and outcomes. Additionally, the majority of the included studies were conducted in the United Kingdom, thus may be open to cultural bias and not generalisable to other countries.

Findings from this review were also limited by the lack of specificity of some voice appraisal measures. For example, the omnipotence subscale of the BAVQ-R, (Chadwick, Lees, & Birchwood, 2000) comprises items relating to power, malevolence, all knowing and control. On the other hand, some measurements of voice-related distress only comprised of a single unvalidated Likert scale. Further development of sensitive and valid measures for voice-related distress would benefit future research in this area.

Limitations of the current review

The current review has a number of limitations. Studies not written in the English language and grey literature were excluded from the review, which may result in important study findings being overlooked. It is also acknowledged that the use of a quality assessment tool inevitably involves a degree of subjectivity in the rating process (Higgins, Altman, & Sterne, 2011). The quality assessment tool was adapted so that a percentage score was used instead of a total score to account for the items that were not applicable for certain study designs. As such, the varying number of items to assess

quality across studies may make some studies appear higher in quality due to being assessed with fewer items. However, quality assessments allow for comparison of studies and the evaluation of study methodology.

While meta-analysis techniques are considered a strength due to the calculation of effect sizes, such methods were not employed in this review given the variation in the designs and methodology across studies (Garg, Hackam & Tonelli, 2008). Therefore, a narrative synthesis was conducted. It is possible that the limitations of the definition of distress in this study to voice-related distress only and not using a broader definition encompassing depression and anxiety may have resulted from a different pattern of results.

Implications for future research

Although evidence supports the finding that voice-related distress is by and large associated with voice appraisals, it is possible that changes in distress cannot be addressed via voice appraisals alone. Perhaps mediating and moderating variables need to be the target for interventions to observe these changes. For example, people with fewer means of coping have higher levels of voice-related distress (Nayani & David, 1996). Evidence for the triadic relationship between beliefs, coping and distress has also yet to be reviewed. Underlying social schemata may also mediate the relationship between cognitive appraisals and voice-related distress (Birchwood et al., 2004). Research exploring these may provide further evidence in support of the cognitive model of voice hearing.

Furthermore, participant characteristics may also predict improvement with CBT for psychosis. Although not explored in these studies, it has been found that early intervention with acutely psychotic inpatients, female gender, shorter duration of illness, and shorter duration of untreated illness predicted better outcomes (Drury, Birchwood, Cochrane, & MacMillan, 1996a ; Drury, Birchwood, Cochrane, & MacMillan, 1996b). People with shorter duration of symptoms may benefit more from CBT compared with more chronic psychosis as symptoms may be less systematized. Cognitive flexibility, which is the ability to consider alternatives for beliefs (Brabban, Tai, & Turkington, 2009), insight into illness (Naeem, Kingdon, & Turkington, 2008), fewer negative symptoms before therapy (Thomas, Rossell, Farhall, & Shawyer, 2011), higher social functioning (Allott et al., 2011) and optimism (Myhr et al., 2013) have been shown to

predict better outcomes for CBT for psychosis. Factors such as social functioning may also predict better outcomes in group therapies. It may be interesting to assess whether any of these attributes moderate the relationship between voice appraisals and voice-related distress. This will identify factors to be targeted to improve outcomes in cognitive therapy for psychosis.

Furthermore, it may be interesting for future reviews to assess the association between voice-related distress and other psychological factors (e.g. self-esteem, anxiety and depression). Participants who are more anxious or have low self-esteem may be more prone to experience voice-related distress. This may be important as it may imply whether or not self-esteem, depression and anxiety may need to be targeted prior to CBT for voice-hearing. A meta-analysis could also be considered in the future, to assess the association between anxiety, depression and distress with voice appraisals. This would help explore whether distress, anxiety and depression relate to different voice appraisals. It may also help operationalise the term 'distress' to allow for more consistency in terminology in future voice-hearing research.

As findings regarding effects of modifying specific voice appraisals on voice-related distress have been inconclusive in a number of studies, further research is warranted using more robust designs to determine which voice appraisals to target for effective intervention. Furthermore research assessing more of the understudied voice appraisals, such as origin, may provide more evidence to further refine the cognitive model of voice-hearing. These studies could also concentrate on using robust measures, larger sample sizes, cross-cultural validation and RCT designs to assess effects of modifying beliefs on distress.

Implications for clinical practice

This review generally supports the association between voice-related distress and appraisals of voices, in line with the cognitive model of voice-hearing. Voice appraisals included malevolence, power, control, benevolence and beliefs about voices' origin. Evidence for an association was particularly strong for malevolence and control appraisals, indicating that these may be particularly important to target in interventions. These findings suggest that when assessing voice-hearing, it is advisable to enquire about the type and strength of voice appraisals as they may potentially inform psychological

formulations regarding the development and maintenance of voice-related distress. It may also be helpful to monitor changes in beliefs using validated scales (e.g. BAVQ-R; Chadwick, Lees, & Birchwood, 2000) to allow interventions to be evaluated.

Findings provide some support that modification of voice appraisals, particularly malevolence, power and control appraisals, using CBT is associated with a reduction in voice-related distress. Techniques in CBT for modifying beliefs may include generating alternative explanations for voice content, behavioural experiments to test the voice appraisal, exploring evidence for and against appraisals and reducing safety behaviours to allow disconfirmation of appraisals. Despite fairly strong evidence for associations between voice-related distress and voice appraisals of power, control and malevolence, evidence that modifying appraisals lead to reduced distress was less consistent. Future clinical practice would benefit from further research in this area (e.g. exploring moderating and mediating factors in the appraisal-distress relationship and also replicating studies using more robust designs).

References

Allott, K., Alvarez-Jimenez, M., Killackey, E. J., Bendall, S., McGorry, P. D., & Jackson, H. J. (2011). Patient predictors of symptom and functional outcome following cognitive behaviour therapy or befriending in first-episode psychosis. Schizophrenia Research, 132(2-3), 125-130.

Andrew, E. M., Gray, N. S., & Snowden, R. J. (2008). The relationship between trauma and beliefs about hearing voices: A study of psychiatric and non-psychiatric voice-hearers. Psychological Medicine, 38, 1409-1417.

Bauer, S. (1970). The function of hallucinations: an enquiry into the relationship of hallucinatory experience to creative thought. In Origin and Mechanisms of Hallucinations (ed.W.Keup), New York: Plenum.

Beck, A. T., & Rector, N. A. (2003). A cognitive model of hallucinations. *Cognitive Therapy Research, 27*(1), 19-52.

Bentall, R. P., Haddock, G., & Slade, P. D. (1994). Cognitive-Behavior Therapy for persistent auditory hallucinations: From theory to therapy. *Behavior Therapy, 25*(1), 51-66.

Birchwood, M., & Chadwick, P. (1997). The omnipotence of voices: Testing the validity of cognitive model. *Psychological Medicine, 27*(6), 1345-1353.

Birchwood, M., Gilbert, P., Gilbert, J., Trower, P., Meaden, A., Hay, J., . . . Miles, J. N. (2004). Interpersonal and role-related schema influence the relationship with the dominant 'voice' in schizophrenia: A comparison of three models. *Psychological Medicine, 34*(8), 1571-1580.

Birchwood, M., Meaden, A., Trower, P., Gilbert, P., & Plaistow, J. (2000). The power and omnipotence of voices : subordination and entrapment by voices and significant others. *Psychological Medicine, 30*(2), 337-344.

Birchwood, M., Michail, M., Meaden, A., Tarrier, N., Lewis, S., Wykes, T., . . . Peters, E. (2014). Cognitive behaviour therapy to prevent harmful compliance with

command hallucinations (COMMAND): a randomised controlled trial. *Lancet Psychiatry, 1*(1), 23-33.

Birtchnell, J. (1994). A new interpersonal system for describing and measuring the relating of marital partners. *Unpublished Manuscripts*.

Brabban, A., Tai, S., & Turkington, D. (2009). Predictors of outcome in brief cognitive behavior therapy for schizophrenia. *Schizophrenia Bulletin, 35*(5), 859-864.

Brett-Jones, J., Garety, P. A., & Hemsley, D. R. (1987). Measuring delusional experiences : a method and its application. *British Journal of Clinical Psychology, 26*(Pt 4), 257-265.

Brockman, R., Kiernan, M., Brakoulias, V., & Murrell, E. (2014). The relationship between cognitive behavioral therapy maintenance processes, emotional distress, and positive psychotic symptoms: Evidence that CBT is "not a quasi-neuroleptic". *Journal of Cognitive Psychotherapy, 28*(2), 101-116.

Brunet, K., Birchwood, M., Upthegrove, R., Michail, M., & Ross, K. (2012). A prospective study of PTSD following recovery from first-episode psychosis: The threat from persecutors, voices, and patienthood. *British Journal of Clinical Psychology, 51*(4), 418-433.

Chadwick, P., & Birchwood, M. (1994). The omnipotence of voices: A cognitive approach to auditory hallucinations. *British Journal of Psychiatry, 164*(2), 190–201.

Chadwick, P., & Birchwood, M. J. (1995). The omnipotence of voices II: The Beliefs About Voices Questionnaire (BAVQ). *British Journal of Psychiatry, 166*(6), 773-776.

Chadwick, P., & Lowe, C. F. (1990). Measurement and modification of delusional beliefs. *Journal of Consulting and Clinical Psychology, 58*(2), 225-232.

Chadwick, P., Lees, S., & Birchwood, M. (2000). The revised Beliefs About Voices Questionnaire (BAVQ-R). *British Journal of Psychiatry, 177*, 229-232.

Chadwick, P., Sambrooke, S., Rasch, S., & Davies, E. (2000). Challenging the omnipotence of voices: group cognitive behavior therapy for voices. *Behaviour Research and Therapy, 38*(10), 993-1003.

Close, H., & Garety, P. (1998). Cognitive assessment of voices: Further developments in understanding the emotional impact of voices. *British Journal of Clinical Psychology, 37*(Pt 2), 173-188.

Daalman, K., Boks, M. P., Diederen, K. M., de Weijer, A. D., Blom, J. D., Kahn, R. S., & Sommer, I. E. (2011). The same or different? A phenomenological comparison of auditory verbal hallucinations in healthy and psychotic individuals. *Journal of Clinical Psychiatry, 72*(3), 320-325.

Dannahy, L., Hayward, M., Strauss, C., Turton, W., Harding, E., & Chadwick, P. (2011). Group person-based cognitive therapy for distressing voices: Pilot data from nine groups. *Journal of Behavior Therapy and Experimental Psychiatry, 42*(1), 111-116.

De Leede-Smith, S., & Barkus, E. (2013). A comprehensive review of auditory verbal hallucinations: lifetime prevalence, correlates and mechanisms in healthy and clinical individuals. *Frontiers in Human Neuroscience*, 1-25. Retrieved from http://journal.frontiersin.org/article/10.3389/fnhum.2013.00367/full

Deeks, J., Dinnes, J., D'Amico, R., & Sowden, A. (2003). *Evaluating non-randomised intervention studies.* Southampton: National Coordinating Centre for Health Technology Assessment.

Downs, S. H., & Black, N. (1998). The feasibility of creating a checklist for the assessment of the methodological quality both of randomised and non-randomised studies of health care interventions. *Journal of Epidemiology and Community Health, 52*(6), 377-384.

Drury, V., Birchwood, M., Cochrane, R., & MacMillan, F. (1996a). Cognitive therapy and recovery from acute psychosis: a controlled trial. (I. Impact on psychotic symptoms). *British Journal of Psychiatry, 169*(54), 593–601.

Drury, V., Birchwood, M., Cochrane, R., & MacMillan, F. (1996b). Cognitve therapy and recovery from acute psychosis: a controlled trial. (II. Impact on recovery time). *British Journal of Psychiatry, 169*(5), 602–607.

Evans, J. D. (1996). *Straightforward Statistics for the Behavioral Sciences.* Pacific Grove, California: Brooks/Cole Publishing.

Garety, P. A., Kuipers, E., Fowler, D., Freeman, D., & Bebbington, P. E. (2001). A cognitive model of the positive symptoms of psychosis. *Psychological Medicine, 31*(2), 189-195.

Garg, A. X., Hackam, D., & Tonello, M. (2008). Systematic Review and Meta-analysis: When One Study Is Just not Enough. *Clinical Journal of the American Society of Nephrology, 3*(1), 253-260.

Goodwin, L. D., & Leech, N. L. (2006). Understanding Correlation: Factors That Affect the Size of r. *Journal of Experimental Education, 74*(3), 251-266.

Gottlieb, J. D., Romeo, K. H., Penn, D. L., Mueser, K. T., & Chiko, B. P. (2013). Web-based cognitive-behavioral therapy for auditory hallucinations in persons with psychosis: A pilot study. *Schizophrenia Research, 145*(1-3), 82-87.

Hacker, D., Birchwood, M., Tudway, J., Meaden, A., & Amphlett, C. (2008). Acting on voices: Omnipotence, sources of threat, and safety-seeking behaviours. *British Journal of Clinical Psychology, 47*(Pt 2), 201-213.

Haddock, G., McCarron, J., Tarrier, N., & Faragher, E. B. (1999). Scales to measure dimensions of hallucinations and delusions: The psychotic symptom rating scales (PSYRATS). *Psychological Medicine, 29*(4), 879-889.

Hayward, M., Denney, J., Vaughan, S., & Fowler, D. (2008). The Voice and You: Development and psychometric evaluation of a measure of relationships with voices. *Clinical Psychology & Psychotherapy, 15*(1), 45-52.

Higgins, J. P., Altman, D. G., & Sterne, J. A. (2011). Chapter 8: Assessing risk of bias in included studies. In J. P. Higgins, & S. Green, Cochrane Handbook for Systematic Reviews of Interventions (Version 5.1.0 ed., pp. 187-242). Chichester, UK: John Wiley & Sons.

Hustig, H. H., & Hafner, R. J. (1990). Persistent auditory hallucinations and their relationship to delusions and mood. *Journal of Nervous and Mental Disease, 178*(4), 264-267.

Jenner, J. A., Nienhuis, F. J., Wiersma, D., & van de Willige, G. (2004). Hallucination focused integrative treatment: A randomized controlled trial. *Schizophrenia Bulletin, 30*(1), 133-145.

Kennelly, J. (2011). *Methodological Approach to Assessing the Evidence. In Handler, A., Kennelly, J., Peacock, N.R. (Ed). Reducing racial/ethnic disparities in reproductive and perinatal outcomes: the evidence from population-based interventions.* New York: Springer.

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*(1), 159-174.

Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the Depression Anxiety Stress Scales* (2nd ed.). Sydney: Psychology Foundation.

Mawson, A., Cohen, K., & Berry, K. (2010). Reviewing evidence for the cognitive model of auditory hallucinations: The relationship between cognitive voice appraisals and distress during psychosis. *Clinical Psychology Review, 30*(2), 248-258.

McLeod, B., Morris, M., Birchwood, M., & Dovey, A. (2007a). Cognitive behavioural therapy group work with voice hearers. Part 1. *British Journal of Nursing, 16*(4), 248-252.

McLeod, B., Morris, M., Birchwood, M., & Dovey, A. (2007b). Cognitive behavioural therapy group work with voice hearers. Part 2. *British Journal of Nursing, 16*(5), 292-295.

McNair, D. M., Lorr, M., & Droppleman, L. F. (1992). *Manual for the profile of mood states.* San Diego: CA Educational and Industrial Testing Service.

Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., ... & Stewart, L. A. (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. Systematic reviews, 4(1), 1.

Morris, E. M., Garety, P., & Peters, E. (2014). Psychological flexibility and
nonjudgemental acceptance in voice hearers: relationships with omnipotence and
distress. *Australian and New Zealand Journal of Psychiatry, 48*(12), 1150-1162.

Morrison, A. P. (2001). The interpretation of intrusions in psychosis: an integrative
cognitive approach to hallucinations and delusions. *Behavioral and Cognitive
Psychotherapy, 29*(3), 257-276.

Morrison, A. P., Renton, J. C., Williams, S., Dunn, H., Knight, A., Kreutz, M., . . . Dunn,
G. (2004). Delivering cognitive therapy to people with psychosis in a community
mental health setting: an effectiveness study. *Acta Psychiatrica Scandinavica,
110*(1), 36-44.

Morrison, A. P., Wells, A., & Nothard, S. (2002). Cognitive and emotional predictors of
predisposition to hallucinations in non-patients. *British Journal of Clinical
Psychology, 41*, 259-270.

Mulhall, D. (1978). *Manual for Personal Questionnaire Rapid Scaling Technique.*
London: NFERNelson.

Myhr, G., Russel, J. J., Saint-Laurent, M., Tagalakis, V., Belisle, D., Khodari, F., &
Pinard, G. (2013). Assessing suitability for short-term cognitive-behavioral
therapy in psychiatric outpatients with psychosis: A comparison with depressed
and anxious outpatients. *Journal of Psychiatric Practice, 19*(1), 29–41.

Naeem, F., Kingdon, D., & Turkington, D. (2008). Predictors of response to cognitive
behavior therapy in the treatment of schizophrenia: A comparison of brief and
standard interventions. *Cognitive Therapy Research, 32*(5), 651–656.

National Health Service Centre for Reviews and Dissemination. (2009). *Systematic
reviews: CRD's guidance for undertaking reviews in health care.* York:
University of York.

Nayani, T. H., & David, A. S. (1996). The auditory hallucination: A phenomenological
survey. *Psychological Medicine, 26*(1), 177-189.

Newton, E., Landau, S., Smith, P., Monks, P., Shergill, S., & Wykes, T. (2005). Early
Psychological Intervention for Auditory Hallucinations: An Exploratory Study of

Young People's Voices Groups. *Journal of Nervous and Mental Disease, 193*(1), 58-61.

Peters, E. R., Lataster, T., Greenwood, K., Kuipers, E., Scott, J., Williams, S., . . . Myin-Germeys, I. (2012b). Appraisals, psychotic symptoms and affect in daily life. *Psychological Medicine, 42*(5), 1013-1023.

Peters, E. R., Williams, S. L., Cooke, M. A., & Kuipers, E. (2012a). It's not what you hear, it's the way you think about it: appraisals as determinants of affect and behaviour in voice hearers. *Psychological Medicine, 42*(7), 1507-1514.

Ruddle, A., Livingstone, S., Huddy, V., Johns, L., Stahl, D., & Wykes, T. (2014). A case series exploring possible predictors and mechanisms of change in hearing voices groups. *Psychology and Psychotherapy: Theory, Research and Practice, 87*(1), 60-79.

Sanjuan, J., Gonzalez, J. C., Aguilar, E. J., Leal, C., & van Os, J. (2004). Pleasurable auditory hallucinations. *Acta Psychiatrica Scandinavica, 110*(4), 273-278.

Shawyer, F., Farhall, J., Mackinnon, A., Trauer, T., Sims, E., Ratcliff, K., . . . Copolov, D. (2012). A randomised controlled trial of acceptance-based cognitive behavioural therapy for command hallucinations in psychotic disorders. *Behaviour Research and Therapy, 50*(2), 110-121.

Sommer, I. E., Daalman, K., Rietkerk, T., Diederen, K. M., Bakker, S., Wijkstra, J., & al, e. (2010). Healthy individuals with auditory verbal hallucinations; who are they? Psychiatric assessments of a selected sample of 103 subjects. *Schizophrenia Bulletin, 36*(3), 633-641.

Soppitt, R. W., & Birchwood, M. (1997). Depression, beliefs, voice content and topography: A cross-sectional study of schizophrenic patients with auditory verbal hallucinations. *Journal of Mental Health, 6*(5), 525-532.

Thomas, N., McLeod, H. J., & Brewin, C. R. (2009). Interpersonal complementarity in responses to auditory hallucinations in psychosis. *British Journal of Psychology, 48*(Pt 4), 411-424.

Thomas, N., Rossell, S., Farhall, J., & Shawyer, F. (2011). Cognitive behavioural therapy for auditory hallucinations: Effectiveness and predictors of outcome in a specialist clinic. *Behaviour and Cognitive Psychotherapy, 39*(2), 129–138.

Trower, P., Birchwood, M., Meaden, A., Byrne, S., Nelson, A., & Ross, K. (2004). Cognitive therapy for command hallucinations: randomised controlled trial. *British Journal of Psychiatry, 184*(4), 312-320.

van der Gaag, M., Hageman, M. C., & Birchwood, M. (2003). Evidence for a cognitive model of auditory hallucinations. The Journal of Nervous and Mental Disease, 191, 542-545.

van Os, J., Hanssen, M., Bijl, R. V., & Ravelli, A. (2000). Strauss (1969) revisited: A psychosis continuum in the normal population? *Schizophrenia Research, 45*(1-2), 11-20.

Varese, F., Morrison, A. P., Beck, R., Heffernan, S., Law, H., & Bentall, R. P. (2016). Experiential avoidance and appraisals of voices as predictors of voice-related distress. *British Journal of Clinical Psychology*, [Epub ahead of print].

Vaughan, S., & Fowler, D. (2004). The distress experienced by voice hearers is associated with the perceived relationship between the voicehearer and the voice. *British Journal of Clinical Psychology, 43*(Pt 2), 143-153.

Wells, A., & Butler, G. (1997).Generalised anxiety disorder. In D. M. Clark&C. G. Fairburn (Eds.), Science and practice of cognitive behaviour therapy (pp. 155–178). Oxford: Oxford University Press.

World Health Organization. (1992b). *Schedules for Clinical Assessment in Neuropsychiatry (SCAN)*. Geneva: World Health Organization.

Wykes, T., Parr, A. M., & Landau, S. (1999). Group treatment of auditory hallucinations: Exploratory study of effectiveness. *The British Journal of Psychiatry, 175*(2), 180-185.

Figure 1: PRISMA flow diagram of systematic search

The flow diagram contains the following content organised by phase:

Identification

Records identified through database searching (n = 4989)

Additional records identified through other sources (n = 3)

Records after duplicates removed (n = 2993)

Screening

Records screened (n =2996)

Records excluded based on title & abstract (n = 2764)

Eligibility

Full-text articles assessed for eligibility (n = 232)

Full-text articles excluded (n = 208)

- Authors unable to provide further data (n=4)
- Case study (n=5)
- Conference abstract (n=29)
- Dissertation abstract (n=2)
- Protocol (n=3)
- Data not present (>10 years) (n=3)
- Distress measure not valid (n=7)
- No voice appraisal measure (n=19)
- No distress measure (n=43)
- Non clinical sample (n=10)
- Not assess association between voice appraisal and distress (44)
- Not cognitive voice appraisal (n=1)
- Not published in English (n=4)
- Not quantitative methodology (n=3)
- Review paper= (n=31)

Included

Studies included in review (n = 24)

Table 1: Data extraction sheet

Author, year and Country	Design	Sample characteristics	Measures		Key Findings
			Voice-related distress	Cognitive voice appraisal	
Bentall, Haddock & Slade (1994) **United Kingdom**	Longitudinal – Case series with CBT intervention	DSM-III-R diagnosis of schizophrenia (n = 6)	Modified PQRST (Mulhall, 1978) assessing distress caused by voices Hallucination diary with nightly rating of distress from 'mostly very pleasant' to 'mostly very distressing'	Modified PQRST (Mulhall, 1978) assessing extent of belief that voices are own thoughts Hallucination diary nightly rating of hostility from 'mostly friendly' to 'mostly hostile'	1. Very strong positive correlation between distress and hostility from weekly averages of nightly diary ratings for all six participants (0.961, 0.927, 0.972, 0.959, 0.953 and 0.914). 2. Relationship between changes in attributions about voices (whether they are thoughts or not) and reductions in distress is inconsistent and mixed.
Nayani and David (1996) **United Kingdom**	Observational – cross-sectional	No diagnosis criteria specified. Recruited from psychiatric services. AVH for at least 3 months (n=100)	5 point likert from 0 (no distress) to 4 (unbearable distress)	Open ended semi structured interview based on SCAN (WHO, 1992)	1. High levels of distress were found among participants with little control and few means of coping (control present/distress low, 35/53; no control/distress high, 35/47; $\chi2 = 15.6$, P = 0001).
Birchwood and Chadwick (1997) **United Kingdom**	Observational – Cross-sectional	ICD 10 diagnosis schizophrenia or schizoaffective disorder (n= 62)	5 point rating scale from 1 (very distressing) to 5 (very comforting) (Hustig & Hafner, 1990)	BAVQ (Chadwick & Birchwood, 1995)	1. Differences between level of voice distress and voice belief type was significant (F= 20.4, p=<0.001). 2. Malevolent group (M=1.4, SD= 0.7) rated higher levels of distress than Benign group (M=2.3, SD= 0.75). 3. Benign group rated higher levels of distress than Benevolent group (M=3.3, SD=1.1).
Soppitt and Birchwood (1997) **United Kingdom**	Observational – Cross-sectional	SCAN (WHO, 1992a) CATEGO 5 or DCR10 (WHO, 1992b) criteria for schizophrenia (n=21)	5 point rating scale from 1 (very distressing) to 5 (very comforting) (Hustig & Hafner, 1990)	CAS (Chadwick & Birchwood, 1995; Chadwick & Lowe, 1990) BAVQ (Chadwick & Birchwood, 1995).	1. Significant positive correlation between distress and malevolence (0.4346, p<0.05). 2. No correlation found between distress and benevolence and distress and intrusiveness.
Wykes et al. (1999) **United Kingdom**	Waiting-list control design with repeated measures within subjects: CBT group intervention.	DSM-IV diagnosis of schizophrenia (n=21)	PSYRATS-AVH S (Haddock et al., 1999)	BAVQ (Chadwick & Birchwood, 1995)	1. There was a significant partial correlation between the change in perceived power and the post-treatment levels of distress after controlling for pre-treatment levels (partial r= 0.63, P=0.04)
Birchwood et al. (2000)	Observational –	ICD-10 criteria for	5 point rating scale from 1	BAVQ (Chadwick &	1. No significant difference in distress ratings when

United Kingdom	Cross-sectional	schizophrenia or schizoaffective disorder (n=59)	(very distressing) to 5 (very comforting) (Hustig & Hafner, 1990)	Birchwood, 1995) VPD (developed by authors)	comparing participants appraising their voices with high versus low power. 2. Significant difference in distress ratings when comparing participants appraising their voices with high versus low social rank (F= 10.6, df = 1,58, P=<0.002) 3. Participants who appraised voice as higher social rank were more distressed by them.
Chadwick, Sambrooke, Rasch, and Davies (2000). **United Kingdom**	**Quasi- experimental-Pre-test/post-test design: CBT group intervention.**	ICD 10criteria for schizophrenia or schizoaffective disorder (n=22)	5 point rating scale from 1 (very distressing) to 5 (very comforting) (Hustig & Hafner, 1990)	Ratings of conviction in three beliefs- power, control and personal meaning, on a 10 cm visual analogue line (anchors of 0 or 100%)	1. CBT group therapy had significant effect on conviction in beliefs about power and control, but not personal meaning. Visual inspection indicated no differences in distress scores from assessment, first session and last session.
Birchwood, M., et al. (2004)	Observational – Cross-sectional	ICD-10 criteria for schizophrenia, paranoid psychosis or schizoform disorder. (n=125)	5 point rating scale from 1 (very distressing) to 5 (very comforting) (Hustig & Hafner, 1990)	BAVQ (Chadwick & Birchwood, 1995). VPD (Birchwood et al., 2000) VRS Birchwood et al. (2000)	1. Participants who appraised the voice with higher power and social rank than themselves were significantly more distressed by their voices (p<0.01). 2. Structural equation modelling suggested that rank and social power lead to the appraisal of voice power, distress and depression (χ2= 1.2, df=3, p=0.75)
Jenner et al. (2004) **The Netherlands**	RCT with routine care versus hallucination focused integrative treatment (HIT).	SCAN (WHO, 1992a) diagnosis of nonaffective psychosis, including schizophrenia, schizoaffective, or psychotic disorder not otherwise specified (HIT n=37; Control n=39)	PSYRATS-AVHS (Haddock et al., 1999)	PSYRATS-AVHS (Haddock et al., 1999)	1. Mean difference scores for distress had changed significantly more in the HIT group (M=3.17; SD= 3.6) than control group (M=-0.92; SD=3.8) (t= 2.55, p<0.05). 2. Mean difference scores for beliefs about control almost reached significance by a conservative 2 tailed t test (t=1.77, p<0.10) and would have reached statistical significance with a justifiable 1-tailed test.
Trower et al. (2004) **United Kingdom**	RCT with Cognitive Therapy for Command Hallucinations (CTCH) versus treatment as usual (TAU)	ICD-10 criteria for schizophrenia or related disorder with command hallucinations (CTCH n=18; TAU n=20)	PSYRATS (Haddock et al., 1999)	CAS (Chadwick & Birchwood, 1995; Chadwick & Lowe, 1990) BAVQ (Chadwick & Birchwood, 1995) VPD (Birchwood et al., 2000). OS (Birchwood et al., 2000)	1. There were moderate positive correlations between voice related distress and appraisals of voice power (R= 0.55, P<0.01) and omniscience (R= 0.47, P<0.01). 2. Intensity of distress fell significantly in the CTCH group at 6 months but not in the control group (Finteraction=5.3, P=0.03). By 12 months distress levels in the groups were no longer different (F=2.7, NS) but there was an overall lessening of distress over this period (F=4.2, P=0.05). 3. The CTCH group reported a large and significant reduction in the power of the dominant voice, compared with the TAU group, which showed no change (Finteraction=19.4, P<0.0001). This was maintained at 12 months follow-up (Finteraction= 15.1, P<0.001). 4. There was no impact of CTCH on the perceived malevolence of voices at 6 or 12months.

					5. The belief in voices' omniscience declined significantly in the CTCH group but not in the TAU group (Finteraction=3.9, P=0.05). This pattern was maintained at 12 months (Finteraction=6.3, P=0.02). 6. Patients receiving CTCH showed a significant improvement in perceived control over voices, compared with the TAU group, which showed no change (Finteraction= 11.3, P=0.002). This pattern was maintained at 12 months (Finteraction=7.2, P=0.01).
Vaughan and Fowler (2004) **United Kingdom**	Observational – cross-sectional	No diagnosis criteria specified. Recruited from mental health teams and hospital based multidisciplinary teams. AVH for at least 6 months (n = 31)	5 point rating scale from 1 (very distressing) to 5 (very comforting) (Hustig & Hafner, 1990)	BAVQ (Chadwick & Birchwood, 1995). CRTEQ (Birchnell, 1994)	1. There was strong significant positive correlation between voices appraised as dominant and distress (r = .77; p < .01). 2. There was also moderate significant negative correlation between hearers appraising themselves as submissive to the voices and distress (r = .41; p < .05) but 3. There was moderate significant correlation between voice appraised as intrusive and distress (r = .46; p < .05). 4. 64% of the variability in distress was predicted by the regression. Appraisals of voice dominance contributed a unique variance of 9%. 5. Bivariate correlations between distress and malevolence (r = .67); distress and depression (r = .57) and distress and hearer submissiveness (r = .4) were all significant (p < .05) but did not uniquely contribute significantly to the regression. The relationship between these variables and distress may be mediated by relationships between distress and hearer avoidance and voice dominance.
Newton et al. (2005) **United Kingdom**	Waiting list control design with repeated measures **CBT group intervention**	No diagnosis criteria specified. Recruited from psychiatric services. Experience of AVHS for less than 3 years and were not the result of an organic disorder or substance misuse. (n=22)	PSYRATS- AVHS (Haddock et al., 1999)	PSYRATS- AVHS (Haddock et al., 1999) BAVQ (Chadwick & Birchwood, 1995)	1. There were positive correlations between perceived power of the voices and distress (significant) and depression (non significant) before treatment (power, distress =0.54; p = .01; power, depression = 0.39; p= .08). 2. There were positive correlations between perceived power of the voices with distress and depression (power, distress = 0.74; p = .001; power, depression =0.85; p = .001) after treatment. 3. There was a trend for an increase in perceived control over voices (t =–2.176; df = 17; p = .04), and a reduction in their perceived power (t =–2.21; df = 17; p = .04) over the total treatment period. 4. Reductions in perceived power of voices showed a small non-significant association with distress (r=0.29, p= 0.25).

					5. There was a large, significant power correlation between increased control over AVH and reductions in distress (r=0.61; *p*= .01).
McLeod et al. (2007) **United Kingdom**	RCT with CBT group for AVH versus TAU	DSM-IV criteria of schizophrenia. (CBT group n=10; TAU n=10).	PSYRATS (Haddock et al., 1999)	BAVQ (Chadwick & Birchwood, 1995) VPD (Birchwood et al., 2000).	1. CBT group showed significant reduction in the perceived power of voices, whereas no change was observed in TAU group. (group x time f=8.7, P<0.01). The actual mean scores for CBT group significantly reduced, whereas it had increased in the TAU over time. 2. CBT group showed a trend towards the reduction in the level of distress, whereas this trend was less in the TAU group (group x time f=0.07, P<0.795).
Hacker et al. (2008) **United Kingdom**	Observational – cross-sectional	ICD-10 criteria for schizophrenia (n=30)	PSYRATS (Haddock et al., 1999)	CAVIS (Chadwick & Birchwood, 1994; Close & Garety, 1998) BAVQ- R (Chadwick et al., 2000)	1. Distress was significantly correlated with omnipotence (τ= 0.48, P<0.001). 2. Omnipotence was independently associated with safety behaviours and distress. 3. Regression analysis showed omnipotence to be a significant predictor (β= 0.513, P=0.55) of distress whilst safety behaviours was rendered non significant. 4. A sorbet test of mediation hypothesis indicated the relationship between safety behaviour and distress was significantly mediated by omnipotence (Z=2.2, P=0.27)
Dannahy et al. (2011) **United Kingdom**	**Quasi- experimental- Pre-test/post-test design:** PBCBT	No diagnosis criteria specified. Recruited from psychiatric services and experiencing AVH for at least 2 years. (n=50)	5-point analogue scale ranging from 1 ('not at all distressed') to 5 ('very distressed indeed')	10 cm analogue assessing control the voice has ranging from 0 ('none at all') to 100 ('total control over me') VAY (Hayward et al., 2008)	1. There were significant differences in voice-distress ratings between time 1 and 2 (Z (62) = 4.65, p < .001) and time 1 and 3 (Z (62) = 4.70, p < .001). 2. There were significant differences in voice-control ratings between time 1 and 2 (Z (62) = 4.44, p < .001), and time 1 and 33 (Z(62) = 3.08, p < .01). 3. There were no main effects of time for voice dominance (F (2,122) = 1.29, p = .27),, hearer distance (F (2) = 2.37, p=.10) or voice intrusiveness (F (2,122) = .33, p = .72).
Brunet et al. (2012) **United Kingdom**	Observational – cross-sectional	ICD-10 for first episode of psychosis (All participants n=50; analyses for voice related distress n=27)	5 point rating scale from 1 (very distressing) to 5 (very comforting) (Hustig & Hafner, 1990)	BAVQ- R (Chadwick et al., 2000)	1. During the acute phase of psychosis, higher levels of voice-related distress were associated with greater perceived malevolence (r=−.4, p= .039) and lower perceived benevolence (r= .4, p= .047) but were unrelated to omnipotence 2. (r=−.08, p= .71). 3. The regression model selected malevolence as the sole predictor of distress, and accounted for 13% of variance (R2= .16, R2adj= .13, F(1, 25) = 4.75, p= .039). Each additional point scored for malevolence resulted in an increase of .1 in distress (β= .1, t= 2.18, p= .039).

Peters, Lataster et al. (2012a) **United Kingdom**	Experience sampling method	No diagnosis criteria specified. Recruited from outpatients services for psychosis. (n= 12)	ESM diary assessing intensity, distress and interference from each psychotic symptom using 7 point likert scale (1= not at all to 7=very). PSYRATS (Haddock et al., 1999)	ESM diary assessing appraisal of symptoms including 'right now I believe this problem is to do with…'. Appraisals relating to insight, decentering, control and power of voices were included and rated on 7 point Likert scale.	1. Intensity (standardized B=0.62, p<0.001), control (standardized B=0.35, p<0.001) and power appraisals (standardized B=0.36, p<0.001) were all independently significantly associated with symptom related distress.
Peters, Williams et al. (2012b) **United Kingdom**	Observational – cross-sectional	No diagnosis criteria specified. Recruited from outpatients services for psychosis. (n= 46)	PQ (Brett-Jones et al., 1987)	BAVQ- R (Chadwick et al., 2000)	1. Voice-associated distress was significantly correlated with omnipotence (r= 62, p<0.01) and malevolence (r=0.52, p<0.01) 2. Beliefs about voices showed stronger associations with affective response than voice experience and form (severity, intensity and frequency).
Shawyer et al. (2012) **Australia**	RCT with Treatment of Resistant Command Hallucinations (TORCH) versus befriending.	DSM-IV diagnosis of schizophrenia or related condition (TORCH n= 21, befriending n= 22)	Rating of how upsetting they found their most recent experiences of AVH were using 5 point scale anchored 'not at all' to 'overwhelming/ terrible.' PSYRATS (Haddock et al., 1999)	BAVQ- R (Chadwick et al., 2000)	1. Significant improvement in distress was observed only in the befriending group (p<0.01). 2. Both groups showed significant reductions in the BAVQ Omnipotence scores (p<0.05). 3. When comparing TORCH and befriending treatment combined with waiting list, there is a significant reduction in the combined treatment only (p<0.01) .
Gottlieb et al. (2013) **United States**	**Quasi- experimental-Pre-test/post-test design:** Web-based CBT for psychosis intervention	DSM- diagnosis of schizophrenia, schizoaffective disorder, or psychosis. (n=17)	PSYRATS (Haddock et al., 1999)	BAVQ- R (Chadwick et al., 2000)	1. No significant change in distress and control from baseline to post treatment.
Morris et al. (2014) **United Kingdom**	Observational – cross-sectional	ICD-10 diagnosis of psychotic illness. (n= 50)	PSYRATS (Haddock et al., 1999)	BAVQ- R (Chadwick et al., 2000)	1. Distress amount significantly correlated with malevolence (r=41, p=<0.01) and benevolence (r=-35, p= <0.05). 2. There was no significant correlation between distress amount and omnipotence.
Ruddle et al.(2014) **United Kingdom**	Case series: CBT intervention	DSM IV-TR criteria for schizophrenia or schizoaffective disorder (n= 15)	PSYRATS (Haddock et al., 1999)	BAVQ- R (Chadwick et al., 2000)	1. 3 of 4 participants whose distress reduced had reduced 'negative beliefs' (combined malevolence and omnipotence score). 2. Overall, there was no convincing evidence that changes in beliefs preceded changes in distress. Similarly, there was no evidence that changes in distress induced changes in

					beliefs. However, there was evidence that changes occurred in synchrony (Lag 0 CCFs: 0.92∗ (0.41), 0.82∗ (0.35), 0.52 (0.33)). 3. Negative beliefs appeared to be the most common covariate of changes in distress.
Birchwood et al. (2014) **United Kingdom**	RCT with CTCH and TAU versus TAU	ICD-10 diagnosis of schizophrenia, schizoaffective or mood disorders. (CTCH n= 98, TAU n=99)	PSYRATS-AVHS (Haddock et al., 1999)	BAVQ- R (Chadwick et al., 2000) VPD (Birchwood et al., 2000) Omniscience Scale (Birchwood et al, 2004)	1. BAVQ-R and PSYRATS distress scores fell significantly over time equally in both treatment groups. There were no significant differences between groups. 2. Treatment effects for PSYRATS distress, BAVQ-R and knowledge (omniscience) were not significant. 3. CTCH and TAU combined group showed significant reduction in appraisals of voice- power compared to TAU only group. For the VPD total, the estimated treatment effect common to both time points was -1.82 (95% CI -0.849 to -0.185, p=0.002). For power differential, the estimated treatment effect for both time points was -0.52 (-0.949 to -0.185, p=0.002). 4. The combined CTCH and TAU group had a large, significant reduction in the rate of compliance to AVH compared with the TAU group (odds ratio 0.45). The odds ratio of the combined treatment effect at both follow-up time points was 0.57.
Varese et al. (2016) **United Kingdom**	Observational – cross-sectional	Diagnosis of psychotic illness based on self-report and corroborated by referring clinicians (n=101)	PSYRATS-AVHS (Haddock et al., 1999)	IVI (Morrison et al., 2002)	1. Distress significantly correlated with IVI metaphysical beliefs (r= 0.34, p<0.001) and IVI loss of control (r= 0.30, p<0.01) 2. Distress was not correlated with IVI positive beliefs.

BAVQ= Beliefs About Voices Questionnaire; BAVQ- R= Beliefs About Voices Questionnaire Revised; VPD= Voice Power Differential Scale; CAS= Cognitive Assessment Schedule; SPD= Social Power Differential Scale, OS= Omniscience Scale, VAY= Voice and You; VRS= Voice Rank Scale; SCAN= Schedules for Clinical Assessment in Neuropsychiatry, PQRST= Personal Questionnaire Rapid Scaling Technique PSYRATS= Psychotic Symptom Rating Scales; PQ= Personal Questionnaire Technique

Table 2: Quality Assessment Tool ratings

Author	Design	Overall Score	Reporting	External Validity	Internal Validity- Bias	Internal Validity- Confounds	Power
Bentall, Haddock & Slade (1994)	Longitudinal – Case series	42%	63%	0%	40%	50%	0%
Nayani and David (1996)	Observational – cross-sectional	50%	50%	67%	67%	0%	0%
Birchwood and Chadwick (1997)	Observational – Cross-sectional	64%	67%	67%	100%	0%	0%
Soppitt and Birchwood (1997)	Observational – Cross-sectional	60%	83%	33%	100%	0%	0%
Wykes et al. (1999)	Waiting-list control design with repeated measures within subjects: CBT group intervention.	54%	56%	67%	80%	33%	0%
Birchwood et al. (2000)	Observational – Cross-sectional	67%	71%	33%	100%	100%	0%
Chadwick, Sambrooke, Rasch and Davies (2000).	Quasi- experimental- Pre-test/post-test design: CBT group intervention	71%	100%	33%	60%	75%	0%
Birchwood, M., et al. (2004)	Observational – Cross-sectional	80%	100%	33%	100%	100%	0%
Jenner et al. (2004)	RCT with routine care versus hallucination focused integrative treatment (HIT).	77%	78%	67%	57%	100%	100%
Trower et al. (2004)	RCT with Cognitive Therapy for Command	88%	100%	67%	86%	83%	100%

	Hallucinations (CTCH) versus TAU					
Vaughan and Fowler (2004)	Observational – cross-sectional	71%	67%	67%	100%	100%	0%
Newton et al. (2005)	Waiting list control design with repeated measures: CBT group intervention	67%	50%	33%	80%	100%	100%
McLeod et al. (2007)	RCT with CBT group for AVH	54%	44%	67%	71%	50%	0%
Hacker et al. (2008)	Observational – cross-sectional	87%	100%	67%	100%	50%	100%
Dannahy et al. (2011)	Quasi- experimental- Pre-test/post-test design: PBCBT	68%	89%	67%	60%	25%	100%
Brunet et al. (2012)	Observational – cross-sectional	81%	100%	33%	100%	50%	100%
Peters, Lataster et al. (2012a)	Experience sampling method	65%	86%	33%	100%	33%	0%
Peters, Williams et al. (2012b)	Observational – cross-sectional	64%	83%	33%	100%	0%	0%
Shawyer et al. (2012)	RCT with Treatment of Resistant Command Hallucinations (TORCH) versus befriending.	73%	100%	33%	71%	50%	100%
Gottlieb et al. (2013)	Quasi- experimental- Pre-test/post-test design: Web-based CBT for psychosis intervention	44%	88%	0%	25%	0%	0%
Morris et al. (2014)	Observational – cross-sectional	63%	71%	33%	100%	50%	0%

Ruddle et al.(2014)	Case series: CBT intervention	33%	33%	33%	25%	50%	0%
Birchwood et al. (2014)	RCT with CTCH and TAU versus TAU	85%	100%	33%	71%	100%	100%
Varese et al. (2016)	Observational – cross-sectional	71%	100%	0%	100%	100%	0%

Paper 2: Empirical Study

An analogue study investigating voice-hearing in response to stressful material

The following paper has been prepared for submission to 'Psychosis'. The guidelines for authors can be found in Appendix D.

Abstract

An analogue study investigating voice-hearing in response to stressful material

Stress is associated with the onset and maintenance of voice-hearing, a key symptom of psychosis. Using an experimental design, this study explored whether people who are exposed to stressful material are more likely to report hearing voices when they are not present (i.e. false alarms), and investigated factors that may predict or moderate voice-hearing. A non-clinical sample ($N = 130$) completed measures of trauma history, hallucination proneness, dissociation, affect and attachment styles, before being allocated to view pictures depicting stressful interpersonal scenarios or pictures with neutral interpersonal scenarios. Participants then completed a voice detection task. False alarms were recorded as a proxy measure of voice-hearing. Participants in the stressful group reported significantly higher levels of stress than in the neutral group. No differences were found in false alarms. Only physical abuse history and depersonalisation significantly correlated with false alarms. This study indicates that people with physical abuse history and dissociative tendencies may be more vulnerable to hearing voices; clinically, these factors should therefore be assessed. However, findings of this study should be interpreted tentatively due to lack of diversity within the sample and low incidences of the factors of interest (i.e. sexual abuse history, hallucination proneness, attachment anxiety and attachment avoidance).

Keywords: voices; auditory hallucinations; stress; trauma; psychosis

Introduction

Voice-hearing is the most commonly reported form of auditory verbal hallucinations (AVH), which features prominently in many disorders. The mechanisms underlying AVH are still largely unknown and evidence does not point to any single cause, but rather a complex interaction of multiple factors.

Stress has been implicated in the onset, maintenance and relapse of psychosis (Phillips, Francey, Edwards, & McMurray, 2007). Myin-Germeys & van Os (2007) found that day-to-day stressors predicted more intense moment-to moment variations of AVH. There has also been growing evidence linking AVH to major life stressors, in particular early-life trauma, which may play a causal role in psychotic symptoms (Read, van Os, Morrison, & Ross, 2005).

Dissociation has been proposed as a mechanism linking trauma and AVH. Dissociation has been conceptualised as a psychological defence to stressful and traumatic events (Perona-Garcelán et al., 2012) and involves separation of normally integrated mental processes. Varese, Barkus, & Bentall (2012) found that the relationship between trauma and hallucination-proneness was positively mediated by dissociative tendencies. The meditational role of dissociation was particularly robust for sexual abuse.

Secure attachment in infancy may act as a buffer to stresses and protect against the development of mental health problems (Mikulincer & Shaver, 2012; Longden, Madill, & Waterman, 2012). Insecure attachment patterns have been found to be associated with psychosis development, expression and long-term outcome (Mathews et al., 2016). Insecure attachment can be conceptualised in terms of the dimensions of anxiety and avoidance. Individuals with an anxious attachment style tend to fear rejection, yet their cravings for closeness may inadvertently drive others away. Those with avoidant attachment may feel uncomfortable with closeness in relationships and seek to maintain emotional distance. Interpersonal stressors have also been found to be associated with attachment anxiety and attachment avoidance (Berry, Barrowclough, & Wearden, 2008).

There is also evidence that negative affect precedes AVH (Allen et al., 2005; Nayani & David, 1996). It has been suggested that negative affect might lead to AVH by increasing the likelihood that a person will experience intrusive, unpleasant thoughts that are difficult to identify as internal, self-generated events (Smailes, Meins, & Fernyhough, 2014). This may be particularly likely in people who are more prone to hallucinating, although further research is required.

Despite evidence supporting the link between stress and the development of psychosis, this area of research has been criticised for methodological limitations such as retrospective design, inadequate control groups, over-reliance on the life events approach to assessing stress and a lack of focus on specific symptoms, such as AVH. Further investigation is required to directly explore the impact of stress on AVH and the role of potentially important influencing variables such as childhood trauma, dissociation and attachment.

AVH within the general population have been found to be associated with the same risk factors that predict psychotic disorders (van Os, Linscott, Myin-Germeys, Delespaul & Krabbendam, 2009), which is consistent with the hypothesis of a symptom continuum from non-clinical through clinical populations (van Os, Hanssen, Bijl & Ravelli, 2000). Indeed, analogue research has been used to better understand mechanisms underlying voices (e.g. Ward, Gaynor, Hunter, Woodruff, Garety &Peters, 2014), and several experimental paradigms have been designed to induce voices in non-clinical samples (e.g.Feelgood & Rantzen 1994; Hoffman et al. 2007). Studying non-clinical individuals who report voice-hearing experiences of a psychotic nature provides a unique opportunity to differentiate those factors that are linked to the clinical disorder from those that are associated with benign anomalous experience. This may provide further insight to factors associated with the development of the onset of psychosis with a clinical need.

The current study aims to investigate: whether exposure to interpersonally related stress increases the likelihood of hearing voices in an experimental task in a non-clinical population (hypothesis 1); whether childhood trauma, dissociation , attachment, affect, and hallucination proneness are associated with voice-hearing (hypothesis 2); and whether these variables moderate the effect of interpersonally-related stress on voice-hearing (hypothesis 3).

Method

Design

The current study employed a two-group experimental design, with independent measures. The two groups were negative pictures condition to induce stress and neutral pictures condition. Group allocation was the independent variable and number of false alarms from the Voice Detection Task (VDT) was the dependent variable. Ethical approval was gained from Research Ethics Committee 4 at the University of Manchester.

Sample

An a-priori power calculation was completed based on a medium (0.5) effect size (Faul, Erdfelder, Lang, & Buchner, 2007). A sample of 128 would be required to have 80% power with an alpha level of 0.05. One-hundred-and-thirty non-clinical participants completed this study. Student participants received course credits. Non-student participants received financial reimbursement. Participants were recruited by means of opportunistic sampling from a UK University via poster and internet advertisements. Potential participants completed an online screening survey which assessed for eligibility and demographic information including age, gender and ethnicity. Inclusion criteria were: English-speaking; eighteen years or older; and normal or corrected vision. Exclusion criteria were: self-reported history of or current contact with secondary care psychiatric services; and hearing impairment.

Measures

Voice Detection Task (VDT; Huque, Poliakoff, & Brown, 2016*):* This task assessed the frequency of voice-hearing when voices were not present (i.e. false alarms). Participants listened to a continuous stream of white noise, into which whispered nonsense words were occasionally embedded. Participants pressed the spacebar every time a voice was heard. The task involved a one-minute practice task before a 4 minute 30 seconds main task. The purpose of the practice was to determine each participant's general reaction times to clearly audible voices, to decide on the criterion for false alarms in the main task.

Stress manipulation task: This stress manipulation task was adapted from a paradigm developed by Suzuki, Poon, Papadopoulos, Kumari, & Cleare (2014) which was considered to be an ecologically valid method to induce interpersonally related stress, due to its representations of trauma. The negative pictures condition comprised 30 pictures: 15 of the 30 were obtained from the International Affective Picture System (IAPS; Lang, Bradley, & Cuthbert, 2005) and 15 from a public photo archive (www.istockphoto.com). Selected IAPS pictures had been rated as having negative valence. Childhood trauma pictures were selected from istockphotos.com, were previously used by Suzuki et al. (2014), and had been rated as being as stressful as negative pictures from IAPS. The neutral pictures condition comprised 30 neutral pictures from IAPS and had midpoint ratings for negative valence and pleasure. Pictures for both conditions depicted people to ensure an interpersonal component to the stress paradigm. For both conditions, each picture was presented in a randomised order for five seconds before participants were asked to rate how stressed they were feeling on a ten-point Likert scale with 'no stress' rated '0' and 'maximal imaginable stress' rated '9'. Each individual picture was rated to ensure that participants' attention was focused on the picture and to reduce avoidance. Internal consistency in this current study for individual pictures ratings was excellent for negative pictures (α= 0.98) and acceptable for neutral pictures (α= 0.78). Participants were also asked to rate how stressed they felt overall on a ten-point Likert scale, before and after the pictures were presented to check the success of the stress manipulation.

Launay-Slade Hallucination Scale Revised (LSHS-R; Bentall & Slade, 1985*):* This 12-item scale is a frequently used measure of predisposition to hallucinations in non-clinical populations. Scores range from 12 to 48, with higher scores indicating greater hallucination proneness. The LSHS-R has been demonstrated to have good reliability and validity (Waters, Badcock, & Mayberry, 2003). Good internal consistency was demonstrated in this study (α= .81).

Childhood Trauma Questionnaire (CTQ; Bernstein et al., 2003*):* This is a 28-item self-report retrospective inventory measuring childhood abuse and neglect. The CTQ has shown to have high construct and discriminant validity in non-clinical samples (Bernstein et al., 2003). It showed high internal (α = 0.96) and test-retest reliability (α = 0.85) previously (Paivio & Cramer, 2004) and in the current study (α = 0.903). For each subscale, Cronbach's alpha was > 0.72.

The Relationship Scales Questionnaire (RSQ; Griffin & Bartholomew, 1994)*:* The RSQ measures attachment styles and can be scored in multiple ways to yield different attachment dimensions. To facilitate comparisons with previous research, the measure was used to derive subscales of attachment anxiety and avoidance (Kurdek, 2002; Macbeth, Shwannauer, & Gumley, 2008), using 13 of the original RSQ 30 items. It has been found to yield psychometrically reliable scores (Kurdek, 2002). In this study, Cronbach's alpha was 0.61 for RSQ Avoidance subscale and 0.84 for RSQ Anxiety subscale.

The Dissociative Experiences Schedule II (DES-II; Carlson & Putnam, 1993*):* The 28-item DES-II measures dissociative symptoms. Subscales include Amnesia, Depersonalisation and Absorption. It has shown to have high internal consistency (α =0.87) in non-clinical populations (Korlin, Edman, & Nyback, 2007). Internal consistency for DES-II was also high in this study ($\alpha = 0.934$). For subscales, Cronbach's alpha was > 0.71.

Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988*):* The PANAS comprises 20 items assessing positive and negative effect. It has high reliability and validity within non-clinical samples (Crawford & Henry, 2004). Only the Negative Affect subscale was utilised in this study. Internal consistency was good ($\alpha = 0.862$).

Procedure

A description of the study procedure is depicted in Figure 1. Participants completed the experimental task in testing cubicles in one sitting, lasting approximately 45 minutes. After informed written consent, the experimenter left the cubicle until all tasks were completed to encourage honest disclosure of sensitive information and to prevent response bias. Participants were allocated to one of two groups in the order they were recruited, resulting in 65 participants in each condition. Participants utilised the Panasonic RPHT225 over the ear Extra Bass Monitor Headphones for the VDT task and pictures were presented on a desktop computer (Dell Optiplex 7.45 Series operating Windows 7 and with Dell E171FP display with screen resolution set to 1280x1024). All stimuli for the experiment were presented electronically using the E-Prime 2.0 software (Psychology Software Tools, Pittsburgh, PA). After the experiment, normalising information about psychosis-like experiences was provided via audio podcast (French et al., 2011).

Statistical Analysis

Where distribution fell outside acceptable ranges for the assumption of normality, logarithmic transformations were utilised. Variables that were successfully transformed included PANAS negative, CTQ total, CTQ emotional abuse, CTQ emotional neglect, DES-II total, DES-II amnesia and DES-II depersonalisation. Transformation was unsuccessful for false alarms, age, CTQ physical abuse, CTQ sexual abuse and CTQ physical neglect. Therefore non-parametric tests were used for correlational analyses and bootstrapping was used for regression analyses.

Independent samples t-tests or non-parametric equivalents were conducted to assess for any significant differences in demographic and scale data between groups at baseline. This was to assess for potential confounding factors. The success of the experimental manipulation (that the negative pictures group rated higher levels of stress than the neutral pictures group) was checked using independent samples t-test.

For hypothesis 1, an Analyses of Covariance (ANCOVA) was conducted to examine whether participants in the negative pictures condition had significantly higher false alarms after the stress manipulation than those in the neutral pictures condition, controlling for number of false alarms at baseline and any confounders identified from comparing group differences at baseline.

For hypothesis 2, associations between false alarms and potential correlates were first assessed using Spearman's rho. A hierarchical linear regression was performed to predict participants' false alarms using variables that significantly correlated with false alarms.

Hierarchical linear regression was performed for hypothesis 3, to explore whether trauma history, attachment style, affect, hallucination proneness and dissociation moderated the effect of interpersonally-related stress. In all cases, regression assumptions were verified and no assumptions were violated.

Results

Sample characteristics

One-hundred and thirty participants participated in this study comprising 88 females (68%) and 42 males (32%). Ages ranged from 18-49 years with a median of age of 20 (IQR = 3). There was a higher proportion of students (n = 75, 56%) than non-students (n = 55, 42%). The majority of participants were White British.

There were no significant differences between the groups at baseline, with the exception of CTQ total (t= -2.14, df= 125, p= 0.034). See Table 1 for sample characteristics, distribution and comparisons of demographics, and comparisons of scales between groups.

Findings indicated that the stress manipulation was successful. There were no significant differences in stress ratings between groups before pictures were presented (t= -0.584, df= 128, p=0.56; negative M= 2.29, SD=2.14; neutral M=2.48, SD= 2.20). There was a significant difference between groups after pictures were presented (t=8.235, df =128, p=0.00) with those in negative pictures condition group rating higher levels of stress (M= 4.09, SD=2.24) versus the neutral pictures condition (M= 1.29, SD= 1.57).

Main analyses

An ANCOVA was conducted to examine whether participants in the negative pictures condition had significantly higher false alarms after the stress manipulation than those in the neutral condition, controlling for baseline false alarms and CTQ total scores. Findings showed no significant effect of group allocation (i.e., negative pictures or neutral pictures conditions) on false alarms post stress manipulation, after controlling for baseline false alarms and CTQ total scores.

To look at potential predictors of voice-hearing, Spearman's rho correlations were calculated to examine which variables were associated with post stress task false alarms (see Table 2). Correlations which were significant at p<.05 were entered into a regression model. To control for baseline false alarms, this was entered into step 1. Group, CTQ physical abuse and DES-II depersonalisation/derealisation were entered into step 2.

False alarms at baseline 1 (F (1, 111) = 54.79, p= 0.00, R^2 = 0.33, adjusted R^2 = 0.32) accounted for 33% of the variance in false alarms post stress manipulation. When group, CTQ physical abuse and DES-II Depersonalisation were added (F (4, 108) = 14.0, p= 0.00, R^2 = 0.34, adjusted R^2 = 0.32), it explained an additional 1.2% of the variation in false alarms scores. Only DES-II Depersonalisation and baseline false alarms were significant predictors of false alarms post stress manipulation. Table 3 summarises these regression analyses.

Exploration was conducted as to whether a number of theoretically important factors including PANAS negative, RSQ avoidance, RSQ anxiety, CTQ total, DES-II total and LSHS-R total may moderate interpersonally-related stress. None were found to be significant (see Appendix C).

Discussion

This study aimed to assess whether exposure to interpersonal-related stress results in more voice-hearing experiences in a non-clinical sample using an experimental design. Results showed that participants who were exposed to stressful material did not significantly report hearing more voices than participants who were exposed to neutral material. These findings suggest that stress induction might not be directly involved in the development of voice-hearing experiences, which diverges from previous studies that have found associations between voice-hearing and daily stressors (Myin-Germeys & van Os, 2007) and interpersonal trauma symptoms (Read et al., 2005). However, methodological issues should be considered prior to conclusions being drawn.

In the current study, physical abuse history significantly correlated with voice-hearing in line with previous research (Bentall, Wickham, Shelvin, & Varese, 2012). Depersonalisation, a form of dissociation, was the only other factor which correlated with voice-hearing and remained a significant independent predictor. A recent meta-analysis reported robust relationships between voice-hearing and dissociation, including voice-hearing proneness in non-clinical samples (Pilton, Varese, Berry, & Bucci, 2015). Findings from this study suggest that both trauma and dissociation may contribute to the development of AVH. During physical abuse, depersonalisation can be a helpful coping strategy for a person to tolerate what might otherwise be too difficult to bear. However, this process also facilitates attribution of thoughts to external sources, which is experienced as voice-hearing. The relationship between childhood trauma and voice-hearing may be mediated by depersonalisation (Perona-Garcelán, et al., 2012).

Contrary to predictions, no associations were found between voice-hearing and hallucination proneness, attachment styles, and childhood sexual abuse, which diverges from findings in the literature (Bentall et al., 2014). This may be due to the lack of diversity within the sample. Only 4.6% (*n*=6) participants reported a history of sexual abuse, 17% (*n*=23) scored high on hallucination proneness, 7.7% scored high on attachment anxiety (*n*=10) and 3.1% scored high on attachment avoidance (*n*=4).

The current study has several strengths, including adequate statistical power, experimental controls and a robust experimental design. The study also has a number of methodological limitations. The stress induction paradigm has not previously been used.

The pictures were newly selected for this study to include an interpersonal component. As such, further exploration and validation of the paradigm is required. It is likely the paradigm was not sufficiently stressful to reach the threshold required for onset of voice-hearing. Alternatively, the VDT may not have been sufficiently sensitive to interpersonal stress. Although participants in the stressful condition rated significantly higher levels of stress than in the neutral pictures condition, their mean stress rating was four, from a scale of zero to nine, which is relatively low.

Furthermore, the stress task did not take into account that individuals may have different threshold levels for stress. Due to limited research in this area, there is little information around the parameters of stress relevant to voice-hearing. For example, it is not known whether different duration of a stressor or an accumulation of stressors would have resulted in different outcomes. It is also uncertain whether voice-hearing is likely to occur immediately after a stressor or after a delay. It is acknowledged that the stress task in this study did not separate out more specific effects of trauma-related pictures from general responses to negative stimuli.

The VDT was a novel task. A main strength of this task was that participants' individual differences in reaction times to hearing voices were taken into account. In this way, the task used in the current study was superior to other voice-hearing paradigms in the literature. However, as false alarms in the current study did not correlate with many variables that are suggested in the literature (e.g., attachment, hallucination proneness, negative affect and childhood sexual abuse), it is possible that either the VDT was not sensitive enough to detect false alarms or the criteria for what was considered a false alarm were too stringent. Additionally, the VDT is a proxy measure of voice-hearing so may have questionable ecological validity. There is evidence that voices are usually experienced as negative in psychosis and individuals may make appraisals of the voices. For example, voices have been appraised as being as being malevolent and controlling (Mawson, Cohen, & Berry, 2010). However, the voices in the task were neutral and unintelligible, and therefore may not elicit appraisals and resemble real-life voice-hearing experiences.

Clinical Implications and Future Research

This study shows that people with history of physical abuse and dissociative tendencies may be more vulnerable to hearing voices. Therefore it is advisable to enquire about abuse history and assess for dissociative tendencies in clinical assessments as these may indicate risk of voice-hearing. Furthermore, for clients who report distressing voice-hearing, it may be helpful to assess for trauma history and dissociative tendencies as they may potentially inform psychological formulations regarding development of voice-hearing. As people generally dissociate as a method of coping with trauma that is too painful, therapy aimed at transforming emotional responses to trauma may help reduce voice-hearing experiences. Although no association was found between false alarms with sexual abuse history, attachment style and hallucination proneness contrary to findings in the literature, this is likely due to low incidences of these in this current sample. Therefore conclusions should be drawn tentatively. Future research should focus on ensuring sample is diverse and more representative of the population.

As exposure to interpersonally related stress did not increase voice-hearing in this experimental study, this may imply that stress may not immediately precede voice-hearing and may not be the main factor involved in the development of voice-hearing. Future work should seek to explore the link between stress and voice-hearing more fully using experimental designs. Exploring the parameters of different types of stressors (e.g. comparison of different stress, stress duration, stress accumulation) may shed light on the inconsistencies within the literature where experimental paradigms have been used. Other moderating and mediating factors that were not investigated in this study should be also explored such as participants' interpretations of voices and coping strategies. Additionally, voice-hearing paradigms and more robust measures of interpersonal stress need to be developed that can be used in experimental designs to ensure consistency in the literature and for replication purposes.

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                    ┌─────────────────────────────┐
                    │ Baseline Measures: LSHS-R,   │
                    │ RSQ, CTQ, PANAS & DES-II     │
                    │                              │
                    │ N=130                        │
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                                   ↓
                    ┌─────────────────────────────┐
                    │ Baseline Voice Detection Task│
                    └──────────────┬──────────────┘
                                   ↓
                    ┌─────────────────────────────┐
                    │ "Overall how stressed are you│
                    │ feeling?" (0= "no stress", 9=│
                    │ "maximal imaginable stress') │
                    └──────────────┬──────────────┘
                                   ↓
                    ┌─────────────────────────────┐
                    │ Assignment to group          │
                    └──────┬───────────────┬───────┘
                           ↓               ↓
      ┌────────────────────────┐   ┌────────────────────────┐
      │ Negative Pictures      │   │ Neutral Pictures        │
      │ Condition N=65         │   │ Condition N=65          │
      └───────────┬────────────┘   └────────────┬───────────┘
                  ↓                              ↓
      ┌────────────────────────┐   ┌────────────────────────┐
      │ Exposure to negative   │   │ Exposure to neutral     │
      │ pictures               │   │ pictures                │
      └───────────┬────────────┘   └────────────┬───────────┘
                  ↓                              ↓
      ┌────────────────────────┐   ┌────────────────────────┐
      │ Manipulation Check:     │   │ Manipulation Check:     │
      │ "Overall how stressed   │   │ "Overall how stressed   │
      │ are you feeling?" (0=   │   │ are you feeling?" (0=   │
      │ "no stress", 9=        │   │ "no stress", 9=        │
      │ "maximal imaginable    │   │ "maximal imaginable    │
      │ stress')               │   │ stress')               │
      └───────────┬────────────┘   └────────────┬───────────┘
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      ┌────────────────────────┐   ┌────────────────────────┐
      │ Voice Detection Task   │   │ Voice Detection Task    │
      └───────────┬────────────┘   └────────────┬───────────┘
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      ┌────────────────────────┐   ┌────────────────────────┐
      │ Debrief                │   │ Debrief                 │
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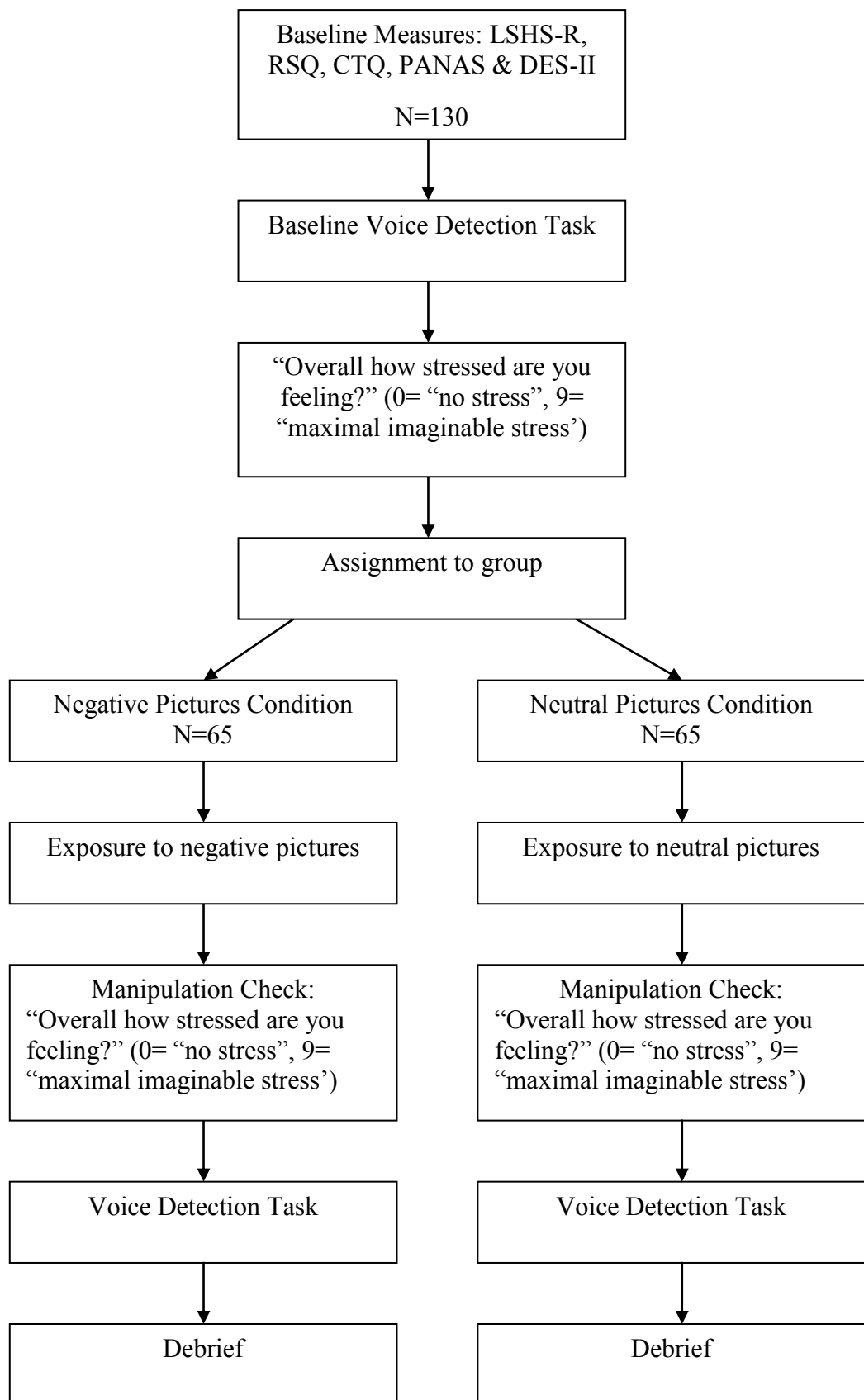
Figure 1: Experimental Procedure

Table 1: Sample characteristics

Variable	Total Sample	Negative Picture Condition	Neutral Pictures Condition	Statistic
Age **Median (IQR)** **Sample size**	20 (3) n=125	20 (3) n=62	20 (3) n=63	U = 181, Z = -3.53, p=0.495
Gender **(female: male)** **Sample size**	88:42 n=130	42:23 n=65	46:19 n=65	X2 = 0.63, df= 1, p= 0.453
Ethnicity **White British** **Other White** **Chinese** **Other Asian** **Not specified**	48% 13% 15% 16% 8%	43% 15% 16% 18% 8%	52% 11% 14% 14% 8%	X2 = 1.30, df= 4, p= 0.861
LSHS-R total **Mean (SD)** **Sample size**	14.7 (7.75) n=128	13.84 (7.47) n=64	15.55 (8.0) n=64	t= -1.245, df= 126, p= 0.216
PANAS negative **Mean (SD)** **Sample size**	1.22 (0.16) n=129	1.22 (0.16) n= 65	1.22 (0.16) n= 64	t= 0.078, df= 127, p= 0.938
RSQ Avoidance **Mean (SD)** **Sample size**	2.67 (0.57) n=130	2.67 (0.53) n= 65	2.71 (0.60) n= 65	t= -0.974, df= 128 p= 0.332
RSQ Anxious **Mean (SD)** **Sample size**	2.31(0.93) n=130	2.38 (0.99) n= 65	2.24 (0.86) n= 65	t= 0.866, df= 128, p= 0.388
CTQ Total **Mean (SD)** **Sample size**	1.54 (0.11) n=127	1.52 (0.95) n=63	1.56 (0.12) n=64	t= -2.14, df= 125, p= 0.034*
CTQ PA **Median (IQR)** **Sample size**	5 (0) n=130	5 (0) n=65	5 (0) n=65	U= 2065,Z = -0.304, p=0.761
CTQ EA **Mean (SD)** **Sample size**	0.88 (0.16) n=129	0.85 (1.58) n= 65	0.90 (1.65) n= 64	t= -1.802, df= 127, p= 0.074
CTQ SA **Median (IQR)** **Sample size**	5 (0) n=129	5 (0) n= 64	5 (0) n= 65	U= 1889,Z = -1.79, p=0.074
CTQ EN **Mean (SD)**	.93 (0.18)	0.90 (0.18)	0.96 (0.18)	t= -1.879, df= 127, p= 0.063

Variable	Total Sample	Negative Picture Condition	Neutral Pictures Condition	Statistic
Sample size	n=129	n= 64	n= 65	
CTQPN Mean (SD) Sample size	5 (2) n=130	5 (2) n= 65	5 (3) n= 65	U= 2044,Z = -0.348, p=0.728
DES-II Total Mean (SD) Sample size	1.54 (0.36) n=125	1.53 (0.37) n= 62	1.56 (0.35) N=63	t= -0.474, df= 123, p= 0.637
DES-II Amnesia Mean (SD) Sample size	0.57 (0.42) n=128	0.56 (0.41) n=64	0.58 (0.43) n=64	t= -0.303, df= 126, p= 0.763
DES-II Depers. Mean (SD) Sample size	0.38 (0.44) n=127	0.35 (0.44) n= 62	0.41 (0.44) n=65	t= -0.811, df=125, p= 0.419
DES-II Abscorp. Mean (SD) Sample size	1.16 (0.31) n= 129	1.17 (0.30) N=64	1.18 (0.32) n=65	t= -0.247, df= 127, p= 0.805

p < .05

LSHS-R= Launay-Slade Hallucination Scale Revised; PANAS= Positive and Negative Affect Schedule; RSQ= Relationship Scale Questionnaire, CTQ= Childhood Trauma Questionnaire; PA= physical abuse, SA= sexual abuse; EN= emotional neglect, PN= physical neglect; DES-II= Dissociation Experiences Scale; Depers= Depersonalisation/Derealisation; Abscorp.= Abscorption

Table 2: Spearman's Correlations between false alarms and scales.

	False Alarms (post pictures task)
Baseline False Alarms	.437**
LSHS-R Total	.116
RSQ Total	.045
RSQ Anxious	.031
RSQ Avoidance	-.067
CTQ Total	.027
CTQ Physical Abuse	-.185*
CTQ Emotional Abuse	.036
CTQ Sexual Abuse	.001
CTQ Emotional Neglect	.130
CTQ Physical Neglect	.005
PANAS Positive	.046
PANAS Negative	-.087
DES-II Total	.077
DES-II Amnesia	-.004
DESII Depersonalisation	.214*
DE-SII Abscorption	.037

*$p < .05$, **$p < .01$

Table 3: Summary of Hierarchical Regression for variables predicting false alarms

	B	95% CI	SE B	β	t	P
Step 1						
(Constant)	3.23	(2.10, 4.52)	0.602		4.65	.001**
False alarms baseline	0.61	(0.37, 0.86)	0.122	.58	7.40	.001**
Step 2						
(Constant)	6.04	(2.42, 10.70)	2.042		2.61	.004**
False alarms baseline	0.62	(0.38, 0.86)	0.120	.58	7.35	.001**
Group	-0.41	(-2.26, 1.51)	0.957	-.03	-0.40	.658
CTQ PA	-0.007	(-0.09, 0.08)	0.041	-.01	-0.15	.868
DESII Depers.	-0.37	(-0.86, -0.03)	0.209	-.10	-1.25	.049*

*$p < .05$, **$p < .01$
Based on 1000 bootstrap samples
CTQ= Childhood Trauma Questionnaire; PA= physical abuse, DES-II= Dissociation Experiences Scale; Depers= Depersonalisation/Derealisation

References

Allen, P., Freeman, D., McGuire, P., Garety, P., Kuipers, E., Fowler, D., . . . Ray, K. (2005). The prediction of hallucinatory predisposition in non-clinical individuals: examining the contribution of emotion and reasoning. *British Journal of Clinical Psychology, 44*(Pt 1), 127–132.

Bentall, R. P., & Slade, P. D. (1985). Reliability of a scale measuring disposition towards hallucinations: A brief report. *Personality and Individual Differences, 6*(4), 527-529.

Bentall, R. P., de Sousa, P., Varese, F., Wickham, S., Sitko, K., Haarmans, M., & Read, J. (2014). From adversity to psychosis: pathways and mechanisms from specific adversities to specific symptoms. *Social Psychiatry and Psychiatric Epidemiology, 49*(7), 1011-1022.

Bentall, R. P., Wickham, S., Shelvin, M., & Varese, F. (2012). Do specific early-life adversities lead to specific symptoms of psychosis? A study from the 2007 the Adult Psychiatric Morbidity Survey. *Schizophrenia Bulletin*.

Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., . . . Zule, W. (2003). Development and validation of brief screening version of the childhood trauma questionnaire. *Child Abuse & Neglect, 27*(2), 169-190.

Berry, K., Barrowclough, C., & Wearden, A. (2008). Attachment theory: a framework for understanding symptoms and interpersonal relationships in psychosis. *Behaviour Research and Therapy, 46*(12), 1275–1282.

Carlson, E. B., & Putnam, F. W. (1993). An update on the dissociative experience scale. *Dissociation, 6*(1), 16-27.

Crawford, J. R., & Henry, J. D. (2004). The Positive and Negative Affect Schedule (PANAS): Construct validity, measurement properties and normative data in a large non-clinical sample. *British Journal of Clinical Psychology, 43*(3), 245-265.

Faul, F., Erdfelder, ,. E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175-191.

Feelgood, S. R., & Rantzen, A. J. (1994). Auditory and visual hallucinations in university students. Personality and Individual Differences, 17, 293-296.

French, P., Hutton, P., Barratt, S., Parker, S., Byrne, R., Shryane, N., & Morrison, A. P. (2011). Provision of online normalising information to reduce stigma associated with psychosis: Can an audio podcast challenge negative appraisals of psychotic experiences? *Psychosis, 3*(1), 52-62.

Griffin, D. W., & Bartholomew, K. (1994). Models of the self and others: fundamental dimensions underlying measures of adult attachment. *Journal of Personality and Social Psychology, 67*(3), 430-445.

Hoffman, R. E., Woods, S. W., Hawkins, K. A., Pittman, B., Tohen, M., Preda, A., et al. (2007). Extracting spurious messages from noise and risk of schizophrenia-spectrum disorders in a prodromal population. British Journal of Psychiatry, 191, 355-356.

Huque, A. U., Poliakoff, E., & Brown, R. J. (2016). Effects of learning on somatosensory and auditory decision-making and experiences: Implications for medically unexplained symptoms. *Unpublished Manuscript*.

Korlin, D., Edman, G., & Nyback, H. (2007). Reliability and validity of a Swedish version of the Dissociative Experiences Scale (DES-II). *Nordic Journal of Psychiatry, 61*(2), 126-142.

Kurdek, L. A. (2002). On being insecure about the assessment of attachment styles. *Journal ofSocial and Personal Relationships, 19*(6), 811-834.

Lang, P., Bradley, M., & Cuthbert, B. (2005). *International affective picture system (IAPS): Affective ratings of pictures and instruction manual.* Gainesville, FL: University of Florida.

Longden, E., Madill, A., & Waterman, M. G. (2012). Dissociation, trauma, and the role of lived experience: Toward a new conceptualization of voice hearing. *Psychological Bulletin, 138*(1), 28-76.

Macbeth, A., Shwannauer, M., & Gumley, A. (2008). The association between attachment style, social mentalities, and paranoid ideation: An analogue study. *Psychology & Psychotherapy: Theory, Research, and Practice, 81*((Pt 1)), 79-93.

Mathews, S., Onwumere, J., Bissoli, S., Ruggeri, M., Kuipers, E., & Valmaggia, L. (2016). Measuring attachment and parental bonding in psychosis and its clinical implications. *Epidemiology and Psychiatric Sciences, 25*(2), 142-149.

Mawson, A., Cohen, K., & Berry, K. (2010). Reviewing evidence for the cognitive model of auditory hallucinations: The relationship between cognitive voice appraisals and distress during psychosis. *Clinical Psychology Review, 30*(2), 248-258.

Mikulincer, M., & Shaver, P. R. (2012). An attachment perspective on psychopathology. *World Psychiatry, 11*(1), 11–15.

Myin-Germeys, I., & van Os, J. (2007). Stress-reactivity in psychosis: evidence for an affective pathway to psychosis. *Clinical Psychology Review*, 409-424.

Nayani, T. H., & David, A. S. (1996). The auditory hallucination: A phenomenological survey. *Psychological Medicine, 26*(1), 177-189.

Paivio, S. C., & Cramer, K. M. (2004). Factor structure and reliability of the childhood trauma questionnaire in a Canadian undergraduate student sample. *Child Abuse & Neglect, 28*(8), 889-904.

Perona-Garcelán, S., Carrascoso-López, F., García-Montes, J. M., Ductor-Recuerda, M. J., Jiménez, A. M., Vallina-Fernández, O., . . . Gómez-Gómez, T. (2012). Dissociative experiences as mediators between childhood trauma and auditory hallucinations. *Journal of Traumatic Stress, 25*(3), 323-329.

Phillips, L. J., Francey, S. M., Edwards, J., & McMurray, N. (2007). Stress and psychosis: Towards the development of new models of investigation. *Clinical Psychology Review, 27*(3), 307-317.

Pilton, M., Varese, F., Berry, K., & Bucci, S. (2015). The relationship between dissociation and voices: A systematic literature review and meta-analysis. *Clinical Psychology Review, 40,* 138-155.

Read, J., van Os, J., Morrison, A. P., & Ross, C. A. (2005). Childhood trauma, psychosis and schizophrenia: a literature review with theoretical and clinical implications. *Acta Psychiatrica Scandinavica, 112*(5), 330-350.

Smailes, D., Meins, E., & Fernyhough, C. (2014). The impact of negative affect on reality discrimination. *Journal of Behaviour Therapy and Experimental Psychiatry, 45*(3), 389–395.

Suzuki, A., Poon, L., Papadopoulos, A., Kumari, V., & Cleare, A. J. (2014). Long term effects of childhood trauma on cortisol stress reactivity in adulthood and relationship to the occurrence of depression. *Psychoneuroendocrinology, 50*, 289-299.

van Os, J., Hanssen, M., Bijl, R. V., & Ravelli, A. (2000). Strauss (1969) revisited: a psychosis continuum in the general population? Schizophrenia Research, 45, 11–20.

van Os, J., Linscott, R. J., Myin-Germeys, I., Delespaul, P., & Krabbendam, L. (2009). A systematic review and meta-analysis of the psychosis continuum: Evidence for a psychosis proneness persistence- impairment model of psychotic disorder. Psychological Medicine, 39, 179-719.

Varese, F., Barkus, E., & Bentall, R. P. (2012). Dissociation mediates the relationship between childhood trauma and hallucination-proneness. *Psychological Medicine, 42*(5), 1025-1036.

Ward, T. A., Gaynor, K. J., Hunter, M. D., Woodruff, P. W. R., Garety, P. A., & Peters, E. R. (2014). Appraisals and Responses to Experimental Symptom Analogues in Clinical and Nonclinical Individuals With Psychotic Experiences. Schizophrenia Bulletin, 40(4), 845-855.

Waters, F. A., Badcock, J. C., & Mayberry, M. T. (2003). Revision of the factor structure of the Launay-Slade Hallucination Scale (LSHS). *Personality and Individual Differences, 35*(6), 1351-1357.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of Personality and Social Psychology, 54*(6), 1063-1070.

Paper 3: Critical Appraisal

A Reflective Paper on the process of completing a Doctorate in Clinical Psychology Research Project

Introduction

The following paper presents a critical appraisal of the research conducted within the current thesis. The appraisal will encompass a critical evaluation of the planning, implementation and interpretation of the systematic review and empirical study respectively. The strengths and limitations of the research will be discussed. Critical reflections of the research process as a whole will also be offered.

Paper 1: Systematic literature review

Rationale for the topic

Mawson, Cohen, & Berry (2010) conducted a systematic review to evaluate the evidence for the association between distress and voice appraisals in psychosis. This paper was well cited, had theoretical implications for the cognitive model of voice-hearing and clinical implications for cognitive behavioural therapy (CBT) for auditory verbal hallucinations (AVH). CBT for AVH aims to reduce distress by modifying appraisals of voices. Gaining an understanding of the types of appraisals most closely associated with increased distress could help clinicians decide which key appraisals to target during CBT. The Mawson et al. (2010) review included 26 studies. Several types of appraisals were found to be linked to higher levels of distress in voice hearers, including voices appraised as malevolent, voices appraised as high in supremacy, voices appraised to have personal acquaintance with the individual, and attitudes of disapproval and rejection towards voices. However, results from cognitive therapy trials did not consistently report significant improvements in distress post-intervention and this was partially attributed to methodological flaws in the included studies. It was decided it would be timely to update the Mawson et al. (2010) review because there has been many relevant studies published since 2008. The review topic also complemented the empirical study which aimed to examine other factors that may contribute to voice-hearing including interpersonally related stress, trauma history, dissociation tendencies, hallucination proneness and negative affect.

Search terms and sets

Initially it was considered whether a replication of Mawson et al. (2010) study search procedure would be suitable. However, it was decided that the databases used (i.e. Medline, Academic Search Complete and Cinahl) were not most relevant to the research topic. Cinahl comprised mostly of nursing and medical literature, Medline specialised predominantly in biomedical information, and Academic Search Complete covered a range of topics including animal science, anthropology, astronomy and civil engineering. As such, it was decided that Web of science, Pubmed, Psych Info and Embase would be utilised as they comprised of literature relating to psychological theories and interventions.

Search terms and sets were reviewed. Additional search terms were included with agreement of the research team. For example, the search term 'cognit*' was added in the voice appraisal search set. Initially the trainee decided on three search sets including terms which related to (1) voice appraisals, (2) voice-hearing and (3) psychosis. However, at full paper screening stage, the trainee wondered whether a fourth search set for words relating to distress should be included, given the topic of the review. A new search was conducted with the additional distress search set. However, many relevant studies that were found in the first search did not show up in the revised search. The main reason for this was that distress was not always a primary outcome for studies, especially intervention studies, so the term 'distress' was not always included in the title or abstract of the paper. Another reason studies did not show up in the revised search was that study authors sometimes used various terminologies used for the concept of distress. For example, in Birchwood & Chadwick (1997) study, the term 'affect' was used in the abstract instead of distress. With these considerations in mind, it was decided that the first search without the distress search set would be more sensitive to producing relevant papers. Additionally, as voice appraisals were a secondary outcome for some studies, they were not always mentioned in the title or abstract of papers. This subsequently led to the paper not being picked up by the search. Therefore, references of all included studies were screened rigorously to identify whether any relevant studies may have been missed.

It was also debated within the research team whether the third search set relating to psychosis was a limitation as it is now widely accepted in research that voice-hearing exists on a continuum. Inclusion of a psychosis search set may miss studies that looked at

distress and voice appraisals in other types of populations. However, it was decided that including the psychosis search set was necessary; otherwise the search would be too broad and unfeasible for a ClinPsyD review. One of the challenges of conducting a systematic review was obtaining the balance between sensitivity (i.e. needed for completeness) and specificity (i.e. needed for efficiency) and decisions were made with these issues in mind.

Inclusion and exclusion criteria

There was a great deal of discussion in the research team regarding what constitutes a voice appraisal and how to define distress, as both concepts are subjective and definitions vary widely in the literature. However, for the purpose of the systematic review, an objective and clear definition was required to ensure consistency. Voice appraisal was defined as the interpretation of, or beliefs about, AVHs. Example domains of beliefs about voices included power, malevolence, benevolence and control, all of which are fundamental concepts of cognitive models of voices. Distress' was operationalised as measurement of voice-related distress only. Assessment measures in studies were closely examined to ensure it assessed distress in relation to AVH, before the paper was included. In the Mawson et al. (2010) review, the definition of distress included anxiety and depression. This definition was considered for the current review but after including all studies that looked at anxiety and depression, there were more than seventy papers, making it an unfeasible task for the trainee given time and work pressures. Also, anxiety and depression has not always been linked to voice-hearing in research in the cognitive model of voice-hearing. Voice-related distress has been considered to be a more integral part of the model and the term is increasingly used as a term in its own right in the psychosis literature. In cognitive therapy, symptoms of voice-hearing are usually targeted only if they become a source of significant distress.

As discussed briefly in the discussion section of the systematic review paper, the decisions that had to be made regarding which voice-appraisals would be included were not easy and the final decision was based on agreement between all research team members. Voices being perceived as pleasurable (Sanjuan, Gonzalez, Aguilar, Leal, & van Os, 2004) were excluded as this was considered to be closer to the concept of a 'feeling' rather than a cognitive appraisal. Appraisals of voices' intrusiveness, loudness

and clarity were also excluded as these were considered as physical characteristics of voices rather than appraisals more specifically.

When considering the eligibility criteria, the trainee decided that association could be assumed in intervention studies if modifying appraisals led to a change in distress levels. This was also an arguably more robust design for assessing association than correlational analyses in cross sectional studies. Studies were only included if interventions focused on modifying voice-appraisals. This led to the decision to exclude a number of studies looking at other intervention types such as mindfulness (Chadwick, Hughes, Russell, Russell, & Dagnan, 2009), imagery rescripting (Ison, Medoro, Keen, & Kuipers, 2014) and relating therapy (e.g. Hayward, Overton, Dorey, & Denney, 2009). Imagery rescripting (Ison et al., 2014) involved exploring and modifying recurrent intrusive images that occurred during voice-hearing. This study was excluded as intrusive images were not considered to be the same process as voice appraisals. Relating therapy (Hayward et al., 2009) involved exploring parallels between voice relating and social relating, enhancing awareness of the reciprocal nature of the relationship with the voice, and exploring ways of relating to the voice differently via an 'empty chair' and 'experiential role plays'. This study was excluded because the intervention did not involve modifying voice appraisals. The trainee also excluded a mindfulness study (Chadwick et al., 2009) that encouraged mindful acceptance of voices via meditation. The trainee decided to include studies examining metacognitive therapy (e.g. Varese, et al., 2016) as metacognitive processes are key processes in some cognitive models of psychosis and voice-hearing (e.g. Morrison, et al., 2011). Longitudinal studies that looked at change in voice appraisals and distress over time without interventions or correlational data were excluded (e.g. Schneider, Jelinek, Lincoln, & Moritz, 2011) as association could not be inferred.

Contacting authors

As examining the association between distress and appraisals was not always on the list of aims for some of the studies, data reported was sometimes insufficient to conclude whether the study should be included. To ensure every effort was made to be systematic, authors were contacted to request further information. Four authors were contacted and one replied (Penn, et al., 2009). Three studies were excluded because of insufficient data (Bucci, et al., 2013; Csipke & Kinderman, 2006; Sorrell, Hayward, & Meddings, 2010).

Quality Assessment

The quality assessment tool in this study was adapted to fit with the range of study designs in the review. A 'not applicable' option was added to the scoring options so that questions that were not appropriate to some studies could be excluded from the total score. For example, questions about randomisation, blinding and intervention groups were not applicable to cross sectional designs. Therefore, studies did not have equal numbers of quality assessment questions. There would be more questions for randomised control studies than cross sectional studies, and therefore overall scores may not be fully reflective of the quality of the study.

It has been recognised that quality assessment tools are prone to biased ratings and poor inter-rater reliability (Higgins, Altman, & Sterne, 2011). Although it is preferable to have all included studies to be second-rated by an independent rater, only 20% of included studies were second-rated. Levels of agreement (κ =0.67) was fairly low. When the trainee reviewed differences in ratings, there were three occasions in which one rater scored '0' and the other rater scored 'unable to determine'. Differences may be due to lack of clarity in instructions distinguishing the two scoring options. Nevertheless, both 'unable to determine' and '0' yield a score of zero. Differences in scoring were also noticed in two questions relating to external validity. These included 'were the subjects asked to participate in the study likely to be representative of the target population?' and 'were the staff, places and facilities where the subjects were treated representative of the treatment the majority of subjects received?' Differences in ratings were likely due to the subjectivity of these questions. Ratings were more consistent on questions that appeared more objective such as 'Did the study mention having conducted a power analysis to determine the sample size needed to detect a significant difference in effect size for one or more outcome measures?'

Synthesising data

While meta-analysis techniques are considered a strength due to the calculation of effect sizes, such methods were not employed in this review given the variation in the designs and methodology across studies (Garg, Hackam, & Tonello, 2008). Therefore, a narrative synthesis was conducted. One of the challenges was selecting salient data and presenting them in a concise, coherent and meaningful way.

When presenting the results section, it was decided to divide the sections by different appraisal type headings. One of the difficulties encountered was deciding which appraisals should be grouped under one heading, given that some of the appraisal measure subscales on the surface seemed to measure more than one construct. For example, the omnipotence subscale of the Beliefs About Voices Questionnaire Revised [BAVQ-R], Chadwick, Lees, & Birchwood (2000) comprises six items: (1) My voice is very powerful, (2) My voice seems to know everything about me, (3) My voice makes me do things I really don't want to do (4) I cannot control my voices, (5) My voice will harm or kill me if I disobey or resist it, (6) My voice rules my life. These items appear to include appraisals of the voices' control, power and malevolence. Similarly the Voice Power Differential Scale [VPD], (Birchwood, Meaden, Trower, Gilbert, & Plaistow, 2000) measured relative power differential with regard to the components of power, including strength, confidence, ability to inflict harm, superiority and knowledge. The trainee wondered whether there was some overlap with malevolent voice appraisals. It was decided with the research team that omnipotence as a whole concept is synonymous to power and therefore findings should be discussed under one heading of 'power'.

Clinical Implications and Future Research

Although findings of associations between voice appraisals and voice-related distress (i.e. correlation data) was fairly consistent, evidence that modifying appraisals lead to reduction in distress was less consistent (i.e. intervention studies). Due to the methodological flaws of the studies (e.g. lack of control group, small sample size) and small number of intervention studies, it was difficult to draw firm conclusions. A review to assess mediating and moderating variables in the voice appraisal- distress relationship may help shed some light on the inconsistencies found in the interventions studies. Additionally, many intervention studies were not only looking to modify one type of appraisal. Other aims may include to reduce physiological stress (e.g. via relaxation techniques). When there are multiple aims and techniques in an intervention, it is diffiuclt to separate what might have caused reduction in distress. Future research may focus on examining which particular techniques lead to a reduction in voice-related distress.

This review generally supports the association between voice-related distress and appraisals of voices, in line with the cognitive model of voice-hearing. Evidence for an

association was particularly strong for malevolence and control appraisals, indicating that these may be particularly important to target in interventions. These findings suggest that when assessing voice-hearing, it is advisable to enquire about the type and strength of voice appraisals as they may potentially inform psychological formulations regarding the development and maintenance of voice-related distress. It may also be helpful to monitor changes in beliefs using validated scales to allow interventions to be evaluated. Findings provide some support that modification of voice appraisals, particularly malevolence, power and control appraisals, using CBT is associated with a reduction in voice-related distress. However further research with more robust designs are required before a firm conclusion is reached.

Paper 2: Empirical paper

Development of the research question

When exploring research ideas, our initial thoughts were to examine whether attachment moderates the voice-hearing and interpersonal trauma link as this has been increasingly hypothesised by some research groups (Varese, Barkus, & Bentall, 2012; Longden, Madill, & Waterman, 2012) but not been tested in a controlled experimental design. Specifically, we wanted to test whether secure attachment primes buffered effects of interpersonal stress. Initial ideas for the experimental procedure were to have participants (1) watching a video depicting interpersonal trauma, (2) being exposed to either secure or insecure attachment primes, and (3) completing a voice detection task. However, after reviewing the literature for attachment primes (Bosmans, Bowles, Dewitte, De Winter, & Braet, 2014; Mikulincer & Shaver, 2001; Mikulincer & Shaver, 2007; Mikulincer, Hirschberger, Nachmias, & Gillath, 2001) and consulting researchers who had previously used these in their studies, the consensus was that attachment primes required more development as the effects were still largely unknown. The effects of secure priming on people with insecure attachments are still unclear. Tasks involving recalling memories of a supportive person or subliminally presenting images depicting supportive contexts may elicit positive affect in people with secure attachment (Mikulincer, Hirschberger, Nachmias, & Gillath, 2001). However, it is unclear whether this would elicit negative affect in people with insecure attachment as it may trigger memories of when they were not supported. Alternatively, there may be no change as they may not relate to the prime.

Additionally, ensuring primes are presented at a level of subliminal awareness can be complicated and contingent upon many factors including presentation time, colour and size of the prime. Furthermore, taking into account individual differences in thresholds for conscious processing was particularly difficult.

There is a growing evidence base supporting the link between interpersonal trauma and voice-hearing, although most studies are retrospective designs. With agreement of the research team, it was decided that exploring the associations between interpersonal stress and voice-hearing directly using an experimental design and exploring moderating factors would be a more feasible study that would contribute to the theory and clinical practice.

Voice Detection Task

According to source-monitoring of voice-hearing, hallucination-prone individuals are impaired in their capacity to discriminate between internally and externally generated events and also have a specific cognitive bias towards misattributing internal cognitive events to external sources (Bentall, 1990). One of the challenges of the empirical study was sourcing an appropriate voice detection task (VDT) that could function as a proxy measure of voice-hearing in order to tap potential source-monitoring deficits. Auditory signal detection paradigms are most commonly used to investigate individuals' ability to detect stimuli in situations of uncertainty, such as detecting voices against background noise. The verbal self-monitoring paradigm is an experimental procedure involving the measurement of the monitoring of self-generated speech. For example, participants are asked to pronounce out loud a list of words which are recorded and distorted. The speech is played back to the participants with someone else's pre-recorded voice and the task is to identify which voices are their own.

To help identify which task was most appropriate and whether there were any new developments, literature was reviewed and several researchers working in the area were contacted including Sarah-Jayne Blakemore, Vaughan Bell, Charles Fernyhough, Richard Brown, Emmanuelle Peters and Eric Morris. After surmising information, it was decided to use the auditory signal detection paradigm due to availability, cost and as they have shown to have more robust and significant effects in clinical and analogue samples in meta-analytical review (Brookwell, Bentall, & Varese, 2013).

Several different tasks were explored with the research team. A novel auditory signal detection task (Huque, Poliakoff, & Brown, 2016) was chosen as it took into account participants' individual differences in reaction times to hearing voices. Additionally, it was less ambiguous than another potential method in which participants clicked a button when they heard existing words from jumbled speech (Feelgood & Rantzen, 1994).

However, as false alarms in the empirical study did not correlate with many variables that were suggested in the literature (e.g. attachment, hallucination proneness, negative affect and childhood sexual abuse) it suggested that the task may not have been sensitive enough to detect false alarms or there was not enough variability and diversity within the sample. When scores were explored with the author who developed the task, the rate of false alarms in this study was not considered unusually low. However, another trainee who had also used the task on a non-clinical sample found that the false alarm rates were unusually low. The trainee attempted to remediate this by broadening the criteria for false alarms but findings continued to show no significant effect on the main outcomes. As the voice detection task is novel and there are possible concerns around its sensitivity, further validation and development of the task is warranted. Moreover, the voice detection task did not capture the wide range of responses to voices, such as beliefs about their power, control or origin, or the subjective experience of voice-hearing, which might be an interesting topic of investigation in the future.

Stress paradigm

A great deal of consideration was put into the choice of the stress manipulation task for the empirical paper. The literature relating to stress paradigms is broad and includes a range of methodologies. Methods found included participants watching film clips, viewing pictures, listening to sounds, expecting an electrical shock, mental imagery, being exposed to negative events in a gaming context, recall of personal emotional events, colour-word interference task and singing a song. However, only one study (Suzuki, Poon, Papadopoulos, Kumari, & Cleare, 2014) was found to have developed a paradigm specifically for measuring reactivity to interpersonal trauma appropriate for use in experimental designs. The paradigm involved presenting a combination of childhood trauma pictures and standardised negative pictures. The study found that childhood trauma pictures were rated just as stressful as negative standardized International Affective Picture System (IAPS; Lang, Bradley, & Cuthbert, 2005) pictures, which are

known to enhance acute stress responses (Kreibig, 2010). However, findings from the study were not able to separate the effects of being exposed to childhood trauma images and standardised negative pictures.

The research team decided to utilise the paradigm from the Suzuki et al., (2014) study as the images added a more specific and ecologically valid component to the paradigm in relation to the hypotheses being tested. Changes were made to the paradigm to ensure that all pictures, neutral and negative, involved an interpersonal aspect (i.e. depicted people in interpersonal scenarios) which was required for the study hypotheses. However, the images in the negative condition were chosen to be suggestive of trauma situations and may not have been sufficiently stressful. In hindsight, it would have been helpful to pilot the stress task prior to conducting the experiment to better understand their effects. However, the development of the voices task took longer than expected (e.g. with sourcing material and development of the task on E-prime.). It is acknowledged that the stress paradigm in the empirical paper may not be analogous to real life interpersonal trauma, as viewing pictures is significantly less stressful and complex than experiencing an interpersonal stressor directly. However, the current paradigm has been shown to be acceptable to participants, safe and ethical. Future work might seek to further explore and validate the stress paradigm and possibly utilise 'high-risk' samples, although this might also present greater ethical issues.

Recruitment and the sample

When planning the recruitment strategy, previous trainees who recruited non-clinical samples were consulted to discuss feasibility issues and participation incentives. Financial reimbursement and credits were the most successful, compared to other methods such as offering psychology workshops and entry into competition for vouchers. However, it is acknowledged that there may be differences in motivation between paid and non-paid participants which may have affected performance on the tasks. Generalisability of the study is another potential issue as there was a lack of diversity and variability within the sample recruited, which was predominantly White British female University students. Previous studies have found associations between history of childhood sexual abuse and voice hearing (Bentall, Wickham, Shelvin, & Varese, 2012). Amongst the sample from the current study, prevalence of sexual abuse was only 4.6%. Prevalence of other childhood traumas were higher: 10% were physically abused, 23.1% were emotionally

abused, 23.8% were physically neglected and 13.1% were emotionally neglect. Likewise, prevalence of avoidant attachment style, anxious attachment style and hallucination proneness were low.

As we aimed to recruit a relatively large sample (n=130), an undergraduate psychology student assisted with recruitment and data input to ensure that the study would be completed within the time limits, especially as the credit system only operated for a short period of time. The trainee supervised the undergraduate student with conducting the experiment, managing any potential participant distress, managing databases and scoring of questionnaires. The trainee tested 52.3% (n=68) of the participants and the undergraduate student recruited 47.7% (n=62). The trainee and the undergraduate student inputted 50% of the questionnaire data in each and cross-checked each other's data input for errors.

A methodological limitation was that participants were allocated to conditions in the order they were booked in for testing for convenience, rather than randomisation. For example, the participant at 9am would be allocated to the stress group, the participant at10am would be allocated to the neutral group, the participant booked in at 11am would be allocated to the stress group, and so on. However, given that participants were not booked in any particular order, this is unlikely to affect the results of the experiment.

Analyses

One of the limitations of the study was that missing values were not imputed. Only 0.45% of the overall data was missing and was 'missing at random'. This is unlikely to significantly affect the analyses of hypothesis one, which was to assess whether participants exposed to stressful material reported more false alarms than those in the neutral group, as only two (1.5%) cases were missing. However, whilst there were sufficient participants to ensure that assumptions were not violated (e.g. with regards to the one in ten rule for number of predictors), up to 16% (n=21) of the cases were missing for the regression analyses due to missing data in questionnaires. Although imputation of missing data was attempted, it was unsuccessful as the imputation algorithm could not find an imputed value under the constraints provided despite the constraints being inputted correctly. This problem has been discussed in online research forums and may possibly be a result of a fault in the SPSS programme software. Nevertheless, analyses

based on the available data only tend to be less biased that those based on estimation. Although findings were based on a smaller sample size than the original data set, there was sufficient power to run the analyses.

Findings from the empirical study showed that physical abuse history significantly predicts false alarms, and depersonalisation/derealisation significantly correlates with false alarms. It is possible that the relationship between childhood trauma and voice-hearing may be mediated by depersonalisation (Perona-Garcelán, et al., 2012). On reflection it was felt that a mediation analyses should be conducted to assess this and the trainee plans to do so prior to submission for journal publication.

Clinical Implications and Future Research

Due to using novel and non-validated tasks (VDT and stress induction task) and the lack of diversity, the trainee found it difficult to draw conclusions. Due to the limitations, the trainee thought that more future research was required before recommendations were given on clinical practice. Therefore a tentative stance was taken when describing clinical implications.

Appendices

The childhood trauma questionnaire was excluded from the appendices for copyright reasons.

Personal reflections of the research process

At the start of the clinical psychology doctorate, the trainee hoped to complete a research project that would contribute to clinical practice and develop the necessary skills and confidence to be able to operate independently in future research endeavours. The trainee's previous research experience was in qualitative designs. For her undergraduate project, she used Interpretative Phenomenological Analysis to explore satisfaction with services in depressed elderly patients and their care-giving spouses. Whilst working as a research assistant, she explored the quality of life and fatigue in people with post-polio syndrome and other neurological conditions using thematic analyses. As such, the trainee

was keen to develop experience in using experimental designs and performing quantitative analyses.

The trainee initially had some reservations regarding her research competence in the project, as she had no prior clinical or research experience working in the area of psychosis or using experimental designs. She had also not conducted a systematic review before and was not familiar with using SPSS, Endnote and E-prime. The trainee found the research project difficult as the project was not 'ready-made' and the trainee was involved in all aspects of the decision making regarding the design of the study from the start. As there was often no clear right or wrong answer, the trainee sometimes had to change her mind on a task or the methodology used as new information came into light. However, being involved with designing the empirical study from the start helped the trainee take ownership of the project and responsibility for taking it forward. A proactive approach was taken to address those initial doubts by reading about the process of clinical research, purchasing relevant books, seeking supervision, peer discussion, contacting researchers in the field and attending relevant training. The trainee found supervision with research supervisors highly valuable as it provided appropriate levels of guidance and support to help the trainee develop critical thinking skills for research.

One of the main challenges the trainee faced was managing competing demands of clinical work, academic work (e.g. case report and exams) and research work, whilst adapting to a physical health condition that impacted on her energy levels, anxiety and concentration. It was difficult to separate out 'normal stress' experienced by all trainees in the cohort from symptoms of the condition. The trainee managed this by meeting with supervisors to discuss practicalities and adjustments, and seeking support from her clinical tutor and peers.

The trainee was pleased to be given the opportunity to develop many transferable skills during the research project. For example, the trainee was able to informally supervise an undergraduate student, write concisely for publication, manage and take responsibility for a research budget, critically appraise research studies, liaise with researchers and analyse quantitative data. In the future, the trainee intends to review the literature base regularly to ensure up to date knowledge of relevant theory and best practice for clinical work. The trainee also intends to promote importance of conducting research at her workplace and seek out opportunities to take part in research when qualified.

The trainee reflected on the role of the psychologist as a scientist-practitioner and the importance for psychologists to contribute to the evidence-base from which they draw on, to ensure continual improvement in clinical practice. However, the trainee is also aware that positive findings, as opposed to negative findings, are more likely to be published (Button, et al., 2013; Fanelli, 2010) and that the amount of non-significant data reported is progressively declining (Fanelli, 2012). Yet, both positive and negative results are equally important when considering the development of new theory and effectiveness of interventions. The trainee hopes researchers and journal editors continue to publish all research findings regardless of outcome to move towards an improved scientific paradigm.

In conclusion, the process of conducting the research was highly valued, despite being challenging at times. The trainee gained a great sense of achievement and satisfaction from being able to lead a research project that will contribute to the understanding of voice-hearing in theory and practice.

References

Bentall, R. P. (1990). The illusion of reality: a review and integration of psychological research on hallucinations. *Psychological Bulletin, 107*(1), 82-95.

Bentall, R. P., Wickham, S., Shelvin, M., & Varese, F. (2012). Do specific early-life adversities lead to specific symptoms of psychosis? A study from the 2007 the Adult Psychiatric Morbidity Survey. *Schizophrenia Bulletin*.

Birchwood, M., & Chadwick, P. (1997). The omnipotence of voices: Testing the validity of cognitive model. *Psychological Medicine, 27*(6), 1345-1353.

Birchwood, M., Meaden, A., Trower, P., Gilbert, P., & Plaistow, J. (2000). The power and omnipotence of voices : subordination and entrapment by voices and significant others. *Psychological Medicine, 30*, 337-344.

Bosmans, G., Bowles, D. P., Dewitte, M., De Winter, S., & Braet, C. (2014). An experimental evaluation of the State Adult Attachment Measure: the influence of attachment primes on the content of state attachment representations. *Journal of Experimental Psychopathology, 5*(2), 134-150.

Brookwell, M. L., Bentall, R. P., & Varese, F. (2013). Externalizing biases and hallucinations in source-monitoring, self-monitoring and signal detection studies: a meta-analytic review. *Psychological Medicine, 43*(12), 2465-2475.

Bucci, S., Birchwood, M., Twist, L., Tarrier, N., Emsley, R., & Haddock, G. (2013). Predicting compliance with command hallucinations: Anger, impulsivity and appraisals of voices' power and intent. *Schizophrenia Research, 147*(1), 163-168.

Button, K. S., Ioannidis, J. P., Mokrysz, C., Nosek, B. A., Flint, J., Robinson, E. S., & Munafò, M. R. (2013). Power failure: why small sample size undermines the reliability of neuroscience. *Nature Reviews Neuroscience, 14*(5), 365-376.

Chadwick, P., Hughes, S., Russell, D., Russell, I., & Dagnan, D. (2009). Mindfulness groups for distressing voices and paranoia: A replication and randomized feasibility trial. *Behavioural and Cognitive Psychotherapy, 37*(4), 403-412.

Chadwick, P., Lees, S., & Birchwood, M. (2000). The revised Beliefs About Voices Questionnaire (BAVQ-R). *British Journal of Psychiatry, 177*, 229-232.

Csipke, E., & Kinderman, P. (2006). A Longitudinal Investigation of Beliefs about Voices. *Behavioural and Cognitive Psychotherapy, 34*(3), 365-369.

Fanelli, D. (2010). Do pressures to publish increase scientists' bias? An empirical support from US States Data. *PLoS One, 5*(4), e10271.

Fanelli, D. (2012). Negative results are disappearing from most disciplines and countries. *Scientometrics, 90*(3), 891–904.

Feelgood, S. R., & Rantzen, A. J. (1994). Auditory and visual hallucinations in university students. *Personality and Individual Differences, 17*(2), 293-296.

Garg, A. X., Hackam, D., & Tonello, M. (2008). Systematic Review and Meta-analysis: When One Study Is Just not Enough. *Clinical Journal of the American Society of Nephrology, 3*(1), 253-260.

Hayward, M., Overton, J., Dorey, T., & Denney, J. (2009). Relating Therapy for People Who Hear Voices: A Case Series. *Clinical Psychology & Psychotherapy, 16*(3), 216-227.

Higgins, J. P., Altman, D. G., & Sterne, J. A. (2011). Chapter 8: Assessing risk of bias in included studies. In J. P. Higgins, & S. Green, *Cochrane Handbook for Systematic Reviews of Interventions* (Version 5.1.0 ed., pp. 187-242). Chichester, UK: John Wiley & Sons.

Huque, A. U., Poliakoff, E., & Brown, R. J. (2016). Effects of learning on somatosensory and auditory decision-making and experiences: Implications for medically unexplained symptoms. *Unpublished Manuscript*.

Ison, R., Medoro, L., Keen, N., & Kuipers, E. (2014). The use of rescripting imagery for people with psychosis who hear voices. *Behavioural and Cognitive Psychotherapy, 42*(2), 129-142.

Kreibig, S. D. (2010). Autonomic nervous system activity in emotion: a review. *Biological Psychology, 84*(3), 394–421.

Lang, P., Bradley, M., & Cuthbert, B. (2005). *International affective picture system (IAPS): Affective ratings of pictures and instruction manual.* Gainesville, FL: University of Florida.

Longden, E., Madill, A., & Waterman, M. G. (2012). Dissociation, trauma, and the role of lived experience: Toward a new conceptualization of voice hearing. *Psychological Bulletin, 138*(1), 28-76.

Mawson, A., Cohen, K., & Berry, K. (2010). Reviewing evidence for the cognitive model of auditory hallucinations: The relationship between cognitive voice appraisals and distress during psychosis. *Clinical Psychology Review, 30*(2), 248-258.

Mikulincer, M., & Shaver, P. R. (2001). Attachment theory and intergroup bias: evidence that priming the secure base schema attenuates negative reactions to out-groups. *Journal of Personality and Social Psychology, 81*(1), 97-115.

Mikulincer, M., & Shaver, P. R. (2007). Boosting attachment security to promote mental health, prosocial values, and inter-group tolerance. *Psychological Inquiry, 18*(3), 139-156.

Mikulincer, M., Hirschberger, G., Nachmias, O., & Gillath, O. (2001). The affective component of the secure base schema: affective priming with representations of attachment security. *Journal of Personality and Social Psychology, 81*(2), 305-321.

Morrison, A. P., Gumley, A. I., Ashcroft, K., Manousos, I. R., White, R., Gillan, K., . . . Kingdon, D. (2011). Metacognition and persecutory delusions: Tests of a metacognitive model in a clinical population and comparisons with non-patients. *British Journal of Clinical Psychology, 50*(3), 223-233.

Penn, D. L., Meyer, P. S., Evans, E., Wirth, R. J., Cai, K., & Burchinal, M. (2009). A randomized controlled trial of group cognitive-behavioral therapy vs. enhanced supportive therapy for auditory hallucinations. *Schizophrenia Research, 109*(1-3), 52-59.

Perona-Garcelán, S., Carrascoso-López, F., García-Montes, J. M., Ductor-Recuerda, M. J., Jiménez, A. M., Vallina-Fernández, O., . . . Gómez-Gómez, T. (2012).

Dissociative experiences as mediators between childhood trauma and auditory hallucinations. *Journal of Traumatic Stress, 25*(3), 323-329.

Sanjuan, J., Gonzalez, J. C., Aguilar, E. J., Leal, C., & van Os, J. (2004). Pleasurable auditory hallucinations. *Acta Psychiatrica Scandinavica, 110*, 273-278.

Schneider, S. D., Jelinek, L., Lincoln, T. M., & Moritz, S. (2011). What happened to the voices? A fine-grained analysis of how hallucinations and delusions change under psychiatric treatment. *Psychiatry Research, 188*(1), 13-17.

Sorrell, E., Hayward, M., & Meddings, S. (2010). Interpersonal Processes and Hearing Voices: A Study of the Association Between Relating to Voices and Distress in Clinical and Non-Clinical Hearers. *Behavioural and Cognitive Psychotherapy, 38*(2), 127-140.

Suzuki, A., Poon, L., Papadopoulos, A., Kumari, V., & Cleare, A. J. (2014). Long term effects of childhood trauma on cortisol stress reactivity in adulthood and relationship to the occurrence of depression. *Psychoneuroendocrinology, 50*, 289-299.

Varese, F., Barkus, E., & Bentall, R. P. (2012). Dissociation mediates the relationship between childhood trauma and hallucination-proneness. *Psychological Medicine, 42*(5), 1025-1036.

Varese, F., Morrison, A. P., Beck, R., Heffernan, S., Law, H., & Bentall, R. P. (2016). Experiential avoidance and appraisals of voices as predictors of voice-related distress. *British Journal of Clinical Psychology*, [Epub ahead of print].

Appendices

Appendix A: Author guidelines for journal 'Clinical Psychology Review'

ELSEVIER CLINICAL PSYCHOLOGY REVIEW

TABLE OF CONTENTS

DESCRIPTION

Clinical Psychology Review publishes substantive reviews of topics germane to **clinical psychology**. Papers cover diverse issues including: psychopathology, psychotherapy, behavior therapy, cognition and cognitive therapies, behavioral medicine, community mental health, assessment, and child development. Papers should be cutting edge and advance the science and/or practice of clinical psychology.

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Examples: Reference to a journal publication: Van der Geer, J., Hanraads, J. A. J., & Lupton R. A. (2000). The art of writing a scientific article. *Journal of Scientific Communications,* 163, 51-59.
Reference to a book: Strunk, W., Jr., &White, E. B. (1979). *The elements of style.* (3rd ed.). New York: Macmillan, (Chapter 4).

Reference to a chapter in an edited book: Mettam, G. R., & Adams, L. B. (1994). How to prepare an electronic version of your article. In B.S. Jones, & R. Z. Smith (Eds.), *Introduction to the electronic age* (pp. 281-304). New York: E-Publishing Inc.

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All necessary files have been uploaded, and contain:
- Keywords
- All figure captions
- All tables

(including title, description, footnotes) Further considerations

- Manuscript has been 'spell-checked' and 'grammar-checked'
- References are in the correct format for this journal
- All references mentioned in the Reference list are cited in the text, and vice versa
- Permission has been obtained for use of copyrighted material from other sources
- (including the Internet)

Printed version of figures (if applicable) in color or black-and-white
- Indicate clearly whether or not color or black-and-white in print is required.

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Appendix B: Tables detailing the quality ratings for each of the reviewed papers

Adapted Quality Assessment Tool Interface:

ADAPTED METHODOLOGICAL QUALITY CHECKLIST (DOWNS & BLACK, 1998)

LAST UPDATED: 07/05/2016   AUTHOR: SAMANTHA WONG

OVERALL SCORE: Paper 1: 42% | Paper 2: 50% | Paper 3: 64% | Paper 4: 60% | Paper 5: 54%

ITEM REF	CRITERIA	PAPER 1 Bentall et al. 1994 RATING	COMMENTS	PAPER 2 Nayani and David (1996) RATING	COMMENTS	PAPER 3 Birchwood and Chadwick (1997) RATING	COMMENTS	PAPER 4 Soppitt and Birchwood (1997) RATING	COMMENTS	PAPER 5 Wykes et al. (1999) RATING	COMMENTS
A	**REPORTING SECTION**										
A1	Is the hypothesis/aim/objective of the study clearly described?	1		UID		1		1		0	
A2	Are the main outcomes to be measured clearly described in the Introduction or Methods section?	1				1		1		1	
A3	*If the main outcomes are first mentioned in the Results section, the question should be answered no. Are the characteristics of the subjects in the study clearly described? *In cohort studies and trials, inclusion and/or exclusion criteria should be given. In case-control studies, a case-definition and the source for controls should be given.	1	Case series design. Characteristics include gender, age, history of AH (years), diagnosis, frequency of AH, persistent treatment resistant AH	UID		1		1		1	
A4	Are the interventions of interest clearly described? *Treatments and placebo (where relevant) that are to be compared should be clearly described. *For studies do not involve interventions, score Not Applicable.	1		N/A		N/A		N/A		1	
A5	Are the distributions of principal confounders in each group of subjects to be compared clearly described? *A list of principal confounders is provided. **Examples of confounders include gender, age, diagnosis, substance misuse, ethic group, duration/severity of mental health problem, service/accommodation (inpatient, community etc.). ****"Having an inclusion/exclusion criteria only for participants is not sufficient for answering 'yes'. Studies which have checked that there no significant differences in each group of subjects at baseline is sufficient to answer 'partially'. **** "Rare Scoring of 2 for "Yes", Rare Scoring of 1 for "Partially"	N/A		N/A		N/A		N/A		0	
A6	Are the main findings of the study clearly described? *Simple outcome data (including denominators and numerators) should be reported for all major findings so that the reader can check the major analyses and conclusions. (This question does not cover statistical tests which are considered below).	0		1	Yes in %	1		1		1	
A7	Does the study provide estimates of the random variability in the data for the main outcomes? *In non normally distributed data the inter-quartile range of results should be reported. In normally distributed data the standard error, standard deviation or confidence intervals should be reported. If the distribution of the data is not described, it must be assumed that the estimates used were appropriate and the question should be answered yes.	0		0		0		0		0	
A8	Have all important adverse events that may be a consequence of the intervention been reported? *This should be answered yes if the study demonstrates that there was a comprehensive attempt to measure adverse events. (A list of possible adverse events is provided).	N/A		N/A		N/A		N/A		N/A	
A9	Have the characteristics of the subjects lost to follow up been described? *This should be answered yes where there were no losses to follow-up or where losses to follow-up were so small that findings would be unaffected by their inclusion. This should be answered no where a study does not report the number of subjects lost to follow-up.	1		N/A		N/A		N/A		0	
A10	Have actual probability values been reported (e.g. 0.035 instead of < 0.05) for the main outcomes except where the probability value is less than 0.001?	0		1		UID		1		1	
A	**REPORTING SECTION SCORE:**	63%		50%		67%		83%		56%	
	EXTERNAL VALIDITY SECTION										

Adapted Quality Assessment Tool Questions

ITEM REF	CRITERIA
A	**REPORTING SECTION**
A1	Is the hypothesis/aim/objective of the study clearly described?
A2	Are the main outcomes to be measured clearly described in the Introduction or Methods section? *If the main outcomes are first mentioned in the Results section, the question should be answered no.
A3	Are the characteristics of the subjects in the study clearly described? *In cohort studies and trials, inclusion and/or exclusion criteria should be given. In case-control studies, a case-definition and the source for controls should be given.
A4	Are the interventions of interest clearly described? *Treatments and placebo (where relevant) that are to be compared should be clearly described. **For studies do not involve interventions, score Not Applicable.
A5	Are the distributions of principal confounders in each group of subjects to be compared clearly described? *A list of principal confounders is provided. **Examples of confounders include gender, age, diagnosis, substance misuse, ethic group, duration/severity of mental health problem, service / accommodation (inpatient, community etc.). *** Having an inclusion/exclusion criteria only for participation is not sufficient for answering 'yes'. Studies which have checked that there no significant differences in each group of subjects at basline is sufficient to answer 'partially'. **** Rate Scoring of 2 for "Yes"; Rate Scoring of 1 for "Partially"
A6	Are the main findings of the study clearly described? *Simple outcome data (including denominators and numerators) should be reported for all major findings so that the reader can check the major analyses and conclusions. (This question does not cover statistical tests which are considered below).
A7	Does the study provide estimates of the random variability in the data for the main outcomes? *In non normally distributed data the inter-quartile range of results should be reported. In normally distributed data the standard error, standard deviation or confidence intervals should be reported. If the distribution of the data is not described, it must be assumed that the estimates used were appropriate and the question should be answered yes.

A8	~~Have all the important adverse events that may be a consequence of the intervention been reported?~~ ~~*This should be answered yes if the study demonstrates that there was a comprehensive attempt to measure adverse events. (A list of possible adverse events is provided).~~
A9	Have the characteristics of the subjects lost to follow up been described? *This should be answered yes where there were no losses to follow-up or where losses to follow-up were so small that findings would be unaffected by their inclusion. This should be answered no where a study does not report the number of subjects lost to follow-up.
A10	Have actual probability values been reported (e.g. 0.035 instead of <0.05) for the main outcomes except where the probability value is less than 0.001?
A	**REPORTING SECTION SCORE:**
B	**EXTERNAL VALIDITY SECTION** **All the following criteria attempt to address the representativeness of the findings of the study and whether they may be generalised to the population from which the study subjects were derived.**
B11	Were the subjects asked to participate in the study likely to be representative of the target population? *The study must identify the source population for subjects and describe how the subjects were selected. Subjects would be representative if they comprised the entire source population, an unselected sample of consecutive subjects, or a random sample. Random sampling is only feasible where a list of all members of the relevant population exists. Where a study does not report the proportion of the source population from which the subjects are derived, the question should be answered as unable to determine.
B12	12. Were the subjects included in the study representative of the target population? *The proportion of those asked who agreed should be stated. Validation that the sample was representative would include demonstrating that the distribution of the main confounding factors was the same in the study sample and the source population.

B13	Were the staff, places, and facilities where the subjects were treated, representative of the treatment the majority of subjects received? *For the question to be answered yes the study should demonstrate that the intervention was representative of that in use in the source population. The question should be answered no if, for example, the intervention was undertaken in a specialist centre unrepresentative of the hospitals most of the source population would attend.
B	**EXTERNAL VALIDTY SECTION SCORE:**
C	**INTERNAL VALIDITY - BIAS SECTION**
C14	Was an attempt made to blind study subjects to the intervention they have received? *Applicable to RCTS only **For studies where the subjects would have no way of knowing which intervention they received, this should be answered yes.
C15	Was an attempt made to blind those measuring the outcomes of the intervention? *Applicable to RCTS only
C16	If any of the results of the study were based on "data dredging", was this made clear? *Any analyses that had not been planned at the outset of the study should be clearly indicated. If no retrospective unplanned subgroup analyses
C17	In trial and cohort studies, do the analyses adjust for different lengths of follow-up of subjects, or in case-control studies, is the time period between the intervention and outcome the same for cases and controls? *Where follow-up was the same for all study subjects the answer should yes. If different lengths of follow-up were adjusted for by, for example, survival analysis the answer should be yes. Studies where differences in follow-up are ignored should be answered no. **Not applicable in designs where there are no comparison groups
C18	Were the statistical tests used to assess the main outcomes appropriate? *The statistical techniques used must be appropriate to the data. For example nonparametric methods should be used for small sample sizes. Where little statistical analysis has been undertaken but where there is no evidence of bias, the question should be answered yes. If the distribution of the data (normal or not) is not described it must be assumed that the estimates used were appropriate and the question should be answered yes.

C19	Was compliance with the interventions reliable? *Where there was non compliance with the allocated treatment or where there was contamination of one group, the question should be answered no. For studies where the effect of any misclassification was likely to bias any association to the null, the question should be answered yes.
C20	Were the main outcome measures used accurate (valid and reliable)? *For studies where the outcome measures are clearly described, the question should be answered yes. For studies which refer to other work or that demonstrates the outcome measures are accurate, the question should be answered as yes.
C	**INTERNAL VALIDTY - BIAS SECTION SCORE:**
D	**INTERNAL VALIDITY - CONFOUNDS (SELECTION BIAS) SECTION**
D21	Were the subjects in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited from the same population? *For example, subjects for all comparison groups should be selected from the same hospital. The question should be answered unable to determine for cohort and case control studies where there is no information concerning the source of subjects included in the study. **Not applicable in designs where there are no interventions or comparison groups
D22	Were study subjects in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited over the same period of time? *For a study which does not specify the time period over which subjects were recruited, the question should be answered as unable to determine. **Not applicable in designs where there are no interventions or comparison groups
D23	Were the study subjects randomised to intervention groups? *Studies which state that subjects were randomised should be answered yes except where method of randomisation would not ensure random allocation. For example alternate allocation would score no because it is predictable. **Not applicable in designs where there are no interventions or comparison groups

D24	Was the randomised intervention assignment concealed from both patients and health care staff until recruitment was complete and irrevocable? *All non-randomised studies should be answered no. If assignment was concealed from subjects but not from staff, it should be answered no. **Not applicable in designs where there are no interventions or comparison groups
D25	Was there adequate adjustment for confounding in the analyses from which the main findings were drawn? *This question should be answered no for trials if: the main conclusions of the study were based on analyses of treatment rather than intention to treat; the distribution of known confounders in the different treatment groups was not described; or the distribution of known confounders differed between the treatment groups but was not taken into account in the analyses. In nonrandomised studies if the effect of the main confounders was not investigated or confounding was demonstrated but no adjustment was made in the final analyses the question should be answered as no. ** Examples of statistical methods that adjust for confounding include as ANCOVA, regression analyses, stratification and multivariate models .
D26	Were losses of subjects to follow-up taken into account? *If the numbers of subjects lost to follow-up are not reported, the question should be answered as unable to determine. If the proportion lost to follow-up was too small to affect the main findings, the question should be answered yes. ** Not applicable for studies that do not involve follow up assessments
D	**INTERNAL VALIDTY - CONFOUNDS (SELECTION BIAS) SECTION SCORE:**
E	**POWER SECTION** **All the following criteria attempt to address the representativeness of the findings of the study and whether they may be generalised to the population from which the study subjects were derived.**
E27	Did the study mention having conducted a power analysis to determine the sample size needed to detect a significant difference in effect size for one or more outcome measures?
E	**POWER SECTION SCORE:**

Appendix C: Additional Multiple Regression Analyses

Summary of additional regression analyses for variables predicting false alarms

	B	95% CI B	SE B	β	t	P
Step 1						
(Constant)	3.03	(1.84, 4.07)	0.55		4.49	.001**
False Hits Baseline	0.63	(0.42, 0.89)	0.12	.60	7.84	.001**
Step 2						
(Constant)	5.59	(1.93, 9.23)	1.81		2.50	.002*
False Hits Baseline	0.62	(0.42, 0.85)	0.11	.59	7.37	.001**
Group	-0.22	(-1.92, 1.71)	0.90	-.02	-0.22	.814
CTQ PA	-0.42	(-0.92, -0.04)	0.22	-.11	-1.41	.045*
DESII Depers.	0.05	(-0.11, 0.26)	0.10	.05	0.62	.558
Step 3						
(Constant)	7.68	(1.12, 21.84)	5.76		1.42	.063
False Hits Baseline	0.62	(0.40, 0.84)	0.11	.59	7.20	.001**
Group	-1.68	(-9.90, 3.13)	3.70	-.13	-0.49	.526
CTQ PA	-0.76	(-3.16, 0.09)	0.97	-.21	-0.79	.223
DESII Depers.	0.00	(-0.66, 0.56)	0.31	.00	0.00	.998
Group x CTQ PA	0.24	(-0.45, 1.61)	0.63	.15	0.39	.578
Group x DESII Depers.	0.04	(-0.38, 0.68)	0.27	.06	0.25	.879

Based on 1000 bootstrap samples
Step 1 R2= 0.36, Step 2 ΔR2= 0.01, Step 3 ΔR2= <0.002
CTQ= Childhood Trauma Questionnaire; PA= physical abuse, DES-II= Dissociation Experiences
Scale; Depers= Depersonalisation/Derealisation

	B	95% CI B	SE B	β	t	P
Step 1						
(Constant)	3.209	(2.01, 4.31)	0.60		4.598	.001**
False Hits Baseline	.613	(0.40, 0.87)	0.12	.574	7.379	.001**
Step 2						
(Constant)	3.752	(-13.08, 12.96)	6.11		.574	.447
False Hits Baseline	.613	(0.40, 0.83)	0.11	.574	-.042	.001**
Group	-.544	(-2.64, 1.29)	0.96	-.042	.026	.592
RSQ Anx.	.185	(-1.33, 1.67)	0.77	.026	-.073	.805
RSQ Avoid.	-.845	(-2.46, 0.55)	0.55	-.073	.088	.295
CTQ SA	.397	(-0.69, 3.93)	1.15	.088	.574	.622
Step 3						
(Constant)	30.120	(-6.0, 71.41)	19.19		.539	.227
False Hits Baseline	.579	(0.39, 0.74)	0.09	.542	6.852	.002**
Group	-13.319	(-37.61, 6.84)	11.46	-1.022	-.474	.326
RSQ Anx.	-4.277	(-7.96, 0.20)	2.12	-.610	-2.322	.062
RSQ Avoid	1.271	(-3.46, 5.71)	2.31	.110	.420	.593
CTQ SA	-3.941	(-10.38, 1.63)	2.92	-.873	-.360	.269
Group x RSQ Anx.	3.290	(-0.31, 6.34)	1.74	.904	2.558	.078
Group x RSQ Avoid.	-1.684	(-4.72, 1.20)	1.52	-.431	-.866	.292
Group x CTQ SA	1.990	(-1.14, 6.49)	1.95	1.271	.363	.340

Based on 1000 bootstrap samples

Step 1 R2= .33, Step 2 ΔR2= .013, Step 3 ΔR2= .039

CTQ= Childhood Trauma Questionnaire; SA= Sexual abuse, RSQ= Relationship Scales
Questionnaire; Avoid. = Avoidance; Anx. = Anxious

	B	95% CI B	SE B	β	t	P
Step 1						
(Constant)	3.19	(1.91, 4.47)	0.62		4.532	.001**
False Hits Baseline	0.62	(0.39, 0.91	0.13	.568	7.210	.001**
Step 2						
(Constant)	4.60	(0.66, 8.54)	1.93		2.122	.028*
False Hits Baseline	0.62	(0.39, 0.90)	0.13	.566	6.934	.001**
Group	-0.40	-2.345, 1.64)	0.98	-.030	-.375	.690
LSHS-R	0.03	(-0.12, 0.16)	0.07	.031	.354	.722
PANAS Positive	-0.07	(-0.24, 0.07)	0.08	-.067	-.798	.392
Step 3						
(Constant)	3.71	(-5.10, 11.68)	4.31		.725	.398
False Hits Baseline	0.62	(0.39, 0.89)	0.13	.565	6.735	.001**
Group	0.19	(-5.15, 6.11)	2.81	.015	.060	.945
LSHS-R Total	-.004	(-0.43, 0.41)	0.21	-.005	-.017	.983
PANAS Positive	.008	(-0.47, 0.51)	0.25	.008	.029	.975
Group x LSHS-R	0.02	(-0.26, 0.33)	0.15	.046	.134	.887
Group x PANAS Positive	-0.05	(-0.36, 0.24)	0.15	-.105	-.293	.748

Based on 1000 bootstrap samples

Step 1 R2= .32, Step 2 ΔR2= .005, Step 3 ΔR2= .001

PANAS= Positive and Negative Affect Scale; LSHS-R= Launay-Slade Hallucination

Appendix D: Author guidelines for the journal 'Psychosis'

Psychosis: Psychological, Social and Integrative Approaches

Routledge OPEN SELECT

Thank you for choosing to submit your paper to us. These instructions will ensure we have everything required so your paper can move through peer review, production and publication smoothly. Please take the time to read them and follow the instructions as closely as possible.

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Contributions to *Psychosis*, whether research papers, reviews, or first person accounts (from service users or therapists), will be subjected to peer review by referees at the discretion of the Editorial Office.

Manuscript preparation

1. General guidelines

- Manuscripts should be consistent with the Aims and Scope of the journal.
- Papers are accepted only in English. American or British English spelling and punctuation is preferred provided usage is consistent throughout.
- The following word limits apply (including the abstract, tables, figures, and references):

  Research articles and reviews will not exceed 5,000 words;

  First person accounts (both kinds) 3,000 words;

  Brief Report - 1,000 words;

  Opinion Pieces - 750 words;

  Letters to Editor - 400 words;

  Book Reviews - 750 words.

Please do not submit Abstracts for Letters to Editor or Book Reviews.

- Submitted manuscripts should be anonymised to allow for review. A separate title page should be submitted containing the author name.
- Manuscript should be assembled in the following order: main text; acknowledgements; appendixes (as appropriate); references; table(s) with caption(s) (on individual pages).
- A separate Abstracts of 200 words (100 words for First person accounts and Opinion Pieces) should also be provided for review papers, research papers and brief reports.
- Each paper should have up to five keywords.
- Section headings should be concise.
- Please include, in the Discussion section, a subsection subtitled Clinical Implications (or Practical Implications if you see implications beyond mental health services, eg primary prevention).
- For all manuscripts non-discriminatory language is mandatory. Sexist or racist terms should not be used.
- Authors must adhere to SI units. Units are not italicised.
- When using a word which is or is asserted to be a proprietary term or trade mark, authors must use the symbol ® or TM.
- Authors are encouraged to include at least two, preferably three, potential reviewers when submitting.
- Authors must not embed equations or image files within their manuscript.
- Authors must not use footnotes.

2. Style guidelines

- Description of the Journal's article style, Quick guide

URL:
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V4bVdqD6uvs

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3. Figures

We welcome figures sent electronically, but care and attention to these guidelines are essential as importing graphics packages can often be problematic.

- **Please be sure that all imported scanned material is scanned at the appropriate resolution: 1200 dpi for line art, 600 dpi for grayscale and 300 dpi for colour.**
- Figures must be saved individually and separate to text. Please do not embed figures in the paper file.
- Avoid the use of colour and tints for purely aesthetic reasons.
- Figures should be produced as near to the finished size as possible.
- All figures must be numbered in the order in which they appear in the paper (e.g. figure 1, figure 2). In multi-part figures, each part should be labelled (e.g. figure 1(a), figure 1(b)).
- Figure captions must be saved separately, as part of the file containing the complete text of the paper, and numbered correspondingly.
- The filename for the graphic should be descriptive of the graphic, e.g. Figure1, Figure2a.
- Files should be saved as one of the following formats: TIFF (tagged image file format), PostScript or EPS (encapsulated PostScript), and should contain all the necessary font information and the source file of the application (e.g. CorelDraw/Mac, CorelDraw/PC).

Please note that it is in the author's interest to provide the highest quality figure format possible. Please do not hesitate to contact our Production Department if you have any queries.

4. Tables

Tables should be numbered consecutively with Arabic numbers in order of appearance in the text. Type each table double-spaced on a separate page, with a short descriptive title typed directly above and with essential footnotes below.

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6. Informed consent

Manuscripts must include a statement that informed consent was obtained from human subjects. Authors should protect patient anonymity by avoiding the use of patients' names or initials, hospital number, or other identifying information.

7. Code of experimental ethics and practice and confidentiality

Contributors are required to follow the procedures in force in their countries which govern the ethics of work conducted with human or animal subjects. The Code of Ethics of the World Medical Association (Declaration of Helsinki) represents a minimal requirement.

For human subjects or patients, describe their characteristics. For human participants in a research survey, secure the consent for data and other material - verbatim quotations from interviews, etc. - to be used. Specific permission for any facial photographs is required. A letter of consent must accompany any photographs in which the possibility of identification exists. It is not sufficient to cover the eyes to mask identity.

It is your responsibility to ensure that the confidentiality of patients is maintained. All clinical material used in your article must be disguised so that it is not recognisable by a third party. Where possible and appropriate, the permission of the patient should be obtained. Authors are invited to discuss these matters with the editor if they wish.

If you are writing a 'case study' or any account of another person's psychosis and/or treament it is required that the person concerned is shown what has been written about them, given an opportunity to correct inaccuracies and add commentary, and signed a consent form stating this to be the case. The paper needs to include a statement to this effect and the Editor needs to be sent a copy of the signed consent form, either as a document attached in the submissoin process or as a separate email.

8. Drug names

Generic rather than trade names of drugs should be used, although trade names may be mentioned in parentheses in the first text reference to the drug.

9. Competing financial interests

A competing interest exists when your interpretation or presentation of information may be influenced by your personal or financial relationship with other people or organizations. Authors should disclose all financial and non-financial competing interests.

Authors are required to complete a declaration of competing interests and submit it together with the manuscript. All competing interests that are declared will be listed at the end of published articles. Where an author gives no competing interests, the listing will read 'The author(s) declare that they have no competing interests'. Please consider the following questions:

1. In the past five years have you received reimbursements, fees, funding, or salary from an organization that may in any way gain or lose financially from the publication of this manuscript, either now or in the future? Is such an organization financing this manuscript? If so, please specify.
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4. Do you have any other financial competing interests? If so, please specify.

If you are unsure as to whether you, or one of your co-authors, has a competing interest please discuss it with the editorial office.

10. Affirmation of authorship

Authors are expected to have made substantive intellectual contributions to, and to have been involved in drafting or revising the manuscript. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content. Acquisition of funding, collection of data, or general supervision of the research group, alone, does not justify authorship. With the submission of a manuscript, it is assumed that all authors have read and approved the final manuscript.

11. Acknowledgements

All contributors who do not meet the above criteria for authorship, should be listed in an acknowledgements section. Examples of those who might be acknowledged include those who provided general, technical, or writing assistance Acknowledgement of funding/grants are also included in this section.

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All submissions should be made online at the *Psychosis* ScholarOne Manuscripts site. New users should first create an account. Once a user is logged onto the site submissions should be made via the Author Centre. To ensure blinded review authors should only include identifying information on a title page which can be uploaded separately.

Manuscripts may be submitted in any standard Word format or EndNote. Please use Word's "Save As" option to save your document as an older (.doc) file type. LaTeX files should be converted to PDF prior to submission because Manuscript Central is not able to convert LaTeX files into PDFs directly.

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- Simon McCarthy-Jones, et al.
  Volume 5, Issue 3, 2013

Appendix E: Ethics Approval Letter

Ref: ethics/15051

Dr Katherine Berry,
School of Psychological Sciences,
2nd Floor Zochonis Building.

9th April 2015

Dear Dr Berry,

Study title: Wong: 'An analogue study investigating voice-hearing and moderating factors in response to stressful material' (our ref 15051)

Research Ethics Committee 4

I write to thank Miss Wong for coming to meet the Committee on 4th March 2015. I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form and supporting documentation as submitted and approved by the Committee.

This approval is effective for a period of five years. If the project continues beyond that period an application for amendment must be submitted for review. Likewise, any proposed changes to the way the research is conducted must be approved via the amendment process (see below). Failure to do so could invalidate the insurance and constitute research misconduct.

You are reminded that, in accordance with University policy, any data carrying personal identifiers must be encrypted when not held on a secure university computer or kept securely as a hard copy in a location which is accessible only to those involved with the research.

Reporting Requirements:

You are required to report to us the following:

1. Amendments
2. Breaches and adverse events
3. Notification of Progress/End of the Study

Feedback

It is our aim to provide a timely and efficient service that ensures transparent, professional and proportionate ethical review of research with consistent outcomes, which is supported by clear, accessible guidance and training for applicants and committees. In order to assist us with our aim, we would be grateful if you would give your view of the service that you have received from us by completing a feedback sheet [https://survey.manchester.ac.uk/pssweb/index.php/155676/lang-en].

We hope the research goes well.

Yours sincerely,

Dr Deborah Bentley
Secretary to University Research Ethics Committee 4

Appendix F: Study Online Advertisement

Experiment Title: Reactions to stressful material
Ethics Number: 15051
Contact Email: samantha.wong-2@postgrad.manchester.ac.uk
Experiment Details:
We are looking for volunteers to take part in a study looking at people's reaction to stress and why people may react differently. Volunteers will initially complete a brief screening questionnaire online to determine if they are eligible to take part. Those who are eligible will be invited to the Zochonis or Coupland building to complete a computer task and a few questionnaires. This will take approximately 45 minutes. Participants from the school of psychological sciences will be offered credits. Other participants will be offered a small financial reimbursement. If you are interested, please click on this link https://apps.mhs.manchester.ac.uk/surveys//TakeSurvey.aspx?SurveyID=7lM1lo61 to read more information about the study and to complete the screening questionnaire. If you have any other questions, please contact samantha.wong-2@postgrad.manchester.ac.uk.This study has been approved by the University of Manchester Research Ethics Committee (Ref: 15051).

Appendix G: Study Poster Advertisement

REACTIONS TO STRESSFUL MATERIAL
Research Participation

Want to find out more about why some people react to stress differently?

We are interested in the way that stress can impact on people's experiences. Although we are using only mildly distressing material, we hope that our findings can in future be applied to help develop services for people who have experienced traumatic events or are exposed to stress frequently.

Who can take part?
- 18 years old or over
- English speaking
- Normal or corrected vision
- Normal hearing
- No current or historical involvement with secondary care psychiatric services.

What will it involve for me?
You will be asked to see a researcher for approximately 1 hour, on campus. The session will involve completing some questionnaires, looking at some negative or neutral pictures and listening to some audio material. You will complete these tasks individually and your responses will remain confidential.

As a token of appreciation, participants from the school of psychological sciences will receive credits. Other participants will be offered a small financial reimbursement as an alternative.

Further Information
If you would like to take part or have any questions about the study, please get in touch:
Samantha Wong (Email: samantha.wong-2@postgrad.manchester.ac.uk)

Reactions to stressful material
samantha.wong-

Reactions to stressful material
samantha.wong-

Reactions to stressful material
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Reactions to stressful material
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samantha.wong-

Appendix H: Participant Information Sheet

MANCHESTER
1824

Participant Information Sheet

Study Title: Reactions to stressful material

You are being invited to take part in a research study. Before you decide whether to take part it is important you understand why the research is being done and what it will involve. Please take time to read the following information carefully. We can go over it in more detail when we meet if you prefer. Ask us if there is anything that is not clear or you would like more information about. Take time to decide whether or not you wish to take part.

Why is the study being done?
The project as a whole aims to look at people's reactions to stress and why people may react differently. We also want to see if experiencing past stressful events impacts on reactions to current stress. Although we are using distressing material, we hope that our findings can in future be applied to help develop services for people who have experienced traumatic events and experience stress frequently.

Who will be taking part and why have I been asked to take part?
We are hoping for 130 students to take part in this study. We are inviting people to take part who are 18 years old or over, have normal or corrected vision, normal hearing, have no current or historical involvement with secondary care psychiatric services and are English speaking.

What will it involve for me?
You will be asked to see a researcher for approximately 1 hour, on campus. The session will involve completing some questionnaires, looking at some negative or neutral pictures and listening to some audio material. Negative pictures will involve unpleasant photographs (e.g. of violence such as a person getting physically attacked or a severe injury). Questions in the questionnaires will involve asking if you have experienced certain distressing events in your childhood, how you relate to other people and emotions that you are feeling. However, you will not be asked to provide details of these. You will complete these tasks individually and your responses will remain confidential.

Do I have to take part?
It is up to you whether or not you decide to take part. If you do decide to take part you will be given a copy of this information sheet and be asked to sign a consent form. Your participation is voluntary and you can leave the study at any time without giving a reason. If you decide to leave at any time, or not to take part, this will not affect your study at the University.

What are the good things and bad things about taking part?
This project will help us to understand more about people's reactions to stressful events and how it may impact on them. We hope that this will inform ways of supporting people to maintain their wellbeing after stressful events and avoid negative, distressing experiences. Participants from the school of psychological sciences will be offered credits as a token of appreciation. If credits aren't available, participants will be offered a small financial reimbursement of £5 instead and be informed of this before participation. This decision will be made by the researcher and participants will be informed of this before taking part in the experiment.

Participants will be required to view either neutral pictures or negative pictures which may elicit brief mild stress. These pictures have been widely used in research for investigating emotions. We will also ask participants to listen to an audio recording and fill in questionnaires about their past experiences. Although prior research has not reported adverse effects when completing these tasks, it might be that some participants find some of these tasks upsetting. If this is the case, the researcher can signpost participants to sources of support, including the University Student Services, NHS 111 Emergency Care number, or the Samaritans (Tel: 08457 90 90 90).

What do I do if something goes wrong?

If you have a concern about any aspect of this study, you should ask to speak to the researchers who will do their best to answer your questions. If they are unable to help or you wish to make a complaint regarding the study, please contact a University Research Practice and Governance Coordinator on 0161 275 7583 or 0161 275 8093 or by email to research-governance@manchester.ac.uk.

Will my taking part be confidential?

If you agree to take part in the study, any information you give the researcher will be kept strictly confidential. We will conform to the Data Protection Act of 1998 with respect to data collection, storage and destruction. Your name will not appear on any of the forms, we will give you a study number instead. Any information you give to the researcher will not be shared with any staff without your consent, unless the researcher feels that either yourself or others are likely to be harmed.

What will happen to the results of the research study?

The findings will be presented to a range of mental health professionals and academics. It is hoped that the findings will improve mental health services. We also aim to publish the results of the study in a scientific journal and/or conference presentations.

Who is organising and funding the research?

This study is funded and organised as part of the University of Manchester Doctorate in Clinical Psychology Programme.

Further Information

If you would like any further information or have any questions about the study, please ask a member of the research team:

Samantha Wong
(Researcher)
2nd Year Trainee, Doctorate in Clinical Psychology
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University of Manchester
Brunswick street
Manchester
M13 9PL
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Manchester
M13 9PL
Email: sandra.bucci@manchester.ac.uk

Appendix I: Consent Form

MANCHESTER 1824

The University of Manchester

CONSENT FORM

Client Identification Number for this study:~~~~~~~~~~

Title of Project: Reactions to stressful material

Name of Researcher:

Name of Participant:

Initials

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my legal rights or study being affected. ☐

3. I understand that my data will be treated confidentially and any publication resulting from this work will report only data that does not identify me. ☐

4. I understand that relevant sections of the data collected during the study may be looked at by individuals from the University of Manchester or from regulatory authorities where it is relevant to my taking part in this research. I give permission for these individuals to have access to my data. ☐

5. I agree to take part in this study   . ☐

_____   _____   _____
Name of Participant   Date   Signature

_____   _____   _____
Name of Researcher   Date   Signature

Appendix J: Screening Questionnaire

Screening Questionnaire

The following questionnaire will help us determine whether you are eligible to take part in the study. It will take approximately 2 minutes to complete.

1. Do you consent to taking part in this study?
    - ○ Yes
    - ○ No

2. What is your age in years?

3. What is your gender?

    - ○ Female
    - ○ Male

4. Do you have a hearing impairment?
    - ○ Yes
    - ○ No

5. Do you have normal or corrected vision?
    - ○ Yes
    - ○ No

6. Have you in the past been, or are you currently a service user of secondary care psychiatric services?
    - ○ Yes
    - ○ No

7. If you answered yes in question 6, what secondary service do you/have you used?

8. Do you speak fluent English?

○ Yes

○ No

9. Which ethnic group do you most identify with?

◉ British
○ Irish
○ Other White background
○ Pakistani
○ Bangladeshi
○ Indian
○ Other Asian background
○ Caribbean
○ African
○ Other Black background
○ White and Black background
○ White and Black Caribbean
○ White and Black African
○ Other mixed background
○ Chinese
○ Other, please specify

Thank you for completing the screening questionnaire. A researcher will contact you soon to let you know if you are eligible to participate in the study. Please leave your contact details below.

10. What is your email address?*

11. What is your telephone number?

Appendix K: Dissociative Experiences Scale (DES-II)

Dissociative Experiences Scale-II (DES-II)
Eve Bernstein Carlson, Ph.D. & Frank W. Putnam, M.D.

Directions: This questionnaire consists of twenty-eight questions about experiences that you may have in your daily life. We are interested in how often you have these experiences. It is important, however, that your answers show how often these experiences happen to you when you are not under the influence of alcohol or drugs. To answer the questions, please determine to what degree the experience described in the question applies to you, and circle the number to show what percentage of the time you have the experience.

For example: 0% 10 20 30 40 50 60 70 80 90 100%

           (Never)   (Always)

1. Some people have the experience of driving or riding in a car or bus or subway and suddenly realizing that they don't remember what has happened during all or part of the trip. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

2. Some people find that sometimes they are listening to someone talk and they suddenly realize that they did not hear part or all of what was said. Circle the number to show what percentage of the time this happens to you.   0% 10 20 30 40 50 60 70 80 90 100%

3. Some people have the experience of finding themselves in a place and have no idea how they got there. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

4. Some people have the experience of finding themselves dressed in clothes that they don't remember putting on. Circle the number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

5. Some people have the experience of finding new things among their belongings that they do not remember buying. Circle the number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

6. Some people sometimes find that they are approached by people that they do not know, who call them by another name or insist that they have met them before. Circle the number to show what percentage of the time this happens to you   0% 10 20 30 40 50 60 70 80 90 100%

7. Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and they actually see themselves as if they were looking at another person. Circle the number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

8. Some people are told that they sometimes do not recognize friends of family members. Circle the number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

9. Some people find that they have no memory for some important events in their lives (for example, a wedding or graduation). Circle the number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

1

10. Some people have the experience of being accused of lying when they do not think that they have lied. Circle the number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

11. Some people have the experience of looking in a mirror and not recognizing themselves. Circle the number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

12. Some people have the experience of feeling that other people, objects, and the world around them are not real. Circle the number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

13. Some people have the experience of feeling that their body does not seem to belong to them. Circle the number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

14. Some people have the experience of sometimes remembering a past event so vividly that they feel as if they were reliving that event. Circle the number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

15. Some people have the experience of not being sure whether things that they remember happening really did happen or whether they just dreamed them. Circle the number to show what percentage of the time this happens to you.   0% 10 20 30 40 50 60 70 80 90 100%

16. Some people have the experience of being in a familiar place but finding it strange and unfamiliar. Circle the number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

17. Some people find that when they are watching television or a movie they become so absorbed in the story that they are unaware of other events happening around them. Circle the number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

18. Some people find that they become so involved in a fantasy or daydream that it feels as though it were really happening to them. Circle the number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

19. Some people find that they sometimes are able to ignore pain. Circle the number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

20. Some people find that they sometimes sit staring off into space, thinking of nothing, and are not aware of the passage of time. Circle the number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

21. Some people sometimes find that when they are alone they talk out loud to themselves. Circle the number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

2

22. Some people find that in one situation they may act so differently compared with another situation that they feel almost as if they were two different people. Circle the number to show what percentage of the time this happens to you.   0% 10 20 30 40 50 60 70 80 90 100%

23. Some people sometimes find that in certain situations they are able to do things with amazing ease and spontaneity that would usually be difficult for them (for example, sports, work, social situations, etc.). Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

24. Some people sometimes find that they cannot remember whether they have done something or have just thought about doing that thing (for example, not knowing whether they have just mailed a letter or have just thought about mailing it). Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

25. Some people find evidence that they have done things that they do not remember doing. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

26. Some people sometimes find writings, drawings, or notes among their belongings that they must have done but cannot remember doing. Circle the number to show what percentage of the time this happens to you.   0% 10 20 30 40 50 60 70 80 90 100%

27. Some people sometimes find that they hear voices inside their head that tell them to do things or comment on things that they are doing. Circle the number to show what percentage of the time this happens to you.   0% 10 20 30 40 50 60 70 80 90 100%

28. Some people sometimes feel as if they are looking at the world through a fog, so that people and objects appear far away or unclear. Circle the number to show what percentage of the time this happens to you.
0% 10 20 30 40 50 60 70 80 90 100%

3

Dissociative Experiences Scale II (DES II)
Description and Interpretation

Description: The Dissociative Experiences Scale II (DES II) is a copyright-free, screening instrument. According to its authors, Carlson and Putnam, "it is a brief, self-report measure of the frequency of dissociative experiences. The scale was developed to provide a reliable, valid, and convenient way to quantify dissociative experiences. A response scale that allows subject to quantify their experiences for each item was used so that scores could reflect a wider range of dissociative symptomatology than possible using a dichotomous (yes/no) format." (see Dissociation 6 (1): 16-23)

Interpretation: The Dissociative Experiences Scale II (DES II): When scoring, drop the zero on the percentage e.g. 30%=3; 80%=8 then add up single digits for client score Mean DES Scores Across Populations for Various Studies

General Adult Population	5.4
Anxiety Disorders	7.0
Affective Disorders	9.35
Eating Disorders	15.8
Late Adolescence	16.6
Schizophrenia	15.4
Borderline Personality Disorder	19.2
PTSD	31
Dissociative Disorder (NOS)	36
Dissociative Identity Disorder (MPD)	48

Items from the DES for Each of the Three Main Factors of Dissociation:

Amnesia Factor: This factor measures memory loss, i.e., not knowing how you got somewhere, being dressed in clothes you don't remember putting on, finding new things among belongings you don't remember buying, not recognizing friends or family members, finding evidence of having done things you don't remember doing, finding writings, drawings or notes you must have done but don't remember doing. **Items — 3, 4, 5, 8, 25, 26**.

Depersonalization/Derealization Factor: Depersonalization is characterized by the recurrent experience of feeling detached from one's self and mental processes or a sense of unreality of the self. Items relating to this factor include feeling that you are standing next to yourself or watching yourself do something and seeing yourself as if you were looking at another person, feeling your body does not belong to you, and looking in a mirror and not recognizing yourself. Derealization is the sense of a loss of reality of the immediate environment. These items include feeling that other people, objects, and the world around them is not real, hearing voices inside your head that tell you to do things or comment on things you are doing, and feeling like you are looking at the world through a fog, so that people and objects appear far away or unclear.
Items — 7, 11, 12, 13, 27, 28.

Absorption Factor: This factor includes being so preoccupied or absorbed by something that you are distracted from what is going on around you. The absorption primarily has to do with one's traumatic experiences. Items of this factor include realizing that you did not hear part or all of what was said by another, remembering a past event so vividly that you feel as if you are reliving the event, not being sure whether things that they remember happening really did happen or whether they just dreamed them, when you are watching television or a movie you become so absorbed in the story you are unaware of other events happening around you, becoming so involved in a fantasy or daydream that it feels as though it were really happening to you, and sometimes sitting, staring off into space, thinking of nothing, and being unaware of the passage of time.
Items — 2, 14, 15, 17, 18, 20.

4

Appendix L: Launay–Slade Hallucination Scale- Revised (LSHS-R)

LSHS-R

	4 Certainly applies to me	3 Possibly applies to me	2 Unsure	1 Possibly does not apply to me	0 Certain does not apply to me
1. No matter how hard I try to concentrate, unrelated thoughts always creep into my mind					
2. In my daydreams I can hear the sound of a tune almost as clearly as if I were actually listening to it					
3. Sometimes my thoughts seem as real as actual events in my life					
4. Sometimes a passing thought will seem so real that it frightens me					
5. The sounds I hear in my daydreams are generally clear and distinct					
6. The people in my daydreams seem so true to life that sometimes I think they are					
7. I often hear a voice speaking my thoughts aloud					
8. In the past, I have had the experience of hearing a person's voice and then found that no-one was there					
9. On occasions, I have seen a person's face in front of me when no-one was in fact there					
10. I have heard the voice of the Devil					
11. In the past, I have heard the voice of God speaking to me					
12. I have been troubled by hearing voices in my head					

Appendix M: Relationship Scale Questionnaire (RSQ)

RSQ

Please read each of the following statements and rate the extent to which you believe each statement best describes your feelings about <u>close relationships</u>.

		Not at all like me		Somewhat like me		Very much like me
1.	I find it difficult to depend on other people.	1	2	3	4	5
2.	It is very important to me to feel independent.	1	2	3	4	5
3.	I find it easy to get emotionally close to others.	1	2	3	4	5
4.	I want to merge completely with another person.	1	2	3	4	5
5.	I worry that I will be hurt if I allows myself to become too close to others.	1	2	3	4	5
6.	I am comfortable without close emotional relationships.	1	2	3	4	5
7.	I am not sure that I can always depend on others to be there when I need them.	1	2	3	4	5
8.	I want to be completely emotionally intimate with others.	1	2	3	4	5
9.	I worry about being alone.	1	2	3	4	5
10.	I am comfortable depending on other people.	1	2	3	4	5
11.	I often worry that romantic partners don't really love me.	1	2	3	4	5
12.	I find it difficult to trust others completely.	1	2	3	4	5
13.	I worry about others getting too close to me.	1	2	3	4	5
14.	I want emotionally close relationships.	1	2	3	4	5
15.	I am comfortable having other people depend on me.	1	2	3	4	5
16.	I worry that others don't value me as much as I value them.	1	2	3	4	5
17.	People are never there when you need them.	1	2	3	4	5
18.	My desire to merge completely sometimes scares people away.	1	2	3	4	5
19.	It is very important to me to feel self-sufficient.	1	2	3	4	5

	Not at all like me		Somewhat like me		Very much like me
20. I am nervous when anyone gets too close to me.	1	2	3	4	5
21. I often worry that romantic partners won't want to stay with me.	1	2	3	4	5
22. I prefer not to have other people depend on me.	1	2	3	4	5
23. I worry about being abandoned.	1	2	3	4	5
24. I am somewhat uncomfortable being close to others.	1	2	3	4	5
25. I find that others are reluctant to get as close as I would like.	1	2	3	4	5
26. I prefer not to depend on others.	1	2	3	4	5
27. I know that others will be there when I need them.	1	2	3	4	5
28. I worry about having others not accept me.	1	2	3	4	5
29. Romantic partners often want me to be closer than I feel comfortable being.	1	2	3	4	5
30. I find it relatively easy to get close to others.	1	2	3	4	5

Appendix N: Positive And Negative Affect Schedule (PANAS)

PANAS

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer. Indicate to what extent you feel this way.

	1 Very slightly or not at all	2 A little	3 Moderately	4 Quite a bit	5 Extremely
interested					
distressed					
excited					
upset					
strong					
guilty					
scared					
hostile					
enthusiastic					
proud					
irritable					
alert					
ashamed					
inspired					
nervous					
determined					
attentive					
jittery					
active					
afraid					

Appendix O: List of Neutral and Negative Pictures

List of Neutral and Negative Pictures

Negative Pictures	Neutral Pictures
Istockphoto ID 8343067	IAPS ID 2036
Istockphoto ID 2407313	IAPS ID 2038
Istockphoto ID 12431266	IAPS ID 2102
Istockphoto ID 12630563	IAPS ID 2191
Istockphoto ID 4810706	IAPS ID 2200
Istockphoto ID 13420065	IAPS ID 2214
Istockphoto ID 9694373	IAPS ID 2221
Istockphoto ID 11470966	IAPS ID 2235
Istockphoto ID 6846493	IAPS ID 2273
Istockphoto ID 10794309	IAPS ID 2305
Istockphoto ID 14199236	IAPS ID 2377
Istockphoto ID 8343256	IAPS ID 2382
Istockphoto ID not available	IAPS ID 2383
Istockphoto ID not available	IAPS ID 2390
IAPS ID 3530	IAPS ID 2393
IAPS ID 6212	IAPS ID 2394
IAPS ID6231	IAPS ID 2396
IAPS ID6312	IAPS ID 2411
IAPS ID6313	IAPS ID 2440
IAPS ID6315	IAPS ID 2485
IAPS ID6520	IAPS ID 2493
IAPS ID6550	IAPS ID 2495
IAPS ID6560	IAPS ID 2499
IAPS ID9041	IAPS ID 2512
IAPS ID9075	IAPS ID 2513
IAPS ID9410	IAPS ID 2516
IAPS ID9412	IAPS ID 2518
IAPS ID9413	IAPS ID 2580
IAPS ID9414	IAPS ID 2593
IAPS ID9921	IAPS ID 2595

Appendix P: Voice Detection Task

VOICE DETECTION TASK

Features of the white noise

Audacity 2.0.5 for Mac was used. Maximum output volume was used.

Monophonic audio (a single track of audio), 44100Hz, 32-bit floating point audio.

Gain: 0 db

Duration: 5 minutes

Normalized maximum amplitude to: -55 db

Nonsense words

Primary list. Total 70 nonsense words, each composed of seven letters, were created with PassMaker version 1.2. A text to speech converting software programme called the Balabolka v 2.9 was used to create wav files in male voice (IVONA 2 Brian) for each of these nonsense words. The voice parameters during creating the sound files were as follows: rate = 0, pitch = 0, and volume = 100.

Ratings for similarity with actual English words. The 70 nonsense words were played (with maximum volume both on the laptop and headphones) in a quiet room to 10 native English raters (PhD students and faculty members of the University of Manchester) to decide on whether they sound very similar, a little bit similar, or not at all similar to actual English words. Eight (80%) raters identified 17 and seven (70%) raters identified 16 words not at all similar to actual English words. The 17 words with 80% rating were selected for the main test and 16 words with 70% rating were used in the practice test.

Volumes of the sound files

The amplitude of sound files used in the auditory task was based on auditory thresholds of 20 individuals. A computer algorithm called the parameter estimation by sequential testing (PEST) was used to determine thresholds. One of the participants, aged 46 years, was excluded from the analysis for not satisfying the age criterion for the final study which was 18 – 40 years. The thresholds found (on an E-Prime programme) for 19 participants are given below:

Participant ID	Threshold
4LR	-6100.00
5YX	-6000.00
0H5	-5900.00
7CN	-6000.00
7M7	-5900.00
2ND	-5700.00
D83	-5900.00
E81	-5700.00
5S6	-5700.00
J9C	-6100.00
KL7	-5900.00
8IH	-6000.00
MO7	-5900.00
D38	-5700.00
F3T	-6100.00
L05	-5900.00
N7O	-6000.00
U2R	-6300.00
WPH	-6000.00
Mean threshold	-5936.8421
SD	160.591
Minimum	-6300.00
Maximum	-5700.00

The following features were considered to decide on the volumes of the main experiment sound files:

1. The volumes should spread over a range of frequencies such that participants will hear some of the voices but miss others. More specifically, voice amplitudes should lie on the both sides (i.e.

above and below) of participants' auditory thresholds. As auditory threshold will not be determined for individual participants, using a range of volumes surrounding the mean auditory threshold for the pilot sample increases the likelihood that auditory thresholds of participants in the main experiment will lie somewhere in that range. This is to ensure that the voices are neither too loud (that participants hear all of them) nor too faint (that participants hear none of them).

2. Participants should find the task sufficiently ambiguous (in terms of amplitude of sound files) so that they are likely to respond even when they are not absolutely sure about hearing voices. It was expected that this would facilitate the top-down processes related to auditory perception and thus would generate false alarms (i.e. hearing of voices or believing that a voice was presented when actually there was no voice).

To satisfy the above features, the central (i.e. mean) volume was set to -5900 (which is near the mean threshold for the pilot sample, -5936.8421). Other intensities constituted volumes up to 3 steps (1 step = -150 which is close to the SD calculated for the threshold sample) above and 2 steps below the central value. Thus following volumes were used for the voice detection task:

-5450, -5600, -5750, -5900, -6050, -6200

The practice task consisted of the above sound amplitudes as well as much higher ones (i) to make participants familiar with the task and (ii) to determine their general reaction time to clearly audible voices which later is used to decide on the criterion for false alarms in the main task.

The following 18 amplitudes were used in the practice task:

-1000, -1500, -2000, -2500, -3000, -3500, -4000, -4500, -4700, -4900, -5000, -5200, -5450, -5600, -5750, -5900, -6050, -6200

When do the voices (i.e. nonsense words) appear during the test?

Voices appear in a random sequence in both the practice and main task.

Practice test. The following features were considered to decide on the time intervals between the voices in the practice test:

1. The intervals should not be too short that the sound files would hear overlapping with one another.

2. The intervals should not be too long that the total duration would increase unnecessarily.

To satisfy the above requirements, it was decided to use a random interval between a minimum of 1 second and a maximum of 2 seconds in-between two successive sound files. Thus Microsoft Office Excel random number generator function was used to get the following 18 intervals to randomly pair with 18 volume levels:

Intervals between two successive sound files in the practice test (milliseconds)		
1869	1806	1660
1300	1205	1685
1876	1411	1956
1108	1377	1568
1618	1123	1407
1682	1063	1330

Main test. A randomly selected 3 to 10 seconds time gap (generated with Microsoft Excel) was used between two successive voices, thus there was a minimum gap of 3 seconds and a maximum gap of 10 seconds between two voices.

Intervals between two successive sound files in the main test (seconds)		
3	9	2
9	4	3
8	6	10
10	7	6
10	3	10
5	3	3

How many times the sound files were played during the tasks?

Practice test. A sound file (out of total 17 sound files which 70% of the raters rated not at all similar to meaningful English words) was randomly selected to use twice and the other 16 files were used once to cover all the 18 volume levels. Given the intervals between two successive sound files, it was found that an approximately one-minute practice trial would require 24 voices. To get the additional voices, six of the 18 sound files were randomly selected to run twice.

Main test. The main test composed of total 18 voices with 16 nonsense words played once and one was played twice. These were the 17 sound files that 80% of the raters identified not at all similar to the actual English words.

Duration for the sound files

All the sound files were played for about 800ms in both the practice and main tasks.

Procedure to test a participant

The voice detection task consists of threshold and suprathreshold nonsense voices that randomly appear against continuous background white noise. Participants task is to press the spacebar as soon as they hear a voice. Headphones are used to present the stimuli.

1. The task is described to participants in a very simple language.

2. Participants do the practice test which takes around one minute. At the end of the task, participants are asked whether they heard very faint voices like whispers. They are then informed that the main test consists of only whispers and they may find it difficult to detect them.

3. Participants are given the main test which takes around 4m 30s. At the end, participants are asked whether they heard voices and what they think about the task and whether there was anything that influenced their responses.

Reference

Huque, A. U., Poliakoff, E., Brown, R. J. (2016). *Effects of learning on somatosensory and auditory decision-making and experiences: Implications for medically unexplained symptoms*. Unpublished manuscript.