DOCTORATE IN CLINICAL PSYCHOLOGY

An exploration of mindfulness and self-compassion in relation to the experience of distressing voices

Running header: MINDFULNESS, COMPASSION & DISTRESSING VOICES

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June 2016

Submitted in partial fulfilment of the Doctorate in Clinical Psychology, University of Liverpool

Acknowledgements

First and foremost I would like to thank my research supervisors, Catrin Eames and John Mulligan for providing a great double act of academic and clinical advice and spirit-lifting encouragement. They have both helped me exponentially in my research skills and I will certainly putting them into practice throughout my future career. I would also like to thank Paul Christiansen for kindly offering extra guidance with the statistical analysis.

I am of course indebted to all of the people who took the time to take part in the study, without their generous contributions I would literally have nothing to offer. Finding participants would have been very difficult without the support of the Hearing Voices Network, Intervoice and the Mental Health Forum, a huge thanks to Rufus May, Elisabeth Svanholmer, Jacqui Dillon and Rai Waddingham for their willingness to support the study. The design process was greatly aided by Catherine Mills and the SURE group as well as members of the Rathbone hearing voices group. The suggestions made led to the creation of my research blog which turned out to be an exciting interaction with the hearing voices community.

Personally, I would like to thank my talented and supportive colleagues, Rebecca Forrester, Gemma Cherry and Joanne Iddon in particular, for their tolerance of my near constant questions and reassurance seeking. Last but not least, to my parents for their kindness and compassion throughout this three year rollercoaster.

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Word Count = 24,996
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Introductory Chapter: *Thesis Overview*

This thesis provides an investigation into the mechanisms associated with mindfulness and compassion focused approaches to psychosis, and more specifically the experience of hearing voices. Presented are two chapters, first a systematic review investigating the current literature related to compassion focused approaches to psychosis and second, an empirical paper exploring the constructs of mindfulness of voices, self-compassion and attachment in relation to the experience of hearing voices. This introductory chapter provides an overview into the theoretical standpoint of the thesis and how the two papers accompany one another.

Compassion focused approaches are an emerging area of interest in mental health research (Gilbert & Proctor, 2006; Neff & Germer, 2012). Compassion-Focused Therapy (CFT; Gilbert, 2009) represents the most widely investigated model; CFT is a transdiagnostic therapeutic approach focused on ameliorating shame and self-criticism through development of the skills of self-compassion and mindfulness. Neff (2003) defines self-compassion as comprising of three key interacting elements; self-kindness, common humanity and mindfulness. Fostering self-compassion has been demonstrated to be associated with benefits to well-being across a wide range of psychological difficulties (Leaviss & Uttley, 2015), though at present is in the early stages of research into its usefulness for people experiencing psychosis.

Past literature has consistently shown most individuals experiencing psychosis and hearing voices have suffered a difficult upbringing characterised by neglect, criticism, shame and abuse (Bebbington et al., 2004; Campbell & Morrison, 2007). This can lead to a disorganised and fearful attachment that affects the person's relationship with self and others (Liotti & Gumley, 2008) and a hyper-sensitivity to internal and external threat (Freeman & Garety, 2003). Given CFT was designed specifically to provide effective intervention for people with high levels of shame, self-criticism and feelings of threat, it may be a valuable approach to working with people experiencing psychosis. Therefore, chapter one provides a comprehensive exploration of the literature base for compassion

focused approaches to psychosis, investigating effectiveness, acceptability and which aspects of the approach are most salient to this population.

Psychosis is a highly debated human experience with varying explanations that range from neurochemical imbalance to spiritual crisis. The most widely utilised conceptualisation is the Diagnostic and Statistical Manual (DSM; American Psychiatric Association, 2013) definition, that psychosis is part of a broad range of mental illnesses called 'schizophrenia-spectrum disorders'. These disorders are characterised by 'positive' symptoms such as sensory hallucinations including auditory hallucinations or voice hearing, paranoia and delusional beliefs and 'negative symptoms' including apathy, anhedonia and emotional blunting. Despite its popularity, this paradigm has been criticised for lacking construct validity, reliability and for ignoring highly prevalent external and social factors such as trauma, social isolation, poverty and cultural variation (Read, Bentall & Fosse, 2009). Furthermore, the diagnostic label of schizophrenia can cause stigma and discrimination (Dinos, Stevens, Serfaty Weich, & King, 2004) which is associated with low self-esteem and poor subjective recovery (Vass et al., 2015).

In developing the study design and research question for the empirical paper, the ethos of the Hearing Voices Network (HVN; 2013) was chosen as the most respectful and acceptable framework to conceptualise the experience of hearing voices and psychosis. The HVN view psychosis and hearing voices as a natural and meaningful human response to adversity with a wide range of explanations, rather than just the symptoms of an illness (HVN, 2013). Studies have shown that hearing voices is a relatively common experience (Beavan, Read & Cartwright, 2011) and not exclusive to those diagnosed with a schizophrenia or psychosis-related disorders. In line with this framework, it was decided not to include diagnosis as inclusion criteria for the empirical study in order to open the study to a wider range of participants, as well as reducing chance of inciting stigma.

Thomas (2015) argues that one of the difficulties in making sense of the literature base for therapeutic models in psychosis is the reliance on 'omnibus measures' such as the Positive and Negative Symptom Scale (PANSS; Kay, Opler & Fiszbein, 1987). Measures such the PANSS reduce

broad ranges of experiences into oversimplified constructs. This has two key drawbacks. First, it supports the notion of psychosis as mental illness, defining experiences as 'positive' and 'negative' symptoms. Second, it offers little sensitivity or specificity into the mechanisms being investigated, for example it is not possible to interpret whether a study reporting associations with 'positive symptoms' is referring to hearing voices or unusual beliefs. Though studies may report effectiveness in improving outcome for people experiencing psychosis, it is often challenging to elucidate what aspect of the therapy has been particularly helpful. This is problematic when investigating an experience such as hearing voices. Recent reviews into mindfulness-based approaches to working with distressing voices (Strauss, 2014; Strauss, Thomas & Hayward, 2015) have expressed frustration with the lack of clarity in understanding which elements of the approach mediate outcomes for people who hear voices. Furthermore, only one study (Mayhew & Gilbert, 2008) has been published exploring the link between self-compassion and hearing voices specifically as opposed to psychosis in general. Therefore, chapter two presents a cross-sectional, online empirical study providing a novel and specific examination of the associations between mechanisms underlying mindfulness and compassion-focused approaches and their relationship with distress from hearing voices. The findings add clarity to past literature as well as providing new findings with potential clinical implications for therapeutic work with people experiencing distressing voices.

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Chapter One: Literature Review

A systematic review and narrative synthesis of the evidence for acceptability, effectiveness

and mechanisms of change in compassion-focused approaches to working with psychosis[1]

Word Count: 8,738

(exc. References)

[1] Article prepared for submission to Frontiers in Psychology journal for peer review. Please see Appendix A for a copy of the journal guidelines for authors.

Abstract

Compassion-focused approaches could be useful in reducing distress for people experiencing psychosis. This paper presents a systematic review with narrative synthesis investigating the feasibility, acceptability, effectiveness and potential mechanisms of change in compassion focused therapeutic approaches to supporting people experiencing psychosis. Nine studies with a range of quantitative and qualitative designs were identified using a systematic search strategy with the search terms (psychosis or schiz*) AND (compass*) across four databases: PUBMED, MEDLINE, CINAHL Plus and PsychINFO and reported following PRISMA guidelines.

Findings indicated 1) associations between increased compassion and lower emotional distress from psychosis; 2) participants can engage in compassion-focused interventions with caveats; 3) overall it seemed compassion-focused approaches were acceptable and safe; 4) there were not enough high quality trials to conclude on effectiveness; 5) as there were no robust findings on effectiveness, it is currently not possible to identify reliable mechanisms of change. This review found early evidence for compassion-focused approaches to be feasible, acceptable and safe. Significant limitations in the available literature however means more high quality controlled trials are necessary to evidence effectiveness and potential mechanisms of change.

Keywords: Psychosis, Compassion, Mechanisms, Effectiveness, Acceptability, Systematic Review

Introduction

Psychosis is defined as a significant alteration of an individual's perception, thoughts, mood and behaviour (National Institute for Clinical & Health Excellence [NICE], 2014). It is suggested that people with distressing psychosis are 'hyper-sensitised to threat' (Gumley, Braehler, Laithwaite, MacBeth & Gilbert, 2010a) often due to high rates of childhood adversity (Varese et al., 2012), poor attachment experiences (Berry, Barrowclough & Wearden, 2008), distressing voices and paranoia (Birchwood & Chadwick, 1997), social isolation, shame and self-criticism (Birchwood et al., 2006). People experiencing psychosis are frequently subject to stigmatising attitudes from others, increasing feelings of shame, isolation and low social status (Birchwood et al., 2006; Gumley, 2007) which is reflected in the high rates of social deprivation (Eaton & Harrison, 2001), unemployment (Haro et al., 2011) and increased early mortality (Hoang, Stewart & Goldacre, 2011) observed in this population. However, psychosis is not always a negative experience, many find experiences such as hearing voices to be positive or comforting (Jenner, Rutten, Beuckens, Boonstra & Sytema, 2008). Furthermore, psychosis has been linked to the concept of posttraumatic growth (Waite, Knight, & Lee, 2015) and led to the development of a worldwide grassroots movement, the Hearing Voices Network (Dillon & Longden, 2011).

It is important to consider the aetiology of psychosis as differences in conceptualisation can have an impact on treatment. There is considerable disagreement over how psychosis should be conceptualised, ranging from biological illness (Tamminga & Medoff, 2000) to spiritual emergency (Grof & Grof, 1989). The biomedical model remains the most widespread paradigm within Western society, regarding psychosis as the symptoms of schizophrenia-spectrum disorders (American Psychiatric Association [APA], 2013). Schizophrenia-spectrum disorders are defined as chronic, recurrent lifelong mental illnesses with a hypothesised genetic (Schizophrenia Working Group of the Psychiatric Genomics Consortium, 2014) and neurochemical imbalance pathology (Carlsson & Carlsson, 1990). The paradigm describes the presence of 'positive symptoms' such as hearing voices or 'delusions' and 'negative symptoms' such as emotional flattening and low motivation (Bhati, 2013). Advocates of this perspective typically recommend long term symptom management using

neuroleptic medication. Despite the dominance of the biomedical model within mental health services, schizophrenia-spectrum diagnoses have been consistently shown to have poor validity and reliability (Read, Mosher & Bentall, 2004). The approach has been criticised as being reductionist by failing to account for strong evidence of environmental, social and psychological causal influences (Read, 2005). A comprehensive meta-analysis found anti-psychotic medication low efficacy effect size differences when compared to placebo for positive and negative symptoms (Leucht, Arbter, Engel Kissling & Davis, 2009). Other reviews concluded there is not enough evidence to suggest long term anti-psychotic medication treatment leads to beneficial outcome on average (Whitaker & Cosgrave, 2015; Sohler et al., 2015). Furthermore, acceptance of diagnostic labels such as schizophrenia has been associated with lower self-esteem, despair and hopelessness (Bassman, 2000).

Psychological approaches to psychosis increased in popularity following the momentum of the service-user (May, 2000) and recovery (Anthony, 1993) movements. Though a range of therapies for psychosis exist, psychological approaches broadly conceptualise psychosis as a spectrum of idiosyncratic psychological and emotional experiences characterised by hallucinations and unusual beliefs, triggered by a combination of environmental and social events (see Cooke et al., 2014 for a comprehensive overview). It is thought that the difficulties people with psychosis experience are rooted in traumatic experiences, evidenced by robust associations with child sexual abuse (Bebbington, 2009), physical abuse (Fisher et al., 2014) and neglect (Whitfield, Dube, Felitti & Anda, 2005). The 'symptoms' or experiences that emerge from such events are conceptualised as less constructive psychological processes or coping strategies that the person develops, which can lead to difficulties later in life. These issues are compounded by societal attitudes and largely ineffective treatment options. The cognitive model of psychosis adopted this paradigm (Garety, Kuipers, Fowler, Freeman & Bebbington, 2001), framing it within the well-established evidence base for cognitive therapy (Beck, 1976).

At present the primary psychological approach recommended by NICE (2014) is Cognitive Behavioural Therapy for psychosis (CBTp; e.g. Morrison, 2001). Treatment is focused on reduction of unwanted experiences and relapse prevention through collaborative modification of unhelpful cognitive processes, problem-solving and behavioural interventions (Thomas, 2015). Meta-analyses

have found modest effect sizes for CBTp in reducing hallucinations (van der Gaag, Valmaggia & Smit, 2014) and overall reduction on the Positive and Negative Syndrome Scale (PANSS; Kay, Flszbein & Opfer, 1987; Burns, Erickso & Brenner, 2014). However, others have found only small therapeutic effects (Jauher et al., 2014) and limited impact on relapse over the long term (Wykes, Steel, Everett & Tarrier, 2008). These mixed findings have resulted in CBTp being criticised for targeting symptom reduction with little emphasis on the underlying emotional and social processes (Gumley, 2010a), similarly to the medical model (Thomas, 2015).

Discontent with the CBTp model led some researchers to develop approaches to working with psychosis in line with the so-called "third wave" of cognitive therapy (Hayes, 2004). Focusing on emotional regulation through mindfulness, acceptance of present moment experiences, a non-judgemental stance and compassion to self and others; third-wave cognitive approaches to psychosis step away from focusing on controlling and challenging voices and intrusions (Chadwick et al., 1996). Instead, Chadwick et al. (2005) suggest developing a 'mindful response' to psychotic sensations, involving clear awareness and acceptance that they are transient experiences and are not always accurate reflections of reality. These adapted CBTp approaches include Acceptance and Commitment Therapy (ACT; Bach & Hays, 2002), Person Based Cognitive Therapy (PBCT; Chadwick, Newman Taylor & Abba, 2005) and Compassion Focused Therapy (CFT; Gumley et al., 2010a). These approaches attempt to support distress reduction for people who experience psychosis through decentring rather than engaging with their experiences to prevent the rumination, avoidance and confrontation frequently witnessed in attempts to cope with psychosis (Chadwick et al., 2005).

A recent meta-analysis of 12 studies into mindfulness-based interventions for psychosis reported a moderate effect on people's 'negative symptoms' and affect as well as improvements in quality of life and social functioning (Khoury, LeComte, Gaudiano & Paquin, 2013a). The strength of the results were comparable to mindfulness-based interventions for other psychological difficulties (Khoury et al., 2013b). Khoury and colleagues concluded that findings were inconclusive for the impact of acceptance and compassion processes, though when three of the 12 papers investigating compassion were included in the analysis an improvement in the impact of mindfulness on distress

was found. The authors suggest further investigation of the mechanisms involved in compassion-based approaches is warranted.

Compassion, meaning "to suffer with", can be conceptualised as "sensitivity to the suffering of self and others, with a deep commitment to try to relieve it" (Dalai Lama, 2002). From a social psychology and Buddhist perspective, Neff (2003a) operationalised compassion as being comprised of three elements: kindness, common humanity and mindfulness. Similar to other third-wave approaches, compassion focused approaches assume that regulation of emotional distress is a central component to improving outcome for people experiencing psychological difficulties. Whilst attributes of third-wave therapies are retained, such as mindfulness and acceptance of present moment experiences, fostering compassion to self and others is key to the approach (Gilbert, 2009). Though a range of compassion focused interventions exist, such as Loving Kindness Meditation (LKM; Salzberg, 1995), Compassionate Meditation (Hoffman, Grossman & Hinton, 2011) and Compassionate Mind Training (CMT; Gilbert & Irons, 2005), CFT remains the dominant model (Gilbert, 2009).

Compassion focused therapy was originally adapted from psychological approaches to working with people with complex mental health problems characterised by high shame and self-criticism. The approach incorporates evolutionary, neuroscience and social psychology theory as well as principles from the Buddhist tradition (Gilbert, 2009). The model assumes that psychological well-being is achieved through the balance of three neurological 'affect regulation' systems; drive/resource-seeking, threat, and soothing/affiliative (Depue & Morrone-Strupinsky, 2005). The soothing system is linked to feelings of contentment, safeness, positive affect and social bonding related to the effects of oxytocin and endorphins. Research has found that activation of the soothing system downregulates the emotions that cause difficulties generated by the 'threat system', such as anxiety, anger and shame (Kirsch et al., 2005). It is thought that secure early attachment experiences where the caregiver's empathic and nurturing response to distress supports the child to develop, which then supports an individual to develop an effective soothing system to self-regulate emotions in adulthood (Gilbert, 2009). In contrast, those who have experienced trauma, hostile attachment and threatening environments in the absence of secure attachment relationships during early life may not

develop a significant capacity to self-soothe and can instead, become hyper-sensitised to threat (Gumley et al., 2010a). 'Threat emotions' can be activated both internally through self-critical and intrusive cognitions, trauma memories or distressing voices, as well as externally through social marginalisation, stigma and bullying. Given that many of these factors are relevant to people experiencing psychosis, CFT may be an appropriate approach to conceptualisation of and treatment for people experiencing psychosis (Gumley et al., 2010a).

Gumley et al. (2010a) developed a model of CFT specifically in support of mechanisms and experiences underlying psychosis. People with psychosis related difficulties frequently experience a range of internal and external threats. Internal threat may be activated through high levels of self-criticism, shame, hostile voices or images as well as depression or hopelessness through feelings of entrapment or blocked escape (Gilbert et al., 2001). External threat is often experienced through threat focused stigmatising media, treatment, services and, at times, mental health staff (Heriot-Maitland, Longden & Irons, 2014). This is said to contribute to feelings of social marginalisation, low perceived social rank, paranoia, social anxiety and shame (Birchwood et al., 2006; Gumley, 2007; Wood & Irons, 2015). Poor attachment experiences with parents/primary caregivers and high rates of trauma mean that individuals can struggle to ameliorate thoughts and feelings associated with threat, due to potential underdevelopment of the person's underlying 'soothing system' and the associated ability to self-soothe. Clinicians using CFT for psychosis seek to help clients develop compassion toward self and others through activation of the soothing system using interventions such as 'compassionate imagery', evoking mental representation of how a compassionate person might respond to others and their own distress, in order to work towards resolving feelings of shame and self-criticism. To reduce distress the approach places more importance on compassionate 'relating to' and acceptance of the experience of psychotic phenomena, rather than challenging, reducing or removing them.

Khoury et al. (2013a) conducted a meta-analysis of mindfulness based interventions for psychosis, which included one paper investigating CFT. Compassion was found to be 'complementary' to mindfulness, optimising effectiveness. In a systematic review of the psychotherapeutic benefits of CFT, Leaviss and Uttley (2015) found CFT to be potentially more effective than Treatment As Usual (TAU) for psychological disorders, including psychosis. Findings

showed particular effectiveness for people with high self-criticism. Beaumont and Hollins Martin (2015) drew similar conclusions in their narrative review, adding that future research should adhere to more rigorous protocols in terms of outcome measurement and intervention. Both of the previous reviews argue there is not currently enough high quality evidence to suggest that CFT is more effective than other evidence-based models, such as CBT for psychological difficulties. Whilst previous reviews have investigated the acceptability and effectiveness of CFT for psychosis, only three of the reviewed papers investigated psychosis (Mayhew & Gilbert, 2008; Laithewaite et al., 2009; Braehler et al., 2013) all presenting evidence for Gilbert's (2009) model of CFT.

The present systematic review aims to summarise all available literature reporting compassion focused approaches to working with people experiencing psychosis utilising narrative synthesis. The review includes cross sectional, case series, qualitative, pre-post intervention studies and randomised controlled trials in an effort to answer the following questions:

1. Is there evidence that compassion is associated with levels of distress in relation to psychosis?

2. Are compassion focused approaches feasible for working with people experiencing psychosis?

3. Are compassion focused approaches acceptable and safe when working with people experiencing psychosis?

4. Are compassion focused approaches effective in reducing distress associated with psychosis in intervention studies?

5. What are the mechanisms by which compassion focused approaches have their effect?

Method

As a guide to reporting the present review the Preferred Method for Reporting Systematic Reviews and Meta Analyses (PRISMA; Moher, Liberati, Tetzlaff & Altman, 2009) statement and checklist were followed.

Search Strategy

Studies published from earliest available records to October 2015 were identified by searching the terms (psychosis or schiz*) AND (compass*) across four databases: PUBMED, MEDLINE, CINAHL Plus and PsychINFO. Titles and abstracts were initially screened; the remaining full texts were then read for selection. Relevant journals and reference lists in key papers, book chapters, dissertations and reviews were hand searched to ensure no studies were missed from the database search. Authors of selected papers were then contacted to investigate whether further unpublished or published papers were available. A database of published and unpublished literature was assembled from systematic searches of electronic sources and hand searching. The database was held in the Endnote X4 software package. Figure 1 presents a PRISMA flowchart of the search and selection process.

Inclusion and Exclusion Criteria

Empirical studies of any quantitative or qualitative design were included providing they i) were available in English, ii) included a measure of compassion or used a compassion-focused intervention, iii) included a measure of psychosis, iv) in the case of qualitative studies, included compassion and psychosis within the interview schedule. Inclusion criteria for participants were i) aged over 18 years old, ii) had experience of psychosis, psychotic-like experiences or high risk of psychosis. Exclusion criteria were i) organic psychosis, for example dementia or brain injury.
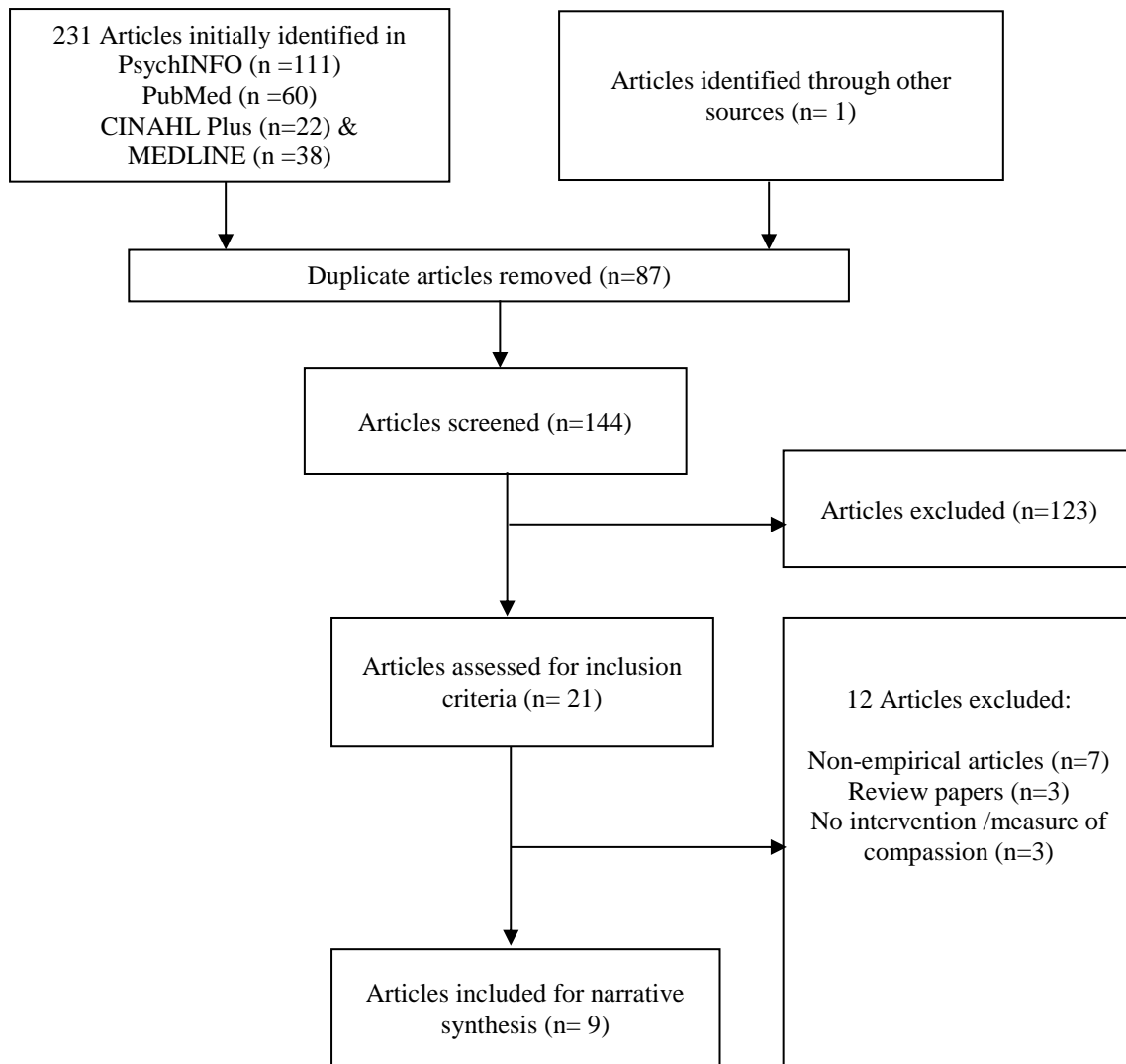
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│ 231 Articles initially      │        │                             │
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│ PsychINFO (n =111)          │        │ other sources (n= 1)        │
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Figure 1. PRISMA diagram showing study selection process.

Definitions and Terminology

As a range of models and approaches fostering compassion exist, compassion-focused approaches are defined broadly in the current review as any study investigating the construct of compassion as a therapeutic mechanism, either through measurement of compassion or increasing self-compassion through intervention.

Psychosis is defined as experience of one or more psychotic phenomena including: hearing voices or other unusual perceptions, unusual beliefs, paranoia, 'negative symptoms' such as flattened affect and lethargy or cognitive disorganisation. It is acknowledged that there is tension in the literature around whether psychosis experiences should be referred to as symptoms, given the

association with biological illness which has received a great deal of criticism (Read, 2005). As much of the psychosis literature refers to experiences such as hearing voices or having unusual beliefs as symptoms, this terminology will be adopted for simplicity.

Finally, 'distress' is defined as any problematic emotional response associated with psychosis such as low mood, worry, and shame.

Data Extraction

Extraction of data was undertaken by the first author (JD) as there was no opportunity for separate independent data extraction to take place. The design of the data extraction table was discussed and confirmed with the second author (CE).

Quality Assessment

Quality of the nine studies included was assessed by two authors (JD & JM) using the Quality Assessment Tool (QATSDD; Sirreyeh, Lawton, Gardner & Armitage, 2012). The QATSDD was designed to assess the quality of diverse range of study designs including quantitative and qualitative, providing a comparable sum score and percentage based on ratings of 0-3 across the 16 factors. Agreement between the reviewers was excellent with a kappa score of .96.

Data Synthesis

As the present review includes a range of study designs, the extracted data were analysed using narrative synthesis following Popay et al.'s (2006) protocol for conducting a narrative synthesis in systematic reviews.

Results

Study Characteristics

Study characteristics and quality assessment scores are displayed in Table 1. Papers utilising a range of designs were incorporated, including cross-sectional (*k*=2), uncontrolled pre-post intervention (*k*=2), case series (*k*=2), controlled intervention (*k*=2) and one qualitative study using interpretative phenomenological analysis (IPA). Most of the studies were undertaken in the UK (*k*=5), the remainder took place in other Western societies (United States, Germany & Canada).

Intervention Characteristics

Three variations of compassion focused intervention were reported across the six intervention studies reviewed. Four studies adapted or used elements of Gilbert's (2009) CFT model in group (Laithewaite, et al., 2009; Braehler, et al. 2013) or one to one modalities (Mayhew & Gilbert, 2008; Lincoln et al., 2013) including compassionate mind training, compassionate imagery, mindfulness and psychoeducation. The remaining two studies used LKM (Johnson et al., 2009) and 'Compassion, Acceptance and Mindfulness' (CAM; Khoury et al., 2015), a novel therapy group including strategies aimed at building compassion for self and others.

Table 1. Study characteristics, quality assessment and data extraction.

Study	Design & Analysis	Population	Recruitment	Measures	Intervention	Key Findings	QATSDD Score
Eicher et al. (2012)	Cross-sectional study reporting correlations between self-compassion, symptoms and insight	Convenience sample of 88 adults diagnosed with schizophrenia or schizoaffective disorder using the SCID	CMHT and Veterans Centre	PANSS; SUMD; BCIS; SeCS; MCSDS	N/A	• High self-compassion significantly associated with lower scores on PANSS positive symptoms ($r = .33$), excitement ($r = -.26$) and emotional distress ($r = -.48$) subscales. • High self-compassion also significantly associated with higher SUMD insight ($r = .28$) and higher MCDS social desirability ($r = .59$). • No relationship found between self-compassion and PANSS negative symptoms subscale.	27 (64%)
Gumley et al. (2014)	Cross-sectional study reporting correlations between narrative compassion, self-compassion and symptoms	Convenience sample of 29 adults diagnosed with a psychotic disorder	CMHT and Forensic Mental Health Services	NCS; PANSS; SeCS	N/A	• Higher narrative compassion was significantly associated with lower scores on PANSS negative symptoms ($r = -.41$), cognitive disorganisation ($r = .42$) and excitement ($r = -.52$) subscales. • No significant correlations between NCS and SeCS. • Higher self-compassion was significantly associated with lower PANSS positive symptoms ($r = -.47$), cognitive disorganisation ($r = -.49$) and emotional distress ($r = -.51$) subscales. • The relationship between narrative compassion and cognitive disorganisation was significantly mediated by the SeCS self-coldness subscale ($p=.009$).	30 (71%)
Waite et al. (2015)	Qualitative using interpretive phenomenological analysis	10 adults self-reporting experience of positive symptoms of psychosis within past 3 years	CMHT	Semi-structured interview schedule	N/A	• Found five subordinate themes: 'the psychological burden of psychosis', 'the "trap" of self-criticism', 'acceptance of psychosis and of the self', 'empowerment and action for change' and 'developing hopeful plans for the future'. • Findings highlighted the complex and idiosyncratic process of recovery in psychosis.	29 (69%)
Johnson et al. (2009)	Case series reporting the outcome of LKM for negative symptoms of psychosis.	Sample of 3 adults diagnosed with schizophrenia	Not available	Not available	Six weekly sessions of LKM with qualified family therapist.	• Anecdotally, case one reported improvements in ability to generate positive emotions, motivation to pursue goals and develop meaningful relationships. • Case two reported increased ability to relax through mindfulness. The state of relaxation improved ability to problem solve and reduce racing thoughts. LKM also helped case two enjoy meaningful activity through being in the present moment. • Case three reported no impact on mood, little effect on negative symptoms. He reported some benefit in coping with his voices,	12 (29%)

reducing distress.

Mayhew & Gilbert (2008)	Case series reporting the outcome of CMT for psychosis	3 adults diagnosed with diagnosis of schizophrenia experiencing hostile auditory hallucinations	CMHT	BAVQ; Forms of Self-Criticism/Self-Attacking & Self-Reassuring Scale; Functions of Self-Criticism/Self-Attacking Scale; SCL-90; VRS; SeCS	12 one hour sessions of CMT conducted by qualified clinical psychologist.	• All participants BAVQ scores were reduced, voices became less malevolent and persecuting. • Two out of three participants heard more reassuring voices following CMT. • All participants had a reduced SCL-90 positive symptom scores and reduction of inadequate self scores on the forms of self-criticism/self-attacking scale. • No change in SeCS scores, but all participants scored highly at start of therapy.	29 (69%)
Laithwaite et al. (2009)	Pre-post uncontrolled evaluation of a compassion-focused group intervention	19 adults diagnosed with schizophrenia-spectrum disorders	Inpatient unit	SCS; OAS; SeCS; BDI; RSE; SIP-AD	20 sessions of compassionate mind informed recovery after psychosis group therapy with a qualified clinical psychologists	• Significant post treatment improvements on the SCS ($p<.05$, $r=.3$), BDI ($p<.05$, $r=.38$), OAS ($p<.05$, $r=.15$), RSE ($p=.006$, $r=.14$) and PANSS general psychopathology subscale ($p<.05$, $r=.38$). • No significant changes found for PANSS positive or negative subscales. • No significant changes found on the SeCS though participants scored a median comparable to norms found in student populations.	26 (62%)
Khoury et al. (2015)	Pre-post uncontrolled evaluation of compassion, acceptance and mindfulness intervention	27 adults diagnosed with first episode psychosis	Outpatient clinic	SFS; CERQ; PDMMS; BPRS; FMI-short version; BCIS	8 sessions of compassion, acceptance and mindfulness emotion regulation intervention with two trained therapists	• Intervention showed significant improvements in negative emotion regulation ($p=.007$, $d=1.00$) at 3 month follow up. • Trends were also found for improvement on the BPRS positive symptom subscale ($p=.08$, $d=.036$) at post-treatment and depression-anxiety subscale ($p=.08$, $d=.67$) at 3 month follow up. • Eight participants showed improvement in mindfulness, though overall the result was not significant ($p=0.18$, $d=0.4$) • Qualitatively, mindfulness was the most retained component of therapy ($n=8$) over compassion and acceptance.	28 (67%)

| Lincoln et al. (2013) | Randomized pre-post group comparison of compassion-focused intervention versus control condition | 71 students with subclinical symptoms of psychosis | Student sample | CAPE; PC; ADS; RSE | Compassion-focused imagery intervention following negative mood induction | • All negative emotions were significantly increased following emotion induction (p<.006), happiness significantly decreased (*p*<.001).
• Paranoia significantly decreased following compassion-focused imagery (*p*=.17, *d*=.59).
• Negative emotion significantly mediated the relationship between compassion focused imagery and paranoia (*p*=.019).
• No significant effect of self-esteem in predicting paranoia.
• Participants with high psychosis proneness responded with significantly higher reduction in state paranoia (*p*=.003, *r*=1.0). | 26 (62%) |
| Braehler et al. (2013) | Feasibility RCT comparing Group CFT with TAU | 40 adults diagnosed with a schizophrenia-spectrum disorder | CMHT and clinical psychology service | NRSS; CGI-I; BDI; PANAS; FORSE; PBIQ-R | 16 two hour sessions of CFT for psychosis delivered by five qualified clinical psychologists | • Participants in CFT group had significant increase in compassion compared to TAU (*p*=.015, *r*= -.42), reduction in avoidance (*p*=.10, *r*=.41) and increase in compassion (*p*=.02, *r*=.59).
• Increased compassion was significantly associated with reductions in BDI depression (*r* = -.56, *p*=.001), PBIQ entrapment (*r*=-.56, *p*=.031), PBIQ shame (*r*=-.57, *p*=.027), PBIQ social marginalisation (*r*=.74, *p*=.002), FORSE intrusiveness (*r*=-.58, *p*=.022) and FORSE fear of relapse (*r*=-.52, *p*=.045).
• CFT group was associated with significant reductions in PBIQ social marginalisation (*r*= -.74, *p*=.04) and BDI scores (*r*= -.78, *p*=.03). | 32 (76%) |

Note: CMHT = community mental health team; EIT = early intervention team; PICU = psychiatric intensive care unit; TAU = treatment as usual; CMT = compassionate mind training; CFT = compassion focused therapy; LKM = loving kindness meditation; SCID = structured clinical interview for DSM disorders; PANSS = positive and negative syndrome scale; SUMD = scale to assess unawareness of illness; BCIS = beck cognitive insight scale; SeCS = self compassion scale; MCSDS = marlow-crowne social desirability scale; NCS = narrative compassion scale; SCS = social comparison scale; OAS = other as shamer scale; RSE = rosenberg self esteem questionnaire; QPR = process of recovery questionnaire; CDS = calgary depression scale; BAVQ = beliefs about voices questionnaire; SCL-90 = symptom checklist-90; VRS = voice rank scale; BDI = beck depression inventory; RSE = rosenberg self esteem measure; SIP-AD = self-image profile for adults; SFS = social functioning scale; CERQ = cognitive emotion regulation questionnaire; PDMMS = psychological distress manifestation measure; BPRS = brief psychiatric rating scale; FMI = freiberg mindfulness inventory; CAPE = community assessment of psychic experiences; PC = the paranoia checklist; ADS = the allgemeine depression scale; NRSS = narrative recovery scale; CGI-I = clinical global impression-improvement scale; PANAS = positive and negative affect scale; FORSE = fear of recurrence scale; PBIQ-R = personal beliefs about illness questionnaire.

Cross-Sectional Study Findings

The cross-sectional studies reported here investigated correlations between self-compassion and symptoms of psychosis. Both studies (Eicher, Davis and Lysaker, 2013; Gumley & MacBeth, 2014) found participants with high self-compassion (as measured by the Self Compassion Scale [SeCS]; Neff, 2003b) were associated with significantly lower scores on the Positive and Negative Syndrome Scale (PANSS; Kay, Flszbein & Opfer, 1987) across positive symptoms and emotional distress subscales. Moreover, both studies found the excitement PANSS subscale to be significantly correlated with higher SeCS total (Eicher et al., 2013) and higher narrative self-compassion measured by an interview-based Narrative Compassion Scale (NCS; Gumley & MacBeth, 2014). Findings suggest that self-compassion is associated with reduced distress overall as well as less frequency or severity of positive symptoms such as hallucinations or delusions. Reduced mania-like symptoms may be related to the hypothesised arousal-reducing effects of the soothing system generated by self-compassion; thus fitting the theoretical model.

Neither study found associations between SeCS scores and the PANSS negative symptoms subscale. However, Gumley and MacBeth (2014) found higher narrative self-compassion to be associated with lower negative symptoms. Furthermore, Gumley and MacBeth (2014) found higher self-compassion on both the SeCS and NCS to be associated with decreased cognitive disorganisation. Interestingly, there was no significant correlation between the SeCS and NCS; this may indicate low power or discrepancies in defining self-compassion or differences between self-report and interview measures.

Eicher, Davis and Lysaker (2013) also investigated "awareness of illness"; greater insight into "illness" was associated with lower self-compassion. On further investigation it was found that those with greater insight scored highly on the self-judgement, over-identification and isolation SeCS subscales. Though there is no clear explanation for this finding. One hypothesis may be that those who are more focused on their psychosis experiences judge themselves negatively, therefore may be less able to take a compassionate stance towards themselves. Another explanation may be that 'insight into illness' means acceptance of the label of schizophrenia, which has been shown to be associated with lower self-esteem and hopelessness (Bassman, 2000).

Overall, the cross-sectional findings demonstrate some preliminary support for an association between self-compassion and lower rates of positive symptoms, excitement and emotional distress alongside mixed findings for lower rates of negative symptoms and cognitive disorganisation. However, both studies had small samples and were cross-sectional; therefore causation and generalisation cannot be inferred. Quality assessment found both studies to be of an above average quality, though lacked evidence of sample size consideration and user involvement in development. The findings warrant further investigation into the relationship between insight and self-compassion, as well as discrepancies between self-report and interview measures on the overall construct and understanding of self-compassion.

Qualitative Findings

Waite, Knight and Lee (2015) conducted the only available qualitative research into the mechanisms of self-compassion in psychosis. The study investigated experiences of recovery for ten people with psychosis. The authors' analysed data using IPA, indicating self-criticism, negative self-to-self relating and external shame may act as maintaining factors for distressing psychosis. They also found compassionate self-acceptance and empowerment as maintenance factors for recovery and growth. These findings tap into the core tenets of compassion focused approaches, in that activation of threat emotions may be due to internal threat processes such as self-criticism, self-stigma and internal shame. The authors summarised the five overarching themes within the study as: the psychological burden of psychosis; the 'trap' of self-criticism; acceptance of psychosis and of the self; empowerment and action for change and developing hopeful plans for the future.

Participants associated distress with blaming themselves for and being ashamed of the label of psychosis. By accepting their experiences and being kind to themselves they felt empowered to move beyond the label. This seems to infer that individualising and engaging with psychosis related difficulties such as hostile voices or intrusive thoughts involves paying direct attention to threat-based cognitions and affect associated with them, thus perpetuating distress. Instead, focusing on a position of self-compassion and self-acceptance and acceptance of 'symptoms' enables people with psychosis to learn to better cope with their experiences. The study also reported insight into the concept of post-traumatic growth, in that participants were able to find opportunities for hope, greater understanding

of themselves and connection with people with similar experiences, despite the ongoing distress they experienced.

As with the cross-sectional findings, participants showed a mixed understanding of the concept of compassion, with only one participant using the term and others referring to compassion as 'kindness', 'contentment' and 'esteem'. The heterogeneity of the language used highlights the complexity of the concept, or perhaps a lack of understanding within this sample of the psychosis population. Though the paper was of a high quality, utilising the Yardley (2008) criteria and independent IPA researchers in the analysis, the sample used were not homogenous and so cultural differences may have introduced variance in responses and meanings.

Case Series Findings

Johnson, Penn, Frederickson and Meyer (2009) present the only study investigating LKM in this review. Their intervention aimed to treat 'negative symptoms' such as anhedonia and avolition by increasing positive emotions through development of compassion for self and others. It is thought that the mechanism of change in LKM is not the increase in positive emotions, but the resulting improvement in an individual's ability to engage in meaningful activity thus increasing life satisfaction. Due to the methodological shortcomings of the study, findings should be treated with caution. No validated outcome measures or qualitative analysis were undertaken, all findings are anecdotal observations and comments by the researchers and the participants, however two of the three cases indicated improvements in their experience of psychosis following six one hour sessions. First, one of the participants described being more able to generate positive emotions; which resulted in increased motivation and ability to develop meaningful relationships. Second, LKM was found to improve 'state of relaxation' which consequentially increased the person's ability to problem solve and slow down thoughts. Furthermore, relaxation led the person to report increased meaningful activity, seemingly due to being less distracted by worry and racing thoughts. The final case reported limited impact on their 'negative symptom' related difficulties, though claimed to be able to use the skills learned to better cope with the distress of their voices.

The second case series (Mayhew & Gilbert, 2008) employed a CMT intervention for three people with distressing voices. Participants engaged in 12 sessions of therapy involving psychoeducation and

socialisation to the model, progressive muscles relaxation and training in ability to generate feelings of warmth and acceptance to self, others and voices through compassionate attention and imagery. All participants showed reduced 'positive symptom' scores and reduced malevolent and persecutory beliefs about their voices. In one case it was reported that their voice changed from malevolent to reassuring. All three participants demonstrated a reduction in beliefs of self-inadequacy. None of the participants showed reduced SeCS scores, though the authors note all had relatively high scores to begin with. Qualitative comments indicated two cases having difficulty in imagining a compassionate human, even finding the idea of compassion to be aversive and frightening. Furthermore, all participants reported not being aware of what self-compassion was or the extent to which they were self-compassionate until it was brought to their attention in therapy.

With such small samples, it is not possible to generalise the findings of case series. This is especially relevant in Mayhew and Gilbert's (2008) study where all three participants scored highly on the SeCS. Neither study considered the influence of common factors of therapy in their analysis; it is possible that the intervention itself was not causal in the improvements reported. Both studies represent very early research into compassion focused interventions and though findings are encouraging with the majority of cases experiencing positive change, it would be inadvisable to infer any more than a tentative description from the data.

Uncontrolled Study Findings

Laithwaite et al. (2009) conducted a pilot study trialling a CMT based 'recovery after psychosis' group for 19 forensic inpatients experiencing psychosis. The study represents the first trial of a compassion-focused approach to psychosis. The ten-week programme incorporated exercises in improving compassionate relating to self and others through psychoeducation, increasing self-awareness using diaries and compassionate letter writing. Findings indicated significant improvements in depression ($r=.38$, $p<.05$), external shame ($r=.38$, $p<.05$), self-esteem ($r=.14$, $p=.006$), social comparison ($r=.3$, $p<.05$) and PANSS general psychopathology subscale scores ($r=.38$, $p<.05$). No changes were found for PANSS positive or negative subscales, indicating the mechanism of change was not reduction of symptoms. Furthermore, no significant changes were found in SeCS scores, therefore not supporting self-compassion as a mechanism of change. It was

reported that participants had great difficulty in generating compassionate imagery and experiencing feelings of compassion. The authors suggest an 'absence of an internal working model of compassion'. Moreover, anecdotally participants reported feeling unable to forgive themselves for the crimes they had committed as it might imply a lack of remorse towards their victims; contraindicating a vital component of compassionate being, self-kindness. It seems plausible that the normalising and validating aspects of the therapy group contributed towards reducing feelings of external shame and inferiority in comparison to others. Improvements in self-esteem may also have been associated with reduced depression. Findings should be interpreted with caution as a small sample were used, some measures had not been validated with the population and results may have been biased due to researchers both delivering the group and completing the assessments.

Khoury, Lecomte, Comtois and Nicole (2015) piloted a novel third-wave intervention, CAM. Twenty-seven participants with first-episode psychosis engaged in eight weeks of treatment focused on improving emotion regulation through development of compassion, acceptance and mindfulness skills. Improvement in negative emotion regulation measured by the Cognitive Emotion Regulation Questionnaire represented the only significant finding in the study (p=.007), with a large effect size (d=1.0). The findings support the theoretical model in that reducing problematic cognitive processes such as rumination can lead to improved regulation of negative affect. However, it is not possible to assume the effects were related to specific components of the intervention. No significant improvements were found for mindfulness and the study did not include a measure of self-compassion. There was no evidence that compassion had any influence on participants' outcome. Also, participants qualitatively indicated that mindfulness was the primary component retained from therapy. The quality of the paper was limited as the authors did not report attrition rates and the sample size was small, therefore it would be inadvisable to generalise these findings.

Overall, these uncontrolled studies showed that interventions involving compassion related concepts and techniques were acceptable and feasible, with no adverse effects noted. The positive effects of treatment in both studies could likely be related to common factors as there were no control group comparisons. Furthermore, both interventions were delivered in group format, meaning variables such as social interaction, normalisation through shared understanding and the development

of supportive relationships could have been major influences, but were not recorded. However, despite their shortcomings these pilot studies show preliminary evidence which in part support corresponding theory and warrant further investigation in higher quality randomised controlled trials.

Controlled Study Findings

Braehler et al. (2013) present the only currently available controlled trial using a compassion focused approach to psychosis with a clinical population. Forty participants were randomised to group CFT or TAU. The CFT arm involved 16 sessions divided into three stages; psychoeducation and socialisation to the model, developing compassion focused skills such as mindfulness, imagery and attention and finally expressive writing to reflect on these skills and apply them to their recovery. Compassion and avoidance were measured by coding the Narrative Recovery Style Scale (Gumley, Braehler, Laithewaite, MacBeth and Gilbert, 2010b), a semi-structured interview exploring experience of psychosis and recovery. Group CFT was found to significantly increase compassion in narratives when compared to TAU (r=-.42, p=.015), reaching the level of 'emergent compassion' against the coding system developed by the authors. Overall the CFT group was associated with significant reductions in perceived social marginalisation (r=-.74, p=.04) and depression (r=-.78, p=.03). On exploration of potential change mechanisms, compassion was correlated with measures of fears of relapse, beliefs about illness and positive and negative affect. Results showed significant associations between compassion and depression (r=.42, p=.001), perceived entrapment (r=.56, p=.031), shame (r=.57, p=.027), social marginalisation (r=.74, p=.002) as well as in appraisal of intrusions as threatening (r=.58, p=.022) and fear of relapse (r=.52, p=.045). Finally, post intervention, group CFT results showed a large effect size in increased compassion (r=.59, p=.02) as well as a moderate effect size in reduced avoidance though this did not meet statistical significance (r=.41, p=.10). Caution should be taken interpreting data as there were considerable variations in TAU in both groups, plus the TAU group had significantly higher levels of depression at baseline. The paper was of a high quality but reliability of the findings may have been impacted by relatively low sample size and lack of formal checks in blinding assessors to treatment condition and therapist competence.

Given that studies show considerable levels of psychosis experiences in non-clinical populations (Verdoux & van Os, 2002), it is appropriate to review studies involving people with high levels of psychosis-proneness. Lincoln, Hohenhaus and Hartmann (2013) conducted a controlled experiment investigating the impact of compassion focused imagery on reducing paranoid thoughts in a student sample of 71. Psychosis-proneness was measured using the Community Assessment of Psychic Experiences (CAPE; Stefanis, Hanssen, Smirnis, Avramopoulos, Evdokimidis & Stefanis, 2002). Participants were randomised to a compassion focused intervention or control groups and underwent negative mood induction. Those in the intervention group then engaged in guided compassionate imagery with a trained experimenter, the control group engaged in 'neutral imagery'. Findings showed significant decreases in paranoia in the intervention group ($p=.017$), with a moderate effect size ($d=.59$). On further exploration of the data, it was found that severity of symptoms at baseline was linked to greater impact of intervention. This was evidenced by negative emotion significantly mediating the relationship between intervention and paranoia ($z=-2.33$; $p=.019$) and high CAPE scorers showing significantly stronger reductions in state paranoia ($z=1.0$, $p=.003$) compared to low and moderate CAPE scorers. No effects of self-esteem were found in predicting paranoia, though the authors posit that this may be due to self-compassion and self-esteem being separate constructs with different underlying processes. Findings are limited as the artificial experimental conditions present a lack of ecological validity. The study only used a single technique from the CFT model, which makes comparison to full therapy programmes inappropriate. Furthermore, using a student sample means generalizability to a clinical population is limited.

Discussion

The present review aimed to answer the following five questions: 1) is there evidence that increased compassion is associated with reduced levels of distress in relation to psychosis? 2) Are compassion focused approaches feasible for working with people experiencing psychosis? 3) Are compassion focused approaches acceptable and safe when working with people experiencing psychosis? 4) Are the compassion focused approaches effective in reducing distress associated with psychosis in

intervention studies?, and 5) If found to be effective, what are the mechanisms by which compassion

focused approaches have their effect?

Association between Compassion & Distress

      In response to question one, the studies reviewed here indicate higher levels of compassion

are related to a reduction in emotional distress (Eicher et al., 2013; Gumley & Macbeth, 2014). A

relationship between high self-compassion and lower severity of 'positive symptoms' was also noted,

though it is not possible to explain which specific aspects of 'positive symptoms' were most

prominent. Conversely, Laithewaite et al. (2009) found no correlation between self-compassion and

'positive symptoms' though did find reduced distress-related psychopathology to be associated with

increased self-compassion. This finding was replicated by Braehler et al. (2013). Though the exact

relationship between self-compassion and distress in psychosis is not clear and direction of causation

cannot be inferred, the findings add support to past reviews reporting associations between self-

compassion and distress-related psychopathology (Macbeth & Gumley, 2012; Leaviss & Uttley,

2015).

Feasibility

      Given that the majority of participants in the reviewed studies engaged in the compassion-

focused interventions under investigation without many reported difficulties, it seemed that overall

they are feasible for working with people with psychosis (review question 2). Participant comments

highlight this engagement, suggesting compassion as "a helpful way to engage fears and voices"

(Mayhew & Gilbert, 2008, p.133). One participant in Waite et al. (2015) suggested "If you are feeling

compassion for others, then you feel it yourself aswell naturally and you almost just, you know, just

become compassionate in total" (p.10). However, as a caveat many of the reviewed studies found

participants had difficulty evoking compassionate images (Mayhew & Gilbert, 2008; Laithwaite et al.,

2009) or defining what compassion is and what it means to them (Gumley & Macbeth, 2014; Waite et

al., 2015). Given people with psychosis have often experienced trauma or poor attachment

relationships (Berry et al., 2008; Varese et al., 2012), difficulties in experiencing or recognising

compassion seem understandable. These findings indicate that for compassion focused approaches to

be truly feasible, assessment should focus on suitability, for example considering attachment

experience. Where indicated, adequate psychoeducation before intervention may help to support understanding of compassion.

Acceptability and Safeness

In addition to being generally feasible, there is evidence for compassion focused approaches being acceptable and safe (question three). No significant distress from the interventions was reported from the reviewed trials (Mayhew & Gilbert, 2008; Laithewaite et al., 2009; Braehler et al., 2013). However, it should be noted that one participant experienced some distress from an imagery exercise (Mayhew & Gilbert, 2008), though on six-month follow-up had managed to overcome this. Furthermore, it is important to consider that the absence of reports of adverse effects does not guarantee that no participants had experienced, none of the studies included a measure or tool for identifying adverse events. Nevertheless, overall the majority of participants benefited from and engaged well in intervention and studies reported low attrition rates and indications of satisfaction, providing further evidence of acceptability (Mayhew & Gilbert, 2008; Braehler et al., 2013).

Effectiveness

From the available evidence it is not possible to confirm the effectiveness of compassion-focused interventions in reducing distress from psychosis (question four) for a range of reasons. First, of all studies investigating interventions only two were controlled, making it difficult to conclude whether improvements were influenced by common therapy factors. Second, there was inconsistency in the focus of outcome; some did not report any impact on distress-related measures. Third, only one trial investigated a full CFT programme with a clinical population. However, some results showed significant reductions in depression (Laithwaite et al., 2009; Braehler et al., 2013) and improvements in negative emotion regulation (Khoury et al., 2015). Furthermore, in a student sample, compassion-focused intervention significantly reduced paranoia (Lincoln et al., 2013). It will be essential for more robust evidence from adequately powered RCTs focusing on distress-related measures to confidently comment on effectiveness.

Mechanisms of Change

At this stage it would be inadvisable to go any further than speculate on the mechanisms of change involved in the improvements reported, given the absence of robust effectiveness data and

lack of control groups. For example, two studies found improvements in perceived social marginalisation and social comparison (Laithwaite et al., 2009; Braehler et al., 2013) which past literature indicates as problematic for people with psychosis (Birchwood et al., 2006). However, as both were group therapy interventions, it seems possible that a normalising, destigmatising environment with similar others could have been implicated in these results. Qualitative data would have been useful in extracting the useful components of therapy, though the only available paper (Waite et al., 2015) did not investigate the effect of an intervention. Future research would benefit from more robust findings, measuring similar factors consistently and following up with a qualitative interview to provide richer data on the key components of the therapy.

Limitations of Reviewed Papers

The papers included in the present review had a number of shortcomings, though given the infancy of research into compassion focused approaches to psychosis this was somewhat expected. First, many of the papers were early stage investigations and so not highly methodologically robust. Second, there was heterogeneity in measurement and conceptualisation of compassion. Third, there were issues with participant's understanding of compassion. Fourth, there was an inconsistency in how distress was measured in psychosis. Finally, studies investigated a range of constructs within psychosis making it difficult to discuss themes and patterns.

Study Quality

Almost all of the included studies had low sample sizes, though this was acceptable at this stage given that many were feasibility or pilot studies. However, this issue hindered the present review as robust findings were not available. None of the studies reported attempts to calculate power *a priori* or discussed statistical power in results. Furthermore, only one paper (Mayhew & Gilbert, 2008) attempted to include service user/carer involvement in the design of their studies. This could have significantly enhanced the quality of the present studies. For example, as there were reports of participants struggling to understand compassion; a service user or 'expert by experience' perspective can be complimentary, if not superior to professional preconceptions (Pitt, Kilbride, Northard, Welford & Morrison, 2007). Finally, quality assessment indicated a lack of reporting statistical reliability and validity of quantitative measures used.

Measurement & Understanding of Compassion

Though the majority of studies measuring compassion used the SeCS (Neff, 2003), there were novel narrative compassion measures used and some studies did not record compassion at all, despite implementing compassion-focused interventions. There were discrepancies between the SeCS and narrative compassion measure in one study (Gumley & Macbeth, 2014) which could highlight an issue in how compassion is understood, though may simply indicate methodological differences and concordance between self-report and semi-structured interview. Other studies reported participants having a difficulty in developing compassionate images (Mayhew & Gilbert, 2008; Laithwaite et al., 2009) or individuals expressed a variety of different interpretations of compassion (Waite et al., 2015). These challenges seem understandable given the high prevalence of threat and adversity and absence of soothing experiences noted in the psychosis population (Gumley et al., 2010a), that compassion might be a difficult concept to experience and understand. There were also reports of compassion being seen as vulnerability (Laithewaite et al., 2009) which is noted in the literature (Gilbert, 2009). Gilbert and Irons (2005) suggest that understanding and developing compassion is much like skills training. It may be that the studies reviewed did not make sufficient preparations through psychoeducation and CMT (Gilbert & Irons, 2005) for participants to understand and experience the benefit of compassion focused interventions. This would be advisable for future trials to consider when designing therapy protocols.

Oversimplification of Psychosis

Another key issue limiting the present review was the range of methods used to measure psychosis and distress in psychosis. Many studies employed the PANSS (Kay, Flszbein & Opfer, 1987), which is designed to measure the presence of 'symptoms' in psychosis though not distress. This seemed at odds with the overall therapeutic model used to guide the reported interventions (e.g. Gumley et al., 2010a) as the goal of therapy is to reduce distress through emotion regulation rather than to reduce symptoms. Furthermore, the PANSS reports rates of 'positive symptoms' and 'negative symptoms', which do not allow for distinction between the specific experiences being investigated, such as hearing voices or having unusual beliefs. Studies often included a measure of some form of distress, such as depression or reported the 'emotional distress' subscale of the PANSS. However,

again there were difficulties in drawing conclusions on how these factors were related to the experience of psychosis specifically. Peters (2014) argues this oversimplification of psychosis is a common issue in psychological research and is a barrier to understanding the specific effects of therapies. Conversely, some studies investigated specific experiences in psychosis, such as paranoia (Lincoln et al., 2013) or voices (Mayhew & Gilbert, 2008) but ignored the potential influence of other psychosis-related experiences such as distressing beliefs.

Overall these issues highlight the broad spectrum of experiences and the idiosyncratic nature of psychosis and recovery (Waite et al., 2015). Future research would benefit from using more specific and consistent measures of distress in psychosis, for example accompanying the PANSS with the Psychotic Symptom Rating Scale (PSYRATS; Haddock et al., 2009) and developing a more unified conceptualisation of psychosis generally.

Limitations of Present Review

Alongside the limitations of the papers reviewed, the present review had a number of shortcomings. First, only one of the authors was able to perform the data extraction which could potentially have introduced bias into the results. Second, the quality assessment tool was selected to provide a consistent approach to assessing quality of multiple study designs, however may not provide a robust appraisal of specific design. This may have lead to higher quality scores for certain designs compared to more specific tools. Third, there was not enough consistent quantitative evidence to perform any statistical analysis, again increasing the risk of bias in reporting and analysis. However, the review had some strengths evidenced in the integrity of method following PRISMA guidelines as well as following guidance on reporting narrative synthesis (Popay et al., 2006).

Clinical Implications and Future Research

This review highlights a range of implications and research recommendations. First, though there is evidence to suggest compassion focused approaches are acceptable and safe for working with this population. Future studies should take caution in ensuring that sufficient assessment and preparation, considering suitability and timing is undertaken before conducting imagery exercises to reduce risk of adverse experiences. Second, studies should ensure there is consistency in the definition of compassion and psychosis in order to enhance efforts to better understand the mechanisms of change

and enable comparability across studies. Furthermore, studies should ensure there is a consistent measure of distress either instead of or as well as measures of psychosis symptoms. Third, more qualitative studies and more robust, adequately powered controlled studies are needed to evidence effectiveness and better control for the influence of common factors. Fourth, intervention studies should include a measure or tool to record potential adverse experiences to ensure distress related to the intervention is adequately reported. Finally, it is recommended future studies involve service users/carers in the design and implementation to improve relevance to the population being studied.

Conclusion

Nine studies were included in the present review. In response to the five review questions: 1) the cross-sectional studies reviewed showed measures of compassion to be associated with reduced levels of emotional distress. 2) Overall findings suggested that people experiencing psychosis could apply compassion focused interventions, however many had difficulties in understanding and defining the concept of compassion and feelings of compassion. 3) Intervention studies indicated compassion focused approaches were acceptable and safe evidenced by low attrition and high satisfaction rates, reported improvements and absence of adverse events. 4) It is not possible to draw firm conclusions on effectiveness of compassion focused approaches in reducing distress from psychosis given the paucity of methodologically robust empirical research, including RCTs. 5) Given that effectiveness data was sparse and heterogeneous, mechanisms of change could not be reliably identified at this stage.

The findings reflect the early stage of research into compassion focused approaches to working with psychosis. The reviewed papers have provided some evidence to show that compassion is related to distress reduction and effective in reducing depression, as well as showing compassion focused interventions may be feasible, acceptable and safe. The limitations of the included studies impeded exploration or prevented further interpretation of the mechanisms of change and effectiveness. More research will be needed to answer the questions of the present review with a further degree of certainty, though the outcome indicates further exploration of compassion focused approaches to psychosis is warranted.

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Chapter Two: Empirical Paper

Investigating mindfulness of voices, self-compassion and attachment style in relation to the experience of hearing voices: a mediation study.[1]

Word Count: 6,420

(exc. references)

[1] Article prepared for submission to Journal of Abnormal Psychology for peer review. Please see appendix A for a copy of the journal guidelines for authors.

Abstract

Developing compassion towards oneself has been linked to improvement in many areas of psychological wellbeing, including psychosis. Furthermore, developing a non-judgemental, accepting way of relating to voices is associated with lower levels of distress for people who hear voices. Secure attachment has been linked to the development of these trait factors. This study examined whether these factors mediate the relationship with distress from voices and whether there is a synergistic relationship between self-compassion and mindfulness. One hundred and twenty eight people (73% female; M_{age} = 37.5; 87.5% Caucasian) who currently hear voices completed the Self Compassion Scale, Southampton Mindfulness of Voices Questionnaire, Relationships Questionnaire and Hamilton Programme for Schizophrenia Voices Questionnaire in a cross-sectional online survey. Results showed that mindfulness of voices partially mediated the relationship between self-compassion and severity of voices. Moreover, the relationship between secure and fearful attachment and severity of voices and was fully mediated by mindfulness of voices. Furthermore, self-compassion and mindfulness of voices were significantly positively correlated with each other and negatively correlated with distress and severity of voices. It is concluded that mindful relation to voices and self-compassion are associated with reduced distress and severity of voices, which lend support to these constructs as potentially useful/beneficial therapeutic skills for people experiencing distress by voice hearing.

Keywords: Hearing Voices, Auditory Hallucinations, Psychosis, Compassion, Mindfulness, Attachment, Mediation.

General Scientific Summary: "This study suggests that people who are more mindful and self-compassionate are less distressed by hearing voices, results lend support to the underlying mechanisms of mindfulness or compassion-focused therapies for people distressed by hearing voices."

Introduction

Hearing voices is a relatively common experience (Beavan, Read & Cartwright, 2011) though frequently associated with psychosis (McCarthy, 2012). The psychological impact varies between individuals; for some voices can be positive and comforting, for others, dominant and distressing (McCarthy, 2012). Understanding the factors mediating distress from voices is key to supporting the person. Distress is characterised by threat emotions such as fear, anxiety, shame and anger (Freeman & Garety, 2003), which can in turn increase the intensity and hostility of the voices (Romme, Honig, Noorthorn & Escher, 1992). Research findings exploring distress from voices indicate that influencing factors include negative content (Beavan & Read, 2010), intrusiveness (Sorrell, Hayward & Meddings, 2010), beliefs about voices (Birchwood & Chadwick, 1997) and active resistance or confrontation with voices (Singh, Sharan & Kulhara, 2003; Vaughan & Fowler, 2004). These findings suggest the process by which an individual relates and applies meaning to their voices has a significant role in mediating distress, in line with Romme and Escher's (1989) early theory that acceptance of voices is essential to coping.

Chadwick, Birchwood and Trower (1996) propose that relating and responding mindfully to voices can alleviate distress. Mindfulness of voices involves accepting and "decentring" from the experience, maintaining a non-judgemental stance and allowing it to pass. This is in contrast with reacting to unpleasant voices with confrontation, judgement, rumination or avoidance which appears to be increase distress (Chadwick, Newman-Taylor & Abba, 2005). A mindful approach to voices involves changing the relationship an individual has with their voices, rather than preventing the voices from occurring. Recent developments in mindfulness research (Khoury et al., 2013a; Radford et al., 2014) distinguish between two levels of the construct: 'trait' level or an individual's natural disposition to be mindful, and 'state' level, a person's ability to be mindful following experiential mindfulness meditation practice. It is has been shown that those who regularly practice mindfulness meditation show shifts in state mindfulness post-meditation, and increased levels of 'trait' mindfulness over time which is in turn protective against distress (Khoury et al., 2013a; Kiken, Garland, Bluth, Palsson & Gaylord, 2015). In relation experiencing to distress from hearing voices,

increased trait mindfulness of voices has been found to be negatively correlated with distress (Chadwick et al., 2007; Newman-Taylor et al., 2009; Úbeda-Gómez et al., 2015). In a grounded theory study, participants described being mindful of voices as something that provided freedom from distress (Abba, Chadwick & Stevenson, 2008).

Distress from voices has also been linked to the mechanisms underlying threat regulation. Gilbert (2009) suggests self-compassion plays a key role in activating the 'soothing system', a neural system associated with the regulation of threat emotions (Depue & Morrone-Strupinsky, 2005). Neff (2003) conceptualises self-compassion as the ability to relate to distressing feelings with kindness, common humanity and mindful awareness. Studies into the relationship between self-compassion and distressing voices have found that self-compassion negatively correlated with distress from voices (Mayhew & Gilbert, 2008) and 'positive symptoms' (Eicher et al., 2013). In a single case study, Kennedy and Ellerby (2016) also reported developing self-compassion as key to managing distress from critical voices.

Birchwood et al. (2004) suggest that the way individuals relate interpersonally influences the way they relate to their voices. Interpersonal relating is theorised to stem from attachment experiences with primary caregivers (Bowlby, 1973). Bartholemew and Horowitz (1991) propose a four-category model of attachment. First, secure attachment is ascribed to those with a positive relationship with self and others. Second, fearful-avoidant refers to those who have a negative view of self and fear rejection from others. Third, dismissing-avoidant describes people who are self-reliant and avoid intimacy with others and finally preoccupied individuals are reliant on others to bolster their low self-esteem. Studies have shown insecure attachment styles to be related to increased distress from voices (Berry et al., 2011); fearful attachment has also been associated with severity of voices specifically (Ponizovsky, Vitenberg, Baumgarten-Katz & Grinshpoon, 2013). Secure attachment has also been associated with an increased capacity for mindfulness (Shaver et al., 2007) and self-compassion (Gilbert & Proctor, 2006; Wei, Liao, Ku & Shaffer, 2011). Moreover, secure attachment appears to be highly correlated with self-compassion, though appears to remain a distinct construct. Secure attachment is thought to be formed through experience of compassion from

caregivers, therefore may be causally linked to the development of self-compassion as an internal mechanism (Gillath, Shaver & Mikulincer, 2005).

Self-compassion has been found to be a mediating mechanism in mindfulness studies of well-being (Hollis-Walker & Colosimo, 2011), perceived stress (Shapiro, Astin, Bishop & Cordova, 2005) and depression (Kuyken et al., 2010). In a meta-analysis, Khoury, Lecomte, Gaudiano and Paquin (2013b) also found self-compassion moderated the clinical effect size of mindfulness for psychosis. Moreover, mindfulness was found to mediate positive clinical outcome in interventions for depression (Kuyken et al., 2010). This evidence suggests that individuals who are more self-compassionate and mindful of their voices experience less distress from voices, and that there appears to be a synergistic relationship between these factors in other areas of well-being such as depression. However, no studies to date have investigated self-compassion and mindfulness of voices together in relation to distressing voices. The present study investigates the following hypotheses:

1. Mindfulness and self-compassion will be negatively correlated with distress from voices.

2. Secure attachment will be positively correlated with mindfulness and self-compassion and negatively correlated with distress from voices.

3. Self-compassion will partially mediate the relationship between mindfulness and distress from voices.

4. Secure attachment will partially mediate the relationship between mindfulness and distress from voices.

5. Mindfulness of voices will partially mediate the relationship between self-compassion and distress from voices.

6. Significantly correlated variables will be further explored in additional analysis.

Method

Participants

One hundred and twenty-eight people who hear voices and were aged 18 years and over completed an online survey between June 2015 and March 2016. Data from participants not completing the survey were not included in the analysis, see Figure 1 for full details. Ninety four (73%) of the participants

were female, with a mean age of 37.6 years (ranging from 18 to 74 years). Of the sample 112 (87.5%) described their ethnicity as 'Caucasian', three as 'Latin/Hispanic', one as 'Middle Eastern', one as 'African', one as 'South Asian', one as 'East Asian', four as 'Mixed' and four as 'Other'.

Participants reported their employment status as 'full-time paid employment' in 27 (21%) instances, 'student' in 21 (16.4%) and 'unable to work' in 38 (29.7%). Furthermore, 11 (8.6%) stated they were in 'part-time employment', 11 (8.6%) were 'self-employed', 6 (4.7%) were 'out of work and looking', 4 were 'out of work and not looking', 5 (3.9%) were in 'voluntary work' and 5 (3.9%) were 'retired'. Sixty-four participants earned less than £10,000 (50%), 32 earned £10,000 to £19,999 (25%), 13 earned £20,000 to £29,000, the remaining 17 participants earned over £30,000.

Of the sample a majority of 107 (84%) had a psychiatric diagnosis, of which 56 (52%) had an ICD-10 (World Health Organization, 1992) F20-F29 category diagnosis (schizophrenia, schizotypal and delusional, and other non-mood psychotic disorder). One hundred and sixteen (91%) had accessed mental health services of which 81 (63%) continued to access. In terms of medication use, 73 (57%) had taken psychiatric medication in the past week, 8 (6%) in the past month, 34 (27%) had in the past and 13 (10%) had never used medication. Taken as a whole 81 (63%) were currently taking medication and 47 (37%) were not. Of those taking medication 63 (77%) were taking anti-psychotics either alone or in combination with other medication. See Appendix C for full details on participant diagnosis and medication.

Mindfulness-based therapies had been accessed by 45 (35%) of the sample. Additionally, 51 (40%) had accessed a mindfulness training course; 31 (24%) in a group, 8 (6%) had a taster day, 10 (8%) attended a short course, 12 (9%) had an online course, 6 (5%) used a mobile app and 23 (18%) used a self-help book. When asked about mindfulness practice, 22 (17%) reported daily practice, 18 (14%) weekly, 6 (5%) monthly, 34 (27%) had practised in the past and 48 (38%) had never practised.

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┌─────────────────────┐
│  Initial responses  │
│       N=309         │
└─────────────────────┘
          │           ┌─────────────────────┐
          │           │  Closed survey and  │
          ├──────────▶│   did not return    │
          │           │       N=119         │
          │           │                     │
          │           │  Did not currently  │
          │           │    hear voices      │
          │           │        N=26         │
          ▼           └─────────────────────┘
┌─────────────────────┐
│ Confirmed currently │
│   hearing voices    │
│       N=164         │
└─────────────────────┘
          │           ┌─────────────────────┐
          ├──────────▶│  Incomplete surveys │
          │           │        N=36         │
          │           └─────────────────────┘
          ▼
┌─────────────────────┐
│  Completed surveys  │
│       N=128         │
└─────────────────────┘
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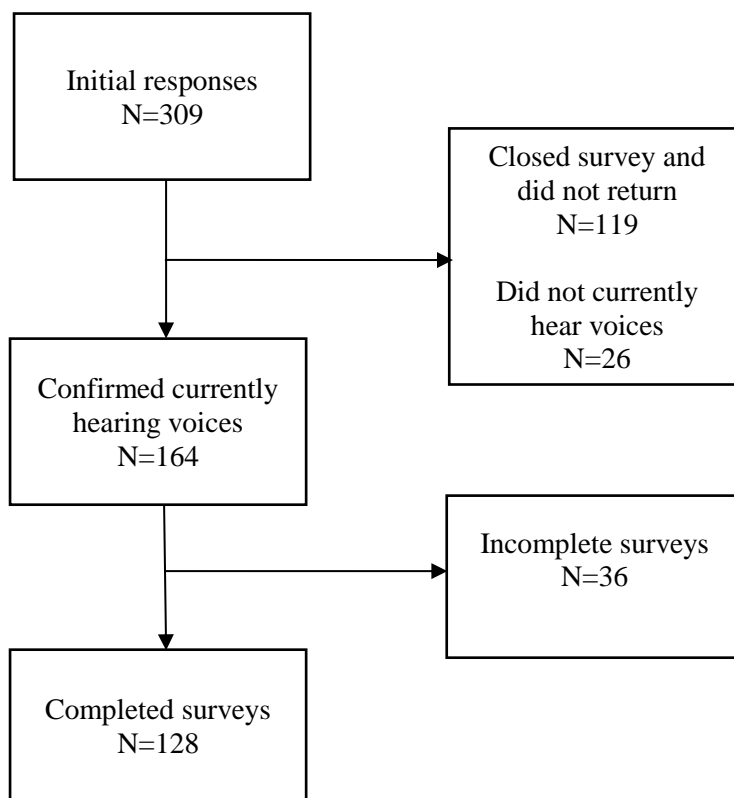
Figure 1. Flow chart of participants study completion.

Measures

Self-Compassion Scale (SCS; Neff, 2003). The SCS is a 26-item questionnaire with a five-point Likert scale, rated almost never (1) to almost always (5) giving a maximum total score of 130. Six constructs of self-compassion are measured: self-kindness, self-judgement, common humanity, mindfulness, isolation and over-identification. Negative constructs are reverse coded, the total score indicates overall level of self-compassion. The scale has been shown to have good test-retest reliability (r=.93) and internal consistency (Cronbach's α=.92; Neff, 2003), also maintained in the present study (Cronbach's α=.94).

Southampton Mindfulness of Voices Questionnaire (SMVQ; Chadwick et al. 2007). The SMVQ is a 16-item questionnaire with a seven-point Likert scale rated from 'disagree totally' (0) to agree totally (6), giving a maximum total score of 96. The SMVQ measures how mindfully an individual responds to their voices across four constructs; (1) clarity of awareness of the present moment versus being unaware and lost to the voice; (2) allowing attention to maintain with unpleasant sensations

versus experiential avoidance; (3) accepting difficult situations and of oneself versus judgement of the situation and self; and (4) letting go versus struggle and rumination. The SMVQ has been found to be a reliable and valid measure (Cronbach's α = 0.84; Chadwick et al. 2007), and yielded high internal consistency in the present study (Cronbach's α=.89).

The Hamilton Program for Schizophrenia Voices Questionnaire (HPSVQ; Van Lieshout & Goldberg, 2007). The HPSVQ is a nine-item questionnaire with a five-point Likert scale rated from 0 to 4, measuring severity of voices. The items consist of frequency, negative content, loudness, distress, impact on self-appraisal, clarity and compliance with commands. The total scale has four optional cut off points, absent-minimal (0-7), mild (8-13), moderate (14-25) and severe voices (<25). The scale has been found to have excellent test-retest reliability (*r*=.84) and internal consistency (Cronbach's α = .94; Kim et al., 2010), replicated with good internal consistency in the present study (Cronbach's α = .88).

The Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991). The RQ is a measure of adult attachment comprising of four statements describing different attachment styles; secure, dismissing, preoccupied and fearful. This is followed by a four-item seven-point Likert scale rated from disagree strongly (1), neutral/mixed (4) to agree strongly (7) measuring how closely the participant identifies with each statement, providing four continuous measures of attachment style. Participants are also asked to select the paragraph which best describes their experience, providing a categorical measure. Internal reliability could not be analysed as each construct contains one item, though past research has found the measure to be reliable and stable over time and when compared to other attachment measures (Scharfe & Bartholomew, 1994).

All measures are available in Appendix D.

Design, Sample size and Ethics

The study was a web-based survey with a cross-sectional design. *Apriori* power analysis using G*Power 3 (Faul, Erdfelder, Buchner & Lang, 2009) indicated a sample of at least 127 participants would be required to reach .80 power, based on 12 predictors, with a medium effect size (f^2=.15) in line with Cohen's (1977) guidelines for behavioural sciences (see Appendix E for full details). Prior to submission for ethical review, the study design and materials were considered with a

hearing voices group and a service user and carer research evaluation group. Changes were made to advertising material and a research blog was created based on recommendations. The study received ethical approval from the University of Liverpool ethics committee (RETH000825, 01/05/15; Appendix F) and followed the British Psychological Society (BPS) code of human research ethics (BPS, 2010) and ethics guidelines for internet-mediated research (BPS, 2013).

Procedure

An online survey was created using Qualtrics (2016) software and distributed online across social media, forums, university announcements and a research blog. The survey was also advertised via the Hearing Voices Network and Intervoice websites and approved non-NHS locations such as meeting houses and charity mental health groups using posters and leaflets. Participants were required to read an information sheet and indicate informed consent before completing the study measures. Participants were then debriefed and offered the opportunity to enter into a prize draw. Signposting information was presented as part of the debriefing sheet. See Appendix F for all documents and advertising material.

Data Analysis Procedure

Though the study was concerned with investigating relationships with distress from voices, no validated self-report measure for distress from voices exists without the need for clinician administration (Thomas, 2015). As the distress item from the HPSVQ was highly correlated with overall severity score and had similar associations with other variables, it was decided it would be more statistically robust to use the HPSVQ total in regression and mediation analysis as analogous to distress.

All analysis was completed using SPSS v23 (IBM, 2015). Data were prepared by removing incomplete datasets, computing reverse-scored measures, subscales and total scores. String variables and groups were coded appropriately for analysis. Demographic data were used to form two groups for analysis: 1) currently taking medication (in the past week or in the past month) or not currently taking medication (in the past or never). 2) Currently practising mindfulness (daily, weekly or monthly) or not currently practising mindfulness (in the past or never).

Normality assumptions were tested using visual assessment of histograms and Q-Q plots, Kolmogorov-Smirnov and Levene's tests. HPSVQ total was significantly not normal. Total scores for HPSVQ, SMVQ and SCS were square-root transformed in order to be used together in parametric analysis (Field, 2009) and met assumptions for parametric testing. All attachment variables and all subscales except SMVQ 'mindful observation' and' letting go' violated normality assumptions. As transformation and standardising z-scores had no impact, non-parametric tests were used for correlational analyses including these measures. When testing for assumptions for all multiple regression models there was no evidence of non-normal residual distribution or homoscedasticity upon visual inspection of plots. Multicollinearity was not detected in correlation matrix or variation inflation factors. Cook's distance and Durbin-Watson tests did not show any outliers or independence errors affecting the models.

The data were explored using correlational analysis, testing hypotheses one and two. Bonferroni correction was applied to adjust for multiple testing. Hierarchical multiple regression was then conducted with variables meeting normality assumptions as an exploratory five-step model entering (1) age and gender; (2) mental health demographics; (3) mindfulness demographics; (4) self-compassion and (5) mindfulness of voices as predictors of severity of voices. Self-compassion and mindfulness of voices subscales were entered into two further regression models using the enter method. Significant predictors were further analysed using independent *t*-tests. Finally, mediation and moderated mediation analyses were undertaken testing hypotheses three, four and five. Mediation followed the Hayes (2012) method using models four and fifteen from the PROCESS macro for SPSS. The Hayes model (2012) uses bootstrapping (1,000 samples) to estimate standard errors and so does not require an assumption of normality. Mediation findings were confirmed using the Sobel test (1982).

Results

Correlational Analysis

In order to explore the strength of relationships between each of the variables, correlational analyses were run between all variables and subscales. Results supported hypotheses one and two with

negative correlations found between severity of voices and mindfulness of voices (r=-.77, p<.001), self-compassion (r=-.51, p<.001), and secure attachment (r=-.21, p=.02), however this correlation was no longer significant when applying bonferroni correction (p<.003). Similar relationships were found between these variables and the distress from voices item of the HPSVQ. Furthermore, secure attachment was positively correlated with mindfulness of voices (r=.30, p=.001) and self-compassion (r=.38, p<.001). In contrast, fearful attachment was correlated with mindfulness of voices (r=-.27, p=.002), self-compassion (r=.-42, p<.001) severity of voices (r=.21, p=.02), however this correlation was no longer significant when applying bonferroni correction (p<.003). No unexpected correlations were noted. Means, standard deviations and correlational results are reported in Table 1.

Table 1. Means, standard deviations and correlational data for all measures and subscales.

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Secure Attachment	1																	
2	Fearful Attachment	-.453*	1																
3	Preoccupied Attachment	-.138	.139	1															
4	Dismissing Attachment	-.084	-.148	-.131	1														
5	Self-Compassion Total	.384*	-.417*	-.255	.134	1													
6	Self-Kindness	.438*	-.275*	-.117	.021	.783*	1												
7	Self-Judgement	-.299*	.334*	.259*	-.114	-.737*	-.564*	1											
8	Common Humanity	.269*	-.316*	-.109	.006	.737*	.583*	-.272*	1										
9	Isolation	-.320*	.369*	.313*	-.113	-.806*	-.459*	-.603*	-.497*	1									
10	Mindfulness	.293*	-.280*	-.132	.106	.854*	.706*	-.500*	.683*	-.580*	1								
11	Over-identification	-.221	.343*	.339*	-264*	-.774*	-.399*	.671*	-.392*	.703*	-.572*	1							
12	Mindfulness of Voices Total	.298*	-.274*	-.058	.090	.575*	.527*	-.451*	.345*	-.357*	.580*	-.352*	1						
13	Mindful Observation	.255	-.200	-.010	.010	.387*	.422*	-.274*	.229*	-.199	.493*	-.216	.878*	1					
14	Letting Go	.275	-.250	-.027	.032	.498*	.494*	-.333*	.393*	-.341*	.561*	-.234	.772*	.668*	1				
15	Absence of Aversion	.238	-.222	-.085	.149	.402*	.342*	-.402*	.213*	-.299*	.401*	-.311*	.829*	.664*	.444*	1			
16	Non-Judgement	.261*	-.244	-.064	.063	.548*	.520*	-.466*	.350*	-.354*	.489*	-.379*	.828*	.602*	.552*	.593*	1		
17	Severity of Voices Total	-.206	.206	.029	-.102	-.512*	-.457	.496*	-.255*	.319*	-.505*	.323*	-.725*	-.643*	-.583*	-.657*	-.578*	1	
18	Distress from Voices Item	-.187	.235	.057	-.184	-.449*	-.400*	.494*	-.145	.321*	-.460*	.342*	-.791*	-.637*	-.537*	-.789*	-.611*	.834*	1
	Mean	3.38	4.87	3.24	4.32	2.59	2.60	3.66	2.70	3.56	3.02	3.58	44.86	12.13	10.03	12.19	10.52	21.63	2.41
	SD	2.05	1.98	1.87	.23	.75	.94	.91	.95	.97	.90	.95	17.91	5.10	4.71	6.07	5.63	8.34	1.42

Note. N=128. *$p<.003$ (alpha adjusted by Bonferroni correction); Italics=Pearson's r, none-italics=Spearman's rho.

Regression Analysis

The overall regression model predicted approximately 58% of variance in severity of voices (R^2=.58, $F(11,127)$ = 13.79, $p<.001$). Age and gender predicted approximately 1% of variance. After controlling for age and gender step two predicted approximately 11% of variance. Only medication significantly predicted severity of voices, with current medication use associated with higher severity of voices. After controlling for mental health variables (currently under mental health services, taking medication, have a diagnosis and years hearing voices), step three controlled for mindfulness variables and predicted approximately 16% of the variance with current practice of mindfulness being significantly associated with lower severity of voices. Step four predicted approximately 36% of the variance with current mindfulness practice and self-compassion predicting lower severity of voices. Finally, step five predicted approximately 58% of the variance with only mindfulness of voices significantly predicting lower severity of voices. Results are presented in Table 2.

Table 2. Hierarchical regression analysis showing demographic variables, self-compassion and mindfulness of voices as predictors of severity of voices.

Variable	Cumulative		Simultaneous	
	R^2	F change	β	p
Step 1	.01	$F(2,127)$=.83		
Gender			-.06	.55
Age			.10	.29
Step 2	.11	$F(6,127)$=2.33*		
Age			-.07	.53
Gender			.172	.06
Diagnosis			.07	.50
Accessing MHS			-.18	.08
Medication			.23	.04*
Years hearing voices			.07	.56

Step 3	.16	$F(9,127)=2.51*$		
Age			-.06	.61
Gender			.14	.12
Current diagnosis			.03	.74
Currently accessing MHS			-.20	.06
Current use of medication			.18	.09
Years hearing voices			.08	.47
Accessed mindfulness therapy			-.15	.13
Accessed mindfulness course			.00	.98
Practising mindfulness			-.27	.01*
Step 4	.35	$F(10,127)=6.07**$		
Age			.87	.39
Gender			2.0	.06
Current diagnosis			.74	.46
Currently accessing MHS			-1.64	.10
Current use of medication			.87	.39
Years hearing voices			.51	.61
Accessed mindfulness therapy			-.15	.15
Accessed mindfulness course			-.20	.84
Practising mindfulness			-2.09	.04*
Self-Compassion			-5.65	.00**
Step 5	.58	$F(11,127)=13.79**$		
Age			-.22	.83
Gender			.42	.60
Current diagnosis			.24	.81
Currently accessing MHS			-.26	.80
Current use of medication			.39	.70

Years hearing voices	1.52	.13
Accessed mindfulness therapy	-.96	.34
Accessed mindfulness course	1.11	.27
Practising mindfulness	-1.79	.08
Self-Compassion	-1.71	.09
Mindfulness of voices	-7.71	.00**

Note: MHS = Mental Health Services; *p<.05; **p<.01.

Exploration of subscales

To explore which aspects of the SCS and SMVQ significantly predicted severity of voices all subscales were entered into two regression models. Subscales from the SCS produced a significant overall model predicting approximately 36% of the variance (R^2 = .36, $F(6, 127)$ = 11.14, $p<.001$) with self-judgement and mindfulness subscales as significant predictors (see Table 3). Subscales from the SMVQ also showed a significant model predicting approximately 53% of the variance (R^2 = .53, $F(4, 127)$ = 34.38, $p<.001$) with letting go and absence of aversion subscales as significant predictors (see Table 4).

Table 3. Regression analysis showing self-compassion subscales as predictors of severity of voices.

Variable	β	p
Self-kindness	-.08	.53
Self-judgement	.36*	.01
Common humanity	.13	.25
Isolation	-.10	.44
Mindfulness	-.47**	.001
Over-identification	-.10	.46

Note: *p<.05; **p<.01.

Table 4. Regression analysis showing mindfulness of voices subscales as predictors of severity of voices.

Variable	β	p
Mindful observation	-.17	.09
Letting go	-.23**	.008
Absence of aversion	-.36**	<.001
Non-judgement	-.10	.24

Note: *p<.05; **p<.01.

Between-group Analysis

Further analysis was conducted exploring the significant predictor variables mindfulness practice and use of medication groups. Independent *t*-tests showed those practising mindfulness had lower severity of voices with a moderate effect size (see Table 5). Those not taking medication had significantly higher mindfulness of voices and self-compassion and lower severity of voices scores, with moderate effect-sizes (see Table 6).

Table 5. Independent t-test results between mindfulness practice groups.

Measure	Standardised mean scores (SD) *Raw mean scores (SD)*		*t*-score	*p*-value	Effect-size (*d*)
	Practising mindfulness (n=46)	Not practising mindfulness (n=82)			
Mindfulness of voices	6.86 (1.38)	6.38 (1.36)	-1.93	.06	.36
	49.00 (18.38)	*42.54 (17.31)*			
Self-compassion	1.64 (.21)	1.57 (.24)	-1.92	.10	.23
	2.72 (.69)	*2.51 (.78)*			
Severity of voices	2.36 (1.01)	1.93 (1.06)	2.27	.03*	.42
	19.33 (8.91)	*22.93 (7.77)*			

Note: *p<.05, **p<.01.

Table 6. Independent t-test results between medication groups.

Measure	Standardised mean scores (SD) *Raw mean scores (SD)*		t-score	p-value	Effect-size (d)
	Taking medication (n=81)	Not taking medication (n=47)			
Mindfulness of voices	6.29 (1.34)	7.01 (1.34)	2.89	.004**	.54
	41.40 (16.87)	*50.83 (18.25)*			
Self-compassion	1.54 (.23)	1.68 (.22)	3.41	.001**	.62
	2.42 (.72)	*2.87 (.73)*			
Severity of voices	2.39 (1.08)	1.89 (.89)	-2.68	.008**	.51
	23.00 (8.61)	*19.28 (7.36)*			

Note: *p<.05, **p<.01.

Mediation Analysis

Hypothesis three was not supported as self-compassion did not significantly mediate the relationship between mindfulness of voices and severity of voices, confirmed using the Sobel test (*Z*=-1.83, *p*=.07). These results maintained when analysing the data split by groups currently practising or not practising mindfulness as well as including mindfulness practice as a moderator variable (see Appendix C). Furthermore, hypothesis four was not found as secure attachment did not have a significant mediating effect on the relationship between self-compassion and severity of voices (*Z*=-.003, *p*=.98) or mindfulness of voices and severity of voices (*Z*=.55, *p*=.58).

Significant mediation models

In Model 1 (see Figure 2) mindfulness of voices partially mediated the relationship between self-compassion and severity of voices, supporting hypothesis five. In an additional exploration of attachment styles, Model 2 (see Figure 3) showed that though secure attachment significantly predicted lower severity of voices, mindfulness of voices and self-compassion fully mediated this relationship. Similarly in Model 3 (see Figure 4) fearful attachment significantly predicted higher severity of voices but mindfulness of voices and self-compassion also fully mediated this relationship. Finally, as use of medication was found to be significantly related to each of the study variables, a moderated mediation analysis was conducted. Model 4 (see Figure 5) investigated direct and indirect

effects of self-compassion on severity of voices mediated by mindfulness of voices at two levels of the moderator (taking medication and not taking medication). The indirect effect remained significant at both levels, mindfulness of voices remained a significant partial mediator. The direct effect was significantly moderated by medication use, with self-compassion no longer significantly associated with severity of voices for those not currently taking medication. Full results are displayed in Table 7.

Table 7. Mediation and moderated mediation analysis results.

	Path a_1 (X→M_1)	Path a_2 (X→M_2)	Path b_1 (M_1→Y)	Path b_2 (M_2→Y)	Path c' (X→Y)	Mediation Path a*b	Sobel test M_1	Sobel test M_2		Indirect effects Effect	K^2	95% CI
Model 1: X (self-compassion)→Y (severity of voices) mediated by M_1 (mindfulness of voices).												
β(S.E)	3.33 (.43)	-	-.48 (.06)	-	-2.28 (.34)	-.67 (.33)	Z=-5.74	-	M_1	-1.54 (.24)	.36	-2.01 to -1.09
p-values	<.001**	-	<.001**	-	<.001**	.04*	<.001**	-				
Model 2: X (secure attachment)→Y (severity of voices) mediated by M_1 (mindfulness of voices) & M_2 (self-compassion).												
β(S.E)	.21 (.06)	.04 (.01)	-.49 (.06)	-.77 (.34)	-.10 (.05)	.04 (.34)	Z=-3.24	Z=-2.01	M_1	-1.4 (.36)	-.10	-.21 to -.07
p-values	<.001**	<.001**	<.001**	.02*	.03*	.25	<.001**	.045*	M_2	-.03(.18)	.02	-.08 to -.004
Model 3: X (fearful attachment)→Y (severity of voices) mediated by M_1 (mindfulness of voices) & M_2 (self-compassion).												
β(S.E)	-.18 (.06)	-.05 (.01)	.49 (.06)	-.75 (.34)	.10 (.05)	-.03 (.03)	Z=-2.86	Z=1.94	M_1	.09 (.31)	.09	.03 to .15
p-values	.002*	<.001**	.001**	.03*	.03*	.47	<.001**	.05*	M_2	.04 (.02)	.04	.00 to .09

							Interaction v_1 (M→m)	Interaction v_2 (X→m)				
Model 4: X (self-compassion)→Y (severity of voices) mediated by M (mindfulness of voices) moderated by medication (m_1= not currently taking, m_2 = currently taking)										*Conditional indirect effects*		
β(S.E)	3.32 (.43)	-	-.73 (.21)	-	2.12 (1.29)	-	.14 (.12)	-1.61 (.73)	m_1	-1.48 (.30)	-	-2.67 to -1.31
p-values	<.001**	-	.05*	-	.10	-	.23	.03*	m_2	-1.96 (.34)	-	-2.14 to -.95
										Conditional direct effects		
									m_1	.51 (.62)	-	-.71 to 1.73
									m_2	-1.11 (.39)	-	-1.88 to -.33

X= predictor variable; Y=outcome variable; M_1= mediator variable 1; M_2=mediator variable 2; m_1=moderator level 1; m_2=moderator level 2; v^1= interaction 1; v^2 = interaction 2; K^2 cannot be computed for moderated mediation;**$p<.001$ *$p<.05$.
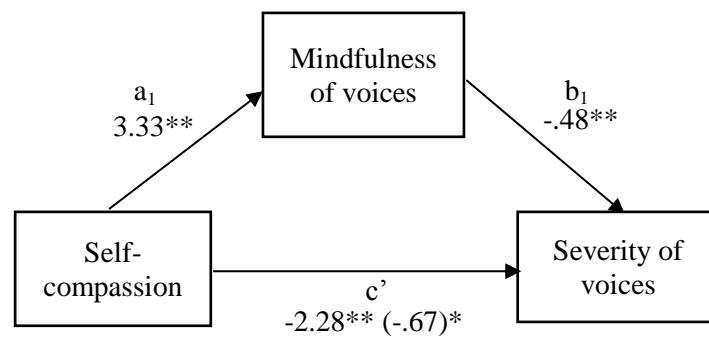
Figure 2. Regression coefficients for the relationship between self-compassion and severity of voices as mediated by mindfulness of voices. The mediation path is in parentheses. *$p<.05$, **$p<.001$.
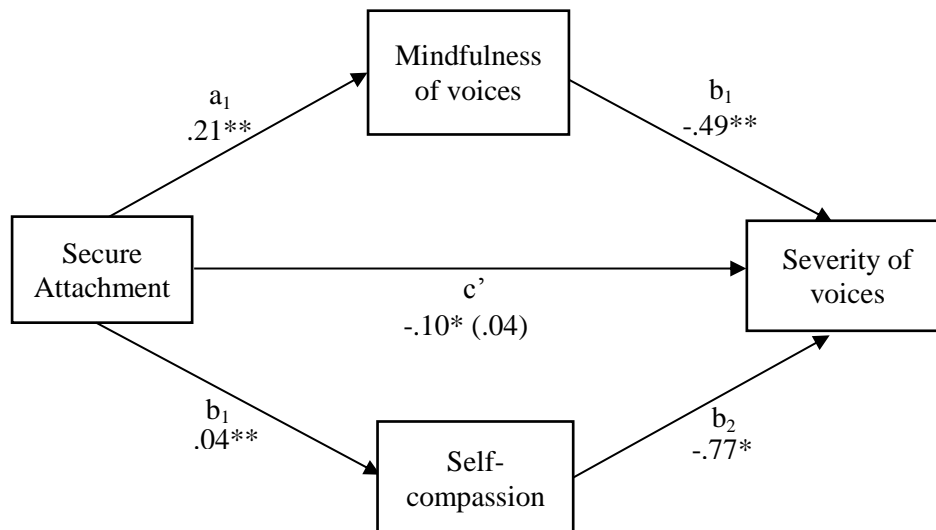

Figure 3. Regression coefficients for the relationship between secure attachment and severity of voices as mediated by mindfulness of voices and self-compassion. The mediation path is in parentheses. *$p<.05$, **$p<.001$.
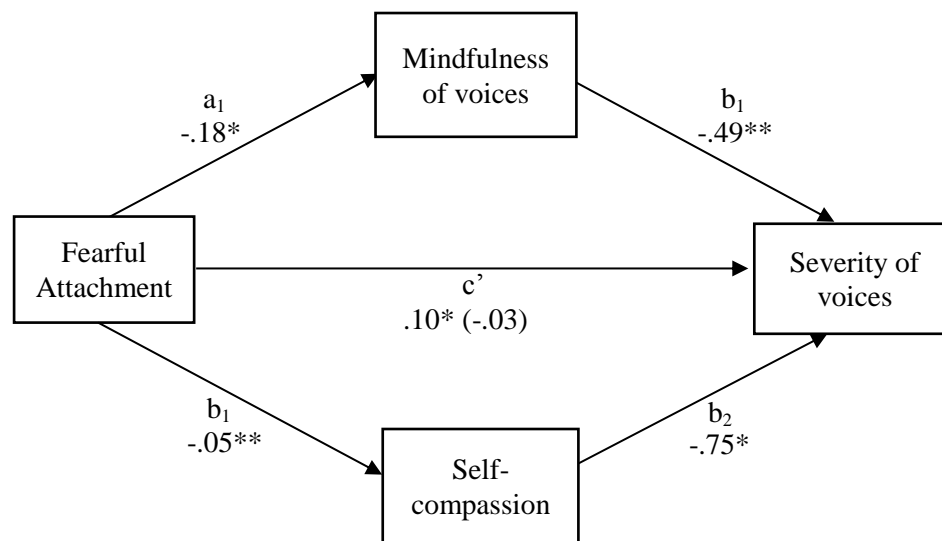
Figure 4. Regression coefficients for the relationship between fearful attachment and severity of voices as mediated by mindfulness of voices and self-compassion. The mediation path is in parentheses. $*p<.05$, $**p<.001$.
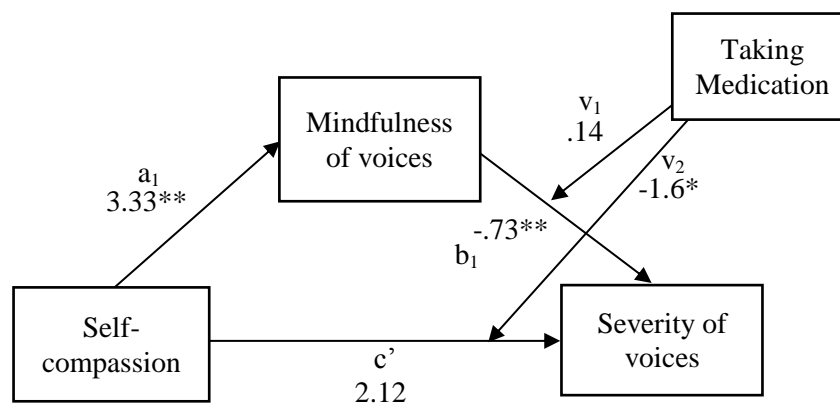
Figure 5. Regression coefficients for the relationship between self-compassion and severity of voices as mediated by mindfulness of voices, moderated by medication group. v^x= moderator interactions, $*p<.05$, $**p<.001$.

Discussion

The primary aim of this study was to explore associations between the mechanisms of mindfulness of voices, self-compassion and distress from hearing voices as well as how attachment style related to each of these variables. Correlational hypotheses were supported, showing that mindfulness of voices,

self-compassion and secure attachment were positively associated with each other and negatively associated with distress/severity of voices. Mediation hypotheses were partially supported providing evidence corroborating past research findings. Further exploration of the data also provided novel insights into the specific mechanisms associated with distress from voices and the impact of psychiatric medication.

Self-compassion emerged as a significant predictor of lower distress and severity of voices, supporting the limited range of past findings (Mayhew & Gilbert, 2008; Eicher et al., 2013) and the notion that self-compassion may play a part in self-soothing and regulation of feelings of threat (Gilbert, 2009). However, the findings may also imply that those who are highly distressed by their voices are not as able to access feelings of self-compassion. The theoretical underpinnings of compassion also support this interpretation, suggesting that people in a state of threat or who feel unsafe are unlikely to access the 'soothing system' as it is of evolutionary disadvantage (Gilbert, 2009), in that it would leave them feeling vulnerable to attack, thus less likely to report feelings of self-compassion. Analysis revealed that only self-judgment (inversely) and mindfulness aspects of the self-compassion scale significantly predicted lower distress/severity of voices. Given that people experiencing psychosis are highly prone to self-criticism (Gumley, Braehler, Laithewaite, MacBeth & Gilbert, 2010) and that the content of distressing voices are frequently judging and critical (Mayhew & Gilbert, 2008), this is an understandable finding. Furthermore, as a large proportion of participants in the study had accessed mindfulness-based therapy (35%), a mindfulness course (24%) or practised mindfulness (36%) it is likely mindfulness would be a prominent factor.

An unexpected additional finding was the role of psychiatric medication. Overall those who used medication tended to be less mindful and self-compassionate. Those who took medication also tended to experience increased severity and distress related to their voices. However, when medication use was investigated as a moderator, results showed that self-compassion significantly predicted severity of voices but this relationship was significant or relevant only for those who take medication. Though interpretation of this finding is speculative, it may be that as medication can have a sedative effect (Randon, 2002), it may reduce feelings of threat and allow the person to access the

'soothing system' and consequently feelings of self-compassion. Another explanation may be that the medication 'dampened down' the voices (Kapur, 2003), allowing the individuals to more freely experience self-compassion. Conversely, antipsychotic medication has been found to numb emotions of all descriptions; soothing, threatening or otherwise (Moritz, Andreou, Klingberg, Thoering & Peters, 2013) which would contradict these interpretations. Future studies into self-compassion and distress from voices may benefit from closer investigation of the impact of psychiatric medication.

Mindfulness of voices presented the strongest association with lower distress and severity of voices, replicating past research (Chadwick, Barnbrook & Newman-Taylor, 2007; Úbeda-Gómez et al., 2015). These results suggest that trait mindfulness may have a role in reduced distress from voices as noted in a recent systematic review (Strauss, Thomas & Hayward, 2015). Furthermore, the findings support the notion that trait mindfulness may be protective factor against distressing cognitions or experiences (Khoury et al., 2013a; Radford et al., 2014). However, the findings may also mean that those with highly intrusive and distressing voices have difficulties focusing on the present moment and maintaining a non-judgemental stance towards their experiences. Moreover, there were no significant differences in mindfulness of voices between those who currently practice and do not practice mindfulness, in contrast to past research suggested practice may have increased trait mindfulness (Kiken et al., 2015). However, it should be considered that few details were collected regarding participant's practice and the group analysed ranged from stating daily to monthly practice. Investigation of subscales showed only 'letting go' and 'absence of aversion' significantly predicted lower distress/severity of voices. This may indicate that those who avoid or ruminate over and confront their voices were more distressed by them, corroborating past literature (Singh, Sharan & Kulhara, 2003; Vaughan & Fowler, 2004; Chadwick, Taylor & Abba, 2005) and the notion that acceptance of the experience of hearing voices is important in effective coping (Romme & Escher, 1989; Strauss, 2014).

Mediation analysis did not support hypothesis three in contrast to past findings (Shapiro et al., 2005; Hollis-Walker et al., 2011) as self-compassion did not mediate the relationship between mindfulness of voices and distress/severity of voices. However, mindfulness of voices did partially

mediate the relationship between self-compassion and distress/severity of voices, supporting hypothesis five and past findings indicating mindfulness as a mediator of positive clinical outcomes in mindfulness-based interventions (Kuyken et al., 2010; Strauss, 2014). This finding may be explained by the fact that the mindfulness component of the self-compassion scale was a highly significant predictor of distress/severity of voices and that many of the participants engaged in mindfulness practice.

Increased secure attachment scores correlated with increased self-compassion and mindfulness of voices and reduced with severity and distress from voices, though these findings became non-significant following bonferonni correction. Nevertheless, secure attachment significantly predicted lower levels of voice severity in mediation analysis. These results go towards supporting hypothesis two. The opposite was found for those with fearful attachment, this makes theoretical sense as fearful attachment represents the opposite pole of self/other relating in the Bartholemew and Horowitz (1991) model. The findings support past literature suggesting those with secure attachment are more able to engage in mindful attention (Shaver et al., 2007) and self-compassion (Wei et al., 2011) as well as those with a fearful attachment experiencing more severe voices (Ponizovsky et al., 2013). Though hypothesis four was not supported as secure attachment did not show any mediating effect, interestingly self-compassion and mindfulness of voices fully mediated relationships between secure and fearful attachment with distress/severity of voices. This suggests that though attachment style is associated with the level of distress an individual experiences from their voices, it may not limit people's ability to benefit from compassion-focused or mindfulness interventions.

It was decided not to set diagnosis of a schizophrenia or psychosis-related disorder as an inclusion criterion in the present study. Only 52% of participants had a diagnosis of schizophrenia or other psychosis-related disorders. This result supports prevalence studies reporting hearing voices as a relatively common experience (Read, Cartright & Beavan, 2009) and suggests future research on voices may improve generalisability of findings by including those who do not have a psychosis-related diagnosis.

The study did have some limitations. As the design was cross-sectional directionality of causation cannot be inferred. The range of measures used was relatively small to lower participant burden, but limited the number of potential confounds measured. Furthermore, though the attachment measure chosen is widely used in research it is not as comprehensive as interview-based measures. As the study was conducted online it relied on self-report and limited the sample to those with internet access. Moreover, the sample was biased toward female Caucasians and demographics showed large proportions of people with experience of practising mindfulness, which may hinder generalisability. It should also be noted that as incomplete cases were deleted from the dataset, bias may have been introduced to the results. Finally it is important to consider that as no self-report measures of distress from voices currently exist (Thomas, 2014), total severity score from the HPSVQ (Van Lieshout & Goldberg, 2007) was used as analogous to distress from voices in regression and mediation analysis. Though distress was highly correlated with severity, there may be differences between the constructs that impact on interpretation of the findings in this study. Future research may benefit from recruiting participants from a broader range of ethnic backgrounds to explore potential differences, particularly between Eastern and Western cultures. Furthermore, collecting data on participant nationality may aid in distinguishing cultural difference. Longitudinal research would be useful to assess whether the relationships observed maintain over time. Moreover, development of a validated self-report measure specific to distress from voices would provide a more consistent construct.

Clinical implications

Though the study was correlational, the findings provide support for the emerging evidence-base of mindfulness and compassion focused therapies for people who are distressed by their voices (Mayhew & Gilbert, 2008; Eicher et al., 2013; Chadwick et al., 2009; Chadwick et al., 2016) as well as some insight into the mechanisms involved. The mediating effect of self-compassion and mindfulness on attachment supports Compassionate Mind Training (CMT) theory (Gilbert & Proctor, 2006). Secure attachment is associated with positive experiences with primary care-givers, fostering development of the mammalian care-giving system and feelings of security, safety, warmth and soothing, attributes which tend to continue into adulthood (Gillath et al., 2005). Those with this

attachment style are therefore likely to have higher pre-existing levels of trait self-compassion (Gilbert & Proctor, 2006). Compassionate mind training assumes that these attributes can be developed by practising skills such as mindful attention and self-compassion (Gilbert, 2009), regardless of early experiences. Investigation of subscales provides some insight into the specific mechanisms which may be most salient therapeutic focuses for people distressed by voices. Interventions may benefit from targeting self-judgement and encouraging clients to accept and allow voices to pass mindfully. These are core tenets of Compassion Focused Therapy (CFT; Gilbert, 2009) and Person-Based Cognitive Therapy (PBCT; Chadwick et al., 2005; Chadwick et al., 2016) therefore these approaches may be particularly useful for people distressed by voices.

The implications of the present study may also support the emerging 'compassion for voices' approach. Kennedy and Ellerby (2016) discuss integration of CFT with the voice dialogue approach utilised by the hearing voices movement (Corstens, Escher & Romme, 2008). Given self-compassion and in particular absence of aversion significantly predicted lower distress/severity of voices, accepting and engaging with voices in a compassionate manner may be a useful direction for future research and therapeutic practice to explore.

Conclusion

The findings of the present study demonstrate strong associations between self-compassion, mindfulness of voices, secure attachment and lower levels of distress and voices severity, as well as mediating relationships highlighting synergy between mindfulness and self-compassion. Results suggest that developing self-compassion and mindful relating to voices may be a useful therapeutic focus for people distressed by their voices.

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Appendices

Appendix A. Guidelines for publication

Literature review targeted journal: Frontiers in Psychology

Manuscript Guidelines

Reviews

Abstract max: 350 words

Figures/Tables: 15

Manuscript max: 12,000 words

Original Content

Frontiers publishes only original content. It therefore requires that all submissions must consist as far as possible of content that has not been published previously. In accordance with COPE guidelines, we expect that "original wording taken directly from publications by other researchers should appear in quotation marks with the appropriate citations." This condition also applies to an author's own work, and to submissions adapted from conference abstracts and proceedings papers, please see the following sections for more information.

Manuscript Length

Frontiers encourages its authors to closely follow the article word count lengths given in the Summary Table. The manuscript length includes only the main body of the text, footnotes and all citations within it, and excludes abstract, section titles, figure and table captions, funding statements, acknowledgments and references in the bibliography. Please indicate the number of words and the number of figures included in your manuscript on the first page.

Language Style

Authors are requested to follow American English spelling. For any questions regarding style Frontiers recommends authors to consult the Chicago Manual of Style.

Title

The title is written in title case, centered, and in 16 point bold Times New Roman font at the top of page.

The title should be concise, omitting terms that are implicit and, where possible, be a statement of the main result or conclusion presented in the manuscript. Abbreviations should be avoided within the title.

Witty or creative titles are welcome, but only if relevant and within measure. Consider if a title meant to be thought-provoking might be misinterpreted as offensive or alarming. In extreme cases, the editorial office may veto a title and propose an alternative.

Authors and Affiliations

All names are listed together and separated by commas. Provide exact and correct author names as these will be indexed in official archives. Affiliations should be keyed to the author's name with superscript numbers and be listed as follows: Laboratory, Institute, Department, Organization, City,

State abbreviation (USA, Canada, Australia), and Country (without detailed address information such as city zip codes or street names).

Headings and Sub-headings

Except for special names (e.g. GABAergic), capitalize only the first letter of headings and subheadings. Headings and subheadings need to be defined in Times New Roman, 12, bold. You may insert up to 5 heading levels into your manuscript (not more than for example: 3.2.2.1.2 Heading title).

Abstract

As a primary goal, the abstract should render the general significance and conceptual advance of the work clearly accessible to a broad readership. In the abstract, minimize the use of abbreviations and do not cite references. The text of the abstract section should be in 12 point normal Times New Roman. See Summary Table for abstract requirement and length according to article type.

Keywords

All article types: you may provide up to 8 keywords; at least 5 are mandatory.

Text

The body text is in 12 point normal Times New Roman. New paragraphs will be separated with a single empty line. The entire document should be single-spaced and should contain page and line numbers in order to facilitate the review process. Your manuscript should be written using either LaTeX or MS-Word.

Nomenclature

The use of abbreviations should be kept to a minimum. Non-standard abbreviations should be avoided unless they appear at least four times, and defined upon first use in the main text. Consider also giving a list of non-standard abbreviations at the end, immediately before the Acknowledgments.

Sections

Your manuscript is organized by headings and subheadings. For Original Research Articles, Clinical Trial Articles, and Technology Reports the section headings should be those appropriate for your field and the research itself.

For Original Research Articles, it is recommended to organize your manuscript in the following sections or their equivalents for your field:

Introduction

Succinct, with no subheadings.

Material and Methods

This section may be divided by subheadings. This section should contain sufficient detail so that when read in conjunction with cited references, all procedures can be repeated. For experiments reporting results on animal or human subject research, an ethics approval statement should be included in this section (for further information, see here)

Results

This section may be divided by subheadings. Footnotes should not be used and have to be transferred into the main text.

Discussion

This section may be divided by subheadings. Discussions should cover the key findings of the study: discuss any prior art related to the subject so to place the novelty of the discovery in the appropriate context; discuss the potential short-comings and limitations on their interpretations; discuss their integration into the current understanding of the problem and how this advances the current views; speculate on the future direction of the research and freely postulate theories that could be tested in the future.

For further information, please see Additional Requirements for specific article types including Focused Reviews, General Commentaries, Case Reports and Data Reports amongst others or you can check the descriptions defined in the journal's "Article Types", which can be seen from the "For Authors" menu on any Frontiers journal page.

References

All citations in the text, figures or tables must be in the reference list and vice-versa. The references should only include articles that are published or accepted. Data sets that have been deposited to an online repository should be included in the reference list, include the version and unique identifier when available. For accepted but unpublished works use "in press" instead of page numbers. Unpublished data, submitted manuscripts, or personal communications should be cited within the text only, for the article types that allow such inclusions. Personal communications should be documented by a letter of permission. Website urls should be included as footnotes. Any inclusion of verbatim text must be contained in quotation marks and clearly reference the original source.

Reference list: provide the names of the first six authors followed by et al and doi when available.

Empirical paper target journal: Journal of Abnormal Psychology

Regular Article

Regular Articles typically should not exceed 9,000 words in overall length (excluding figures).

Manuscript Preparation

Prepare manuscripts according to the Publication Manual of the American Psychological Association (6th edition). Manuscripts may be copyedited for bias-free language (see Chapter 3 of the Publication Manual). Review APA's Checklist for Manuscript Submission before submitting your article.

Double-space all copy. Other formatting instructions, as well as instructions on preparing tables, figures, references, metrics, and abstracts, appear in the Manual. Additional guidance on APA Style is available on the APA Style website.

Tables

Use Word's Insert Table function when you create tables. Using spaces or tabs in your table will create problems when the table is typeset and may result in errors.

Abstract and Keywords

All manuscripts must include an abstract containing a maximum of 250 words typed on a separate page. After the abstract, please supply up to five keywords or brief phrases.

General Scientific Summaries (GSS)

Please provide a General Scientific Summary of the paper on the manuscript file below the abstract.

This should be a brief (2-3 sentences) statement that, in nontechnical language, explains the contributions of the paper.

References

List references in alphabetical order. Each listed reference should be cited in text, and each text citation should be listed in the References section.

Appendix B: Literature review quality assessment

Table 1. Quality assessment data (JD)

	Braehler et al (2013)	Eicher et al (2013)	Gumley et al (2014)	Johnson et al (2009)	Khoury et al (2015)	Laithwaite et al (2009)	Lincoln et al (2013)	Mayhew et al (2008)	Waite et al (2015)
Explicit theoretical framework	3	3	3	3	3	3	3	3	3
Statement of aims/objectives in main body of report	3	3	3	1	3	3	3	3	3
Clear description of research setting	3	3	3	2	3	3	2	3	2
Evidence of sample size considered in terms of analysis	1	0	0	0	1	0	0	0	0
Representative sample of target group of a reasonable size	1	1	1	1	1	1	1	1	2
Description of procedure for data collection	3	3	3	2	3	3	3	3	3
Rationale for choice of data collection tool(s)	2	3	3	0	2	1	2	3	2
Detailed recruitment data	3	3	1	1	3	2	1	3	3
Statistical assessment of reliability and validity of measurement tool(s) (Quantitative only)	3	0	3	0	0	0	0	3	NA
Fit between stated research question and method of data collection (Quantitative only)	3	2	3	1	2	3	3	3	NA
Fit between stated research question and format and content of data collection tool (Qualitative only)	NA	NA	NA	NA	NA	NA	NA	NA	3
Fit between research question and method of analysis (Quantitative only)	3	3	3	1	3	3	3	3	NA
Good justification for analytic method selected	2	1	2	0	2	2	2	0	3
Assessment of reliability of analytic process (Qualitative only)	NA	NA	NA	NA	NA	NA	NA	NA	3
Evidence of user involvement in design	0	0	0	0	0	0	0	1	0
Strengths and limitations critically discussed	2	2	2	0	2	2	3	0	2
Total	32	27	30	12	28	26	26	29	29
Quality %	76%	64%	71%	29%	67%	62%	62%	69%	69%

Table B2. Quality assessment data (JM)

	Braehler et al (2013)	Eicher et al (2013)	Gumley et al (2014)	Johnson et al (2009)	Khoury et al (2015)	Laithwaite et al (2009)	Lincoln et al (2013)	Mayhew et al (2008)	Waite et al (2015)
Explicit theoretical framework	3	3	3	3	3	3	3	3	3
Statement of aims/objectives in main body of report	3	3	3	1	3	3	3	2	3
Clear description of research setting	3	3	3	2	3	3	2	3	2
Evidence of sample size considered in terms of analysis	1	0	0	0	1	0	0	0	0
Representative sample of target group of a reasonable size	1	1	1	1	2	1	1	1	2
Description of procedure for data collection	3	3	3	2	3	3	3	3	3
Rationale for choice of data collection tool(s)	2	3	3	0	2	1	2	3	2
Detailed recruitment data	3	3	1	1	3	2	1	3	3
Statistical assessment of reliability and validity of measurement tool(s) (Quantitative only)	3	0	3	0	0	0	0	3	NA
Fit between stated research question and method of data collection (Quantitative only)	3	2	3	1	2	3	3	3	NA
Fit between stated research question and format and content of data collection tool (Qualitative only)	NA	NA	NA	NA	NA	NA	NA	NA	3
Fit between research question and method of analysis (Quantitative only)	3	3	3	1	3	3	3	2	NA
Good justification for analytic method selected	2	1	2	0	2	2	2	0	3
Assessment of reliability of analytic process (Qualitative only)	NA	NA	NA	NA	NA	NA	NA	NA	3
Evidence of user involvement in design	0	0	0	0	0	0	0	3	0
Strengths and limitations critically discussed	2	2	2	0	2	2	3	0	2
Total	32	27	30	12	29	26	26	29	29
Quality %	76%	64%	71%	29%	69%	62%	62%	69%	69%

Appendix C: Secondary analysis

All additional analysis undertaken that were not included in the empirical paper are included in this section. As word count was limited it was decided that any findings that did not significantly add to the overall results and were not initial hypotheses would be presented in the appendix.

Additional between-group analysis

Categorical Attachment Style as IV

One-way ANOVA was conducted to investigate difference between attachment style groups on the SMVQ, SCS and HPSVQ total scales. Significant differences between groups were found for the SMVQ $F(3,122) = 3.72$, $p=.013$ and SCS $F(3,122) = 9.89$, $p<.001$. No significant differences between attachment groups were found on the HPSVQ. Bonferroni post hoc analysis found significant differences between secure and fearful attachment ($p=.008$) on the SMVQ as well as significant differences between secure and fearful attachment ($p<.001$) and secure and dismissing attachment ($p=.02$) on the SCS. Descriptive statistics are presented in Table H1.

Categorical Voice Severity as IV

Based on the HPSVQ cut off points, four categories were created based on HPSVQ total scores. One-way ANOVA was conducted to investigate difference between groups on the SMVQ and SCS total scales. Significant differences between groups were found for both the SMVQ $F(3,124) = 33.62$, $p<.001$ and SCS $F(3,124) = 9.87$. Bonferroni post hoc analysis showed significant differences between severe and moderate ($p<.001$), mild ($p<.001$) and absent-minimal severity ($p<.001$) on the SMVQ. Furthermore, significant differences between severe and moderate ($p=.002$) and mild severity ($p<.001$) on the SCS. Descriptive statistics are presented in Table H1.

Table H1. Descriptive statistics for one-way ANOVA. (Values are standardised means ± SD).

IV		SMVQ Total	SCS Total	HPSVQ Total
RQ Attachment	Secure (n=22)	7.34 (±1.56)	1.79 (±.25)	2.04 (±1.04)
	Fearful (n=60)	6.24 (±1.19)	1.50 (±.20)	2.29 (±1.03)
	Preoccupied (n=16)	6.70 (±1.65)	1.64 (±.22)	2.09 (±1.04)
	Dismissing (n=28)	6.54 (±1.29)	1.60 (±.20)	2.20 (±1.15
HPSVQ Cut offs	Absent to minimal (n=7)	7.78 (±.48)	1.68 (±.24)	-
	Mild (n=18)	7.77 (±1.17)	1.76 (±.21)	-
	Moderate (n=53)	7.01 (±1.07)	1.64 (±.21)	-
	Severe (n=50)	5.45 (±5.45)	1.48 (±.21)	.-

RQ = Relationships Questionnaire; HSPVQ = Hamilton Programme for Schizophrenia Voices Questionnaire; SMVQ = Southampton Mindfulness Questionnaire; SCS = Self-Compassion Scale.

Additional mediation analysis

Model 5 (see Figure H1) was a moderated mediation analysis, this investigated direct and indirect effects of self-compassion on severity of voices mediated by mindfulness of voices at two levels of the moderator (practising mindfulness and not practising mindfulness). The indirect effect remained significant at both levels. The direct effect was not significantly moderated by mindfulness practice. It was decided not to include this finding in the main report as it was felt it did not add to the overall results. Full results are presented in Table H2.

Table H2. Moderated mediation analysis results.

|	Path *a* (X→M)	Path *b* (M→Y)	Path *c'* (X→Y)	Interaction 1 (M→m)	Interaction 2 (X→m)		*Conditional Indirect effects* Effect	95% CI	*Conditional direct effects* Effect	95% CI
Model 5. X (self-compassion)→Y (severity of voices) mediated by M_1 (mindfulness of voices) moderated by mindfulness practice (m_1= not currently practising m_2 = practising)										
β(S.E)	3.33 (.43)	-.64 (1.48)	.28 (1.09)	-.09 (.13)	-.33 (.79)	m_1	-1.48 (.30)	-.24 to 1.46	.51 (.43)	1.31 to 2.55
p-values	<.001**	<.001*	.78	.49*	.68	m_2	-1.96 (.34)	-.39 to 2.25	-.93 (.67)	.64 to 2.44
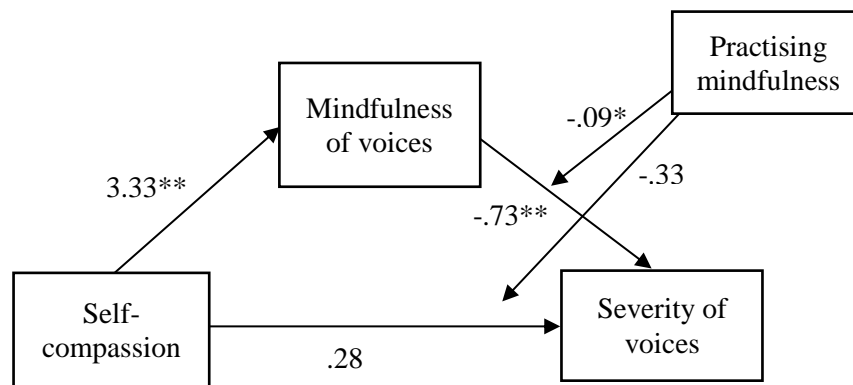
Figure H1. Regression coefficients for the relationship between self-compassion and severity of voices as mediated by mindfulness of voices, moderated by mindfulness group. *$p<.05$, **$p<.001$

Additional regression analysis

To explore which aspects of the SCS significantly predicted total SMVQ scores and which aspects of the SMVQ predicted total SCS scores, all subscales were entered into two regression models. Subscales from the SCS produced a significant overall model predicting approximately 40% of the variance ($R^2 = .40$, $F(6, 127) = 13.14$, $p<.001$) with only the mindfulness subscale as a significant predictor (see Table H3). Subscales from the SMVQ also showed a significant model predicting approximately 62% of the variance ($R^2 = .62$, $F(4, 127) = 18.91$, $p<.001$) with letting go and non-judgement subscales as significant predictors (see Table H4).

Table H3. Regression analysis showing self-compassion subscales as predictors of mindfulness of voices.

Variable	β	p
Self-kindness	.16	.19
Self-judgement	-.18	.17
Common humanity	-.07	.50
Isolation	.03	.79
Mindfulness	.46**	.001

Over-identification	.02	.88

*p<.05; **p<.01.

Table H4. Regression analysis showing mindfulness of voices subscales as predictors of self-compassion.

Variable	*B*	*p*
Mindful observation	-.14	.24
Letting go	.33**	.001
Absence of aversion	.19	.06
Non-judgement	.33**	.001

*p<.05; **p<.01.

Diagnosis and medication demographics

All diagnosis and medication were reported in string variables and coded according to ICD-10 categories and type of medication. Full results are presented in Tables H5 and H6.

Table H5. Diagnoses reported by participants, categorised by ICD-10 codes.

Diagnosis	ICD-10 Codes	*N* (%)
Psychosis Disorder	F20-F29	37 (28.9)
Mood Disorder	F30-F39	13 (10.2)
Anxiety or Dissociative Disorder	F40-F48	15 (11.7)
Personality Disorder	F60-F69	5 (3.9)
Psychosis & Mood Disorders	F20-F29 & F30-F39	9 (7.0)
Psychosis & Anxiety Disorders	F20-F29 & F40-F48	3 (2.3)
Psychosis & Personality Disorders	F20-F29 & F60-F69	2 (1.6)
Mood Disorder & Anxiety Disorders	F30-F39 & F40-F49	10 (7.8)
Mood Disorder & Personality Disorders	F30-F39 & F60-F69	1 (.8)
Psychosis & Mood & Personality Disorders	F20-F29 & F30-F39 & F60-F69	1 (.8)
Psychosis & Mood & Anxiety Disorders	F20-F29 & F30-F39 & F40-F49	3 (2.3)
Mood & Anxiety & Personality Disorders	F30-F39 & F40-F49 & F60-F69	2 (1.6)
Psychosis & Anxiety & Mood & Personality Disorders	F20-F29 & F30-F39 & F40-F49 & F60-F69	1 (.8)
Not Specified	N/A	5 (3.9)

Note: ICD-10 Codes refer to International Classification of Diseases 10th Revision diagnostic categories: F20-F29 Schizophrenia, schizotypal and delusional, and other non-mood psychotic disorders; F30-F39 Mood [affective] disorders; F40-F48 Anxiety, dissociative, stress-related, somatoform and other nonpsychotic mental disorders; F60-F69 Disorders of adult personality and behaviour.

Table H6. Categories of psychiatric medication reported by participants

Medication	*N* (%)
Antipsychotic	19 (14.8%)
Antidepressant	10 (7.8%)
Anxiolytic	1 (0.8%)
Antipsychotic & Antidepressant	14 (10.9%)

Antipsychotic & >1 other medication	30 (23.4%)
Multiple medications not including antipsychotics	3 (2.3%)
Not specified	4 (3.1%)
Taken in the past, but not currently	33 (25.8%)
Never taken medication	14 (10.9%)

Appendix D: Measures

Demographics

<u>About You</u>

1. What is your age in years?

    ☐   Prefer not to disclose

    Please state: _____

2. What is your gender?

    ☐   Prefer not to disclose
    ☐   Male
    ☐   Female

3. What is your ethnicity?

    ☐   Prefer not to disclose
    ☐   Caucasian
    ☐   Latino/Hispanic
    ☐   Middle Eastern
    ☐   African
    ☐   Caribbean
    ☐   South Asian
    ☐   East Asian
    ☐   Mixed
    ☐   Other

4. What is your employment status?

    ☐   Prefer not to disclose
    ☐   Paid full time employment
    ☐   Paid part time employment
    ☐   Self employed
    ☐   Out of work and looking for work
    ☐   Out of work but not currently looking for work
    ☐   Voluntary work
    ☐   Student
    ☐   Retired
    ☐   Unable to work

5. What category best describes your personal annual income?

   Please state your currency: _____

   ☐ Prefer not to disclose
   ☐ Less than 10,000
   ☐ 10,000 to 19,999
   ☐ 20,000 to 29,999
   ☐ 30,000 to 39,999
   ☐ 40,000 to 49,999
   ☐ 50,000 to 59,999
   ☐ 60,000 or more

About   **Your**   **Health**

6. Do you have a mental health diagnosis?

   ☐ Prefer not to disclose
   ☐ No
   ☐ Yes
   Please state:_____

7. Do you currently access mental health services?

   ☐ Prefer not to disclose
   ☐ Yes (please go to question 9)
   ☐ No (please go to question 8)

8. Have you ever accessed mental health services?

   ☐ Prefer not to disclose
   ☐ Yes
   ☐ No

9. Do you take any medication for mental health difficulties?

   ☐ Prefer not to disclose
   ☐ No, never
   ☐ In the past, but not anymore
   ☐ Yes, in the past month
   ☐ Yes, in the past 7 days
   Please state: _____

10. How long have you been hearing voices for?

☐ Prefer not to disclose
☐ Please state in years and months: _____

About   Mindfulness   and   Meditation

11. Have you received any mindfulness-based psychological therapy?
(e.g. Mindfulness-Based Stress Reduction (MBSR); Acceptance and Commitment Therapy (ACT); Compassion Focused Therapy (CFT); Mindfulness-Based Cognitive Therapy (MBCT); Dialectical Behaviour Therapy (DBT)).

☐ Prefer not to disclose
☐ Yes
☐ No

12. Have you accessed a mindfulness training course?

☐ Prefer not to disclose
☐ No, never
☐ Yes, I was referred by a health professional
☐ Yes, I self-referred
Please state how recently you accessed the course:_____

If no, skip to question X

13. If you accessed a mindfulness training course, what type of course was it? (tick all that apply)

☐ Group
☐ Taster day
☐ Short course
☐ Online course
☐ Mobile app
☐ Self-help book

14. Do you practice mindfulness meditation?

☐ Prefer not to disclose
☐ Never
☐ In the past
☐ Monthly
☐ Weekly
☐ Daily

Southampton Mindfulness of Voices Questionnaire

<u>Usually</u> when I hear my voice(s)

	Agree Totally	Agree Strongly	Agree Slightly	Unsure	Disagree Slightly	Disagree Strongly	Disagree Totally
1. I am able just to notice it without reacting							
2. It takes over my mind for quite a while afterwards							
3. I judge the voice as good or bad							
4. I feel calm soon after it has stopped							
5. I am able to accept the experience							
6. I get angry that this happens to me							
7. I notice how brief each comment really is							
8. I judge myself as good or bad,							

depending what the voice says							
9. I 'step back' & am aware of the voice without getting taken over by it							
10. I just listen and let it pass							
11. I accept myself the same whatever the voice says							
12. In my mind I try and push the voice away							
13. I keep thinking about what it said after it's stopped							
14. I find it so unpleasant I have to distract myself & not notice them							
15. I try just to listen without judging what it says							
16. I lose myself in the voice							

Background

The thinking behind the measure is that there are 4 distinct components of mindfulness: Mindful observation (MO), letting go (LG), absence of aversion (AV), and non judgment (J). The four are clearly related, and mindfulness may be defined by the presence of non-judgmental observation with neither aversion, nor clinging.

The measure has four items for each. MO has three positive and one negative, because it is by essence a 'positive'; aversion, which is the opposite has three negative items to counter balance. J and LG both have two positive and two negative. The negative items are reversed for scoring. The four subscales have the following items, with positive or negative wording:

	Positive	Negative
MO	1, 7, 9	16
LG	4, 10	2, 13
AV	5	6, 12, 14
J	11, 15	3, 8

Scoring

Agree Totally (score 6), Agree Strongly (score 5), Agree Slightly (score 4), Unsure (score 3), Disagree Slightly (score 2), Disagree Strongly (score 1), Disagree Totally (score 0). Each of the four subscales therefore has a range of scores from 0 to 24. The total measure has a range of scores from 0 to 96.

The subscales may identify particular points for intervention – for example, one person may struggle to let go of thoughts, voices, images, where another may have strong aversion to these phenomena.

There are parallel versions for assessing mindfulness in relation to auditory hallucinations (Voices) and distressing thoughts or images. Both may be used with people who hear voices.

Paul Chadwick (15.02.02)

Voice(s) scoring key

	Disagree	Unsure	Agree Slightly	Agree Strongly	Agree Totally
1. I just notice it without reacting **MO**	**0**	**1**	**2**	**3**	**4**
2. It takes over my mind for quite a while afterwards **LG**					
3. I judge the voice as good or bad **J**					
4. I feel calm soon after it has stopped **LG**					
5. I am able to accept the experience **AV**					
6. I get angry that this happens to me **AV**					
7. I notice how brief each comment really is **MO**					
8. I judge myself as good or bad, depending what the voice says **J**					
9. I 'step back' & am aware of the voice without getting taken over by it **MO**					
10. I just listen and let it pass **MO**					

11. I accept myself the same whatever the voice says **J**					
12. In my mind I try and push the voice away **AV**					
13. I keep thinking about what it said after its stopped **LG**					
14. I try hard to distract myself & not notice it **AV**					
15. I try hard not to judge what it says **J**					
16. I find it impossible to calmly observe the voices **MO**					

Hamilton Program for Schizophrenia: Voices Questionnaire (HPSVQ)

| 0 | 1 | 2 | 3 | 4 |

_____ 1. How *frequently* did you hear a voice/voices?

_____ 2. How *bad* are the things the voices say to you?

_____ 3. How *loud* are the voices?

_____ 4. How *long* do the voices usually last?

_____ 5. How much do the voices *interfere* with your daily activities?

_____ 6. How *distressing* are the voices that you hear?

_____ 7. How *bad* (worthless/useless) do the voices make you *feel about
   yourself*?

_____ 8. How *clearly* do you hear the voices?

_____ 9. How often do you *do* what the voices say?

Scoring:

0-7:   Absence of to minimal auditory verbal hallucinations

8-13:   Mild severity of auditory verbal hallucinations

14-25: Moderate severity of auditory verbal hallucinations

<25:   Severe auditory verbal hallucinations

The Relationships Questionnaire

Following are four general relationship styles that people often report. Place a checkmark next to the letter corresponding to the style that best describes you or is closest to the way you are.

_____ A. It is easy for me to become emotionally close to others. I am comfortable depending on them and having them depend on me. I don't worry about being alone or having others not accept me.

_____ B. I am uncomfortable getting close to others. I want emotionally close relationships, but I find it difficult to trust others completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to others.

_____ C. I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don't value me as much as I value them.

_____ D. I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me.

Now please rate each of the relationship styles above to indicate how well or poorly each description corresponds to your general relationship style.

Style A

1	2	3	4	5	6	7
Disagree Strongly			Neutral/Mixed			Agree Strongly

Style B

1	2	3	4	5	6	7

Disagree Strongly   Neutral/Mixed   Agree Strongly

Style C

1	2	3	4	5	6	7

Disagree Strongly   Neutral/Mixed   Agree Strongly

Style D

1	2	3	4	5	6	7

Disagree Strongly   Neutral/Mixed   Agree Strongly

To all interested, please feel free to use the Self-Compassion Scale (SCS) for research or any other use. Masters and dissertation students also have my permission to use and publish the Self-Compassion Scale in their theses. The SCS is appropriate for ages 14 and up (as long as individuals have at lease an 8th grade reading level). If you aren't that interested in using the subscales, you might also want to consider using the Short SCS (12 items), which has a near perfect correlation with the long scale.

Kristin Neff, Ph. D.

Associate Professor

Educational Psychology Dept.

University of Texas at Austin

1 University Station, D5800

Austin, TX 78712

e-mail: kristin.neff@mail.utexas.edu

Reference:

Neff, K. D. (2003). Development and validation of a scale to measure self-compassion. Self and Identity, 2, 223-250.

Coding Key:

Self-Kindness Items: 5, 12, 19, 23, 26

Self-Judgment Items: 1, 8, 11, 16, 21

Common Humanity Items: 3, 7, 10, 15

Isolation Items: 4, 13, 18, 25

Mindfulness Items: 9, 14, 17, 22

Over-identified Items: 2, 6, 20, 24

Subscale scores are computed by calculating the mean of subscale item responses. To compute a total self-compassion score, reverse score the negative subscale items - self-judgment, isolation, and over-identification (i.e., 1 = 5, 2 = 4, 3 = 3. 4 = 2, 5 = 1) - then compute a total mean.

(This method of calculating the total score is slightly different than that used in the article referenced above, in which each subscale was added together. However, I find it is easier to

interpret the scores if the total mean is used.)

HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner, using the following scale:

Almost never   Almost always

1   2   3   4   5

_____ 1. I'm disapproving and judgmental about my own flaws and inadequacies.

_____ 2. When I'm feeling down I tend to obsess and fixate on everything that's wrong.

_____ 3. When things are going badly for me, I see the difficulties as part of life that everyone goes through.

_____ 4. When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world.

_____ 5. I try to be loving towards myself when I'm feeling emotional pain.

_____ 6. When I fail at something important to me I become consumed by feelings of inadequacy.

_____ 7. When I'm down and out, I remind myself that there are lots of other people in the world feeling like I am.

_____ 8. When times are really difficult, I tend to be tough on myself.

_____ 9. When something upsets me I try to keep my emotions in balance.

_____ 10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.

_____ 11. I'm intolerant and impatient towards those aspects of my personality I don't like.

_____ 12. When I'm going through a very hard time, I give myself the caring and tenderness I need.

_____ 13. When I'm feeling down, I tend to feel like most other people are probably happier than I am.

_____ 14. When something painful happens I try to take a balanced view of the situation.

_____ 15. I try to see my failings as part of the human condition.

_____ 16. When I see aspects of myself that I don't like, I get down on myself.

_____ 17. When I fail at something important to me I try to keep things in perspective.

_____ 18. When I'm really struggling, I tend to feel like other people must be having an easier time of

it.

_____ 19. I'm kind to myself when I'm experiencing suffering.

_____ 20. When something upsets me I get carried away with my feelings.

_____ 21. I can be a bit cold-hearted towards myself when I'm experiencing suffering.

_____ 22. When I'm feeling down I try to approach my feelings with curiosity and openness.

_____ 23. I'm tolerant of my own flaws and inadequacies.

_____ 24. When something painful happens I tend to blow the incident out of proportion.

_____ 25. When I fail at something that's important to me, I tend to feel alone in my failure.

_____ 26. I try to be understanding and patient towards those aspects of my personality I don't like.

Appendix E: Power calculation

Running header: MINDFULNESS, COMPASSION & DISTRESSING VOICES
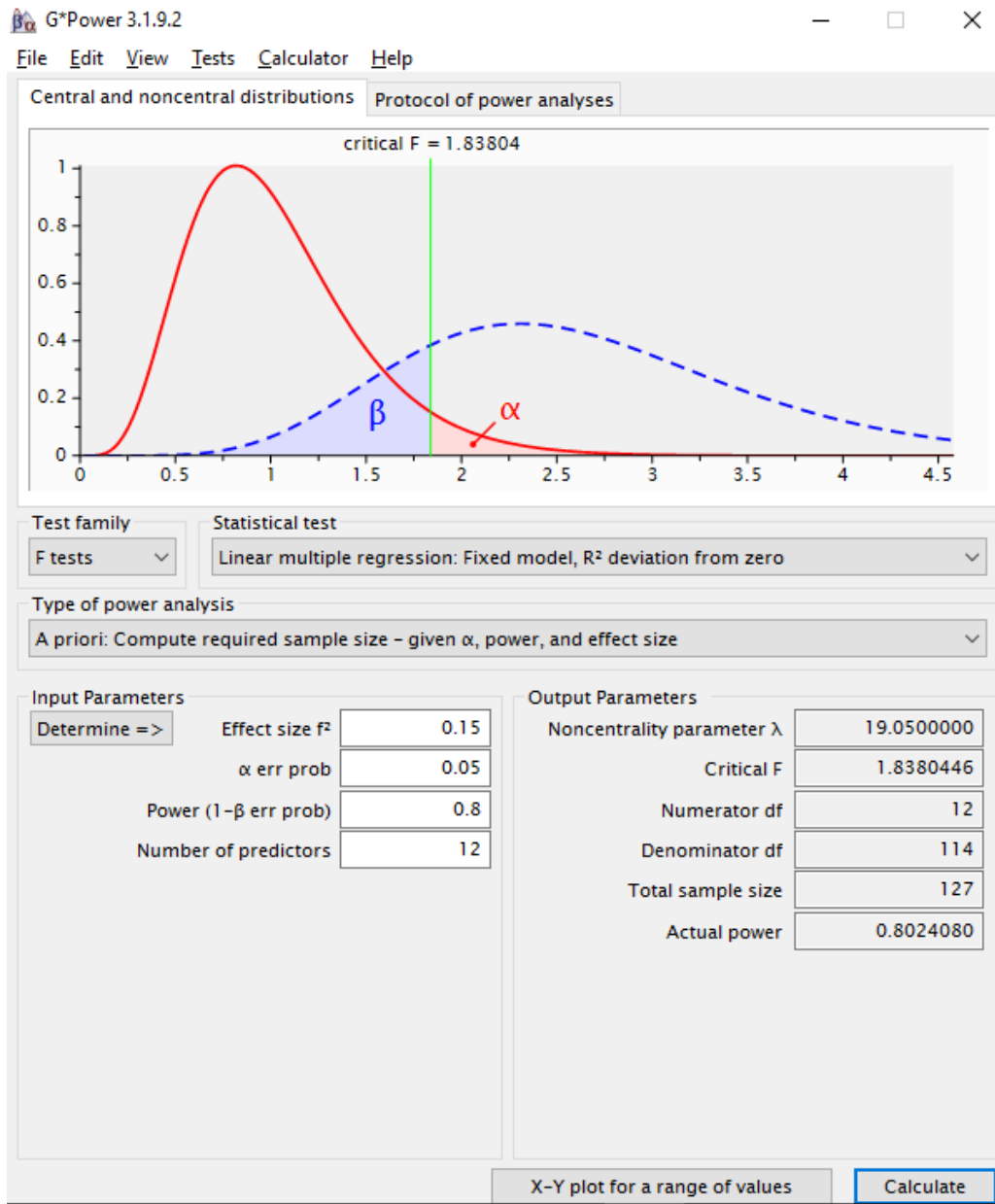
Appendix F: Ethical approvals

1st August 2014

James Dudley
Clinical Psychology Trainee
Doctorate of Clinical Psychology Doctorate Programme
University of Liverpool
L69 3GB

RE: An exploration of the role of self-compassion and mindfulness in relation to the experience of distressing voices

Trainee: James Dudley
Supervisors: Catrin Eames, John Mulligan

Dear James,

Thank you for your response to the Chair's comments of your research proposal submitted to the D.Clin.Psychol. Research Review Committee (letter dated 30/07/14).

Your amended proposal (Version 2, dated 14/07/14) and revised budget (Version 3, dated 30/07/14) have been reviewed by the Committee Chair.

Please note that the Committee advises the trainee to refer to the Hayes textbook on mediational analyses, as this provides a more recent updated account on mediational analysis than that presented by Baron and Kenny; and that the data analysis section, as written, could be a little clearer. For example, is mindfulness predicted to mediate the relationship between self-compassion and distress from voices? Similarly, re the relationship between attachment and distress from voices? The trainee is advised to consider these points with their supervisors as important implications that may require further attention throughout the conduct and write-up phase of the study.

I can now confirm that your amended proposal (Version 2, dated 14/7/14) and revised budget (Version 3, dated 30/07/14) meet the requirements of the Committee and has been *approved as work in progress* by the Committee Chair.

Please take this Chairs Action decision as *final* approval from the committee.

You may now progress to the next stages of your research.

I wish you well with your research project.

Dr Joanne Dickson
Chair D.Clin.Psychol. Research Review Committee.

University of Liverpool Research Ethics Committee Approval

From: Billington, Matthew [mjbill2]

Sent: 01 May 2015 09:32

To: Eames, Catrin; Dudley, James

Cc: Mulligan, John

Subject: RE: RETH000825: An exploration of self-compassion and mindfulness in relation to the experience of distressing voices

Dear Dr Eames and Mr Dudley,

I am pleased to inform you that the Subcommittee has approved your application for ethical approval for your study. Details and conditions of the approval can be found below.

Reference:	RETH000825
Subcommittee:	Non-Invasive Procedures
Review type:	Full committee review
Principal Investigator:	Dr Catrin Eames
Student Investigator:	Mr James Dudley
Department:	Psychological Sciences
Title:	An exploration of the role of self-compassion and mindfulness in relation to the experience of distressing voices.
First Reviewer:	Dr Francine Watkins
Date of initial review:	19/03/2015
Date of Approval:	01/05/2015

The application was APPROVED subject to the following conditions:

Conditions

All serious adverse events must be reported to the Subcommittee within 24 hours of their occurrence, via the Research Integrity and Governance Officer (ethics@liv.ac.uk).

This approval applies for the duration of the research. If it is proposed to extend the duration of the study as specified in the application form, the Subcommittee should be notified. If it is proposed to make an amendment to the research, you should notify the Subcommittee by following the Notice of Amendment procedure. If the named PI / Supervisor leaves the employment of the University during the course of this approval, the approval will lapse. Therefore please contact the Research Integrity and Governance Officer at ethics@liverpool.ac.uk in order to notify them of a change in PI / Supervisor.

Kind regards

_____

Matthew Billington

Research Integrity and Governance Officer

Research Support Office

University of Liverpool

Waterhouse Building (2nd Floor, Block C)

3 Brownlow Street

Liverpool

L69 3GL

Email: ethics@liverpool.ac.uk

Telephone: 0151 794 8290

Website: Research Integrity & Ethics

Dear Dr Eames and Mr Dudley,

I am pleased to inform you that the amendment to your study has been approved. Details and conditions of the approval can be found below.

Reference: RETH000825

Review type: Amendment

Principal   Dr Catrin Eames

Investigator:

Student   Mr James Dudley

Investigator:

Department: Psychological Sciences

Title: An exploration of the role of self-compassion and mindfulness in relation to the experience of distressing voices.

First Reviewer: Dr Francine Watkins

Date   of   initial 14/12/2015

review:

Date   of   22/12/2015

Approval:

The amendment was APPROVED subject to the following conditions:

All serious adverse events must be reported to the Subcommittee within 24 hours of their occurrence, via the Research Integrity and Governance Officer (ethics@liv.ac.uk).

This approval applies for the duration of the research. If it is proposed to extend the duration of the study as specified in the application form, the Subcommittee should be notified. If it is proposed to make an amendment to the research, you should notify the Committee by

following the Notice of Amendment procedure. If the named PI / Supervisor leaves the employment of the University during the course of this approval, the approval will lapse. Therefore please contact the Research Integrity and Governance Officer at ethics@liverpool.ac.uk in order to notify them of a change in PI / Supervisor.

Kind regards,

_____

Matthew Billington

Research Integrity and Governance Officer

Research Support Office

University of Liverpool

Waterhouse Building (2nd Floor, Block C)

3 Brownlow Street

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L69 3GL

Email: ethics@liverpool.ac.uk

Telephone: 0151 794 8290

Website: Research Integrity and Ethics

Appendix G: Information sheet, consent form, debriefing sheet & advertising

LIVERPOOL

Participant Information Sheet

An exploration of the role of self-compassion and mindfulness in relation to the experience of distressing voices.

You are being invited to take part in an online research study. Before you decide whether you would like to take part or not, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear, or if you would like more information. Thank you for reading this.

What is the study for?

This research is about understanding what traits or factors help people who hear voices cope with distressing voices. Past research has shown that the way people interact with and react to their voices can have an impact on the way they feel towards them. Also, the way people treat and view themselves during stressful times can make a difference to how well they cope. In this study, we are hoping to gather information about the experiences of people who hear voices to further understand these factors, specifically looking at how kind people are towards themselves and how able they are to pay attention to their voices non-judgementally. We hope the results will contribute to the improvement of treatments and therapies for those who struggle to cope with distressing voices by increasing our understanding of the traits or factors that help.

Who is doing the study and who has approved it?

The study is being carried out by a team from the University of Liverpool (UK). It has been approved by the University of Liverpool's Research Ethics Committee.

Why have I been invited to take part?

You have been invited because we think that you may be somebody who hears, or has heard voices. This is because you may have viewed the advertisement on 'hearing voices' related websites or social media. If this is the case, we have invited you to take part because we are very interested in learning from your experiences through your responses to the study.

Am I eligible to take part?

We are inviting individuals who hear voices, or have done in the past 6-12 months. Furthermore, we can only invite individuals who are over the age of 18 and are able to read and write in English to take part for ethical reasons to do with gaining appropriate informed consent to participate.

Do I have to take part in the study?

No. It is up to you to decide whether or not to take part. If you decide to take part then we will ask you to sign a consent form. However, you are still free to withdraw at any time without giving a reason. Incomplete questionnaires will be permanently deleted.

What will taking part involve?

If you want to take part then we will first ask you to complete an online consent form. This is to confirm you are happy with the details of the study and wish to proceed to take part. Following this you be asked to complete a set of short questionnaires. We estimate that these should take roughly 20 minutes to complete in a single sitting. However, if you would like to take a break then it is important to leave your computer switched on with the questionnaire open on your screen. If you were to close the internet browser or log off the computer then your answers so far would be lost. We will not ask for any identifying information from you.

Once you have completed the questionnaires, you will have finished the study. At the end of the study, you will be given the option to enter into a prize draw to win one of six £25 Amazon vouchers as a way of thanks for taking the time to participate (only cause long sentence). This will require an email address…information will be kept separately from your questionnaire answers, and we will ask for no other identifying information from you. Once the study closes, the draw will take place and you will be informed by email if you have won a prize. You can also choose to leave your email address if you would like a copy of the report that arises from the study. Your email address details will not be linked to your responses in any way.

Will there be benefits of taking part?

Other than being entered into the prize draw should you wish to do so, there are no specific benefits to participating in the study. However, you may feel it beneficial that the time taken to share your experiences may eventually go towards helping develop more effective therapies for those who hear distressing voices.

What are the possible disadvantages of taking part?

The questionnaires will take time to complete (usually about 20 minutes). They might involve answering questions about things that are upsetting to you. However, you are free to leave the study at any time in the unlikely event you should become upset. We will also provide you with contact details

of additional support services. Furthermore, if any of the questions raise concerns you are advised to contact your General Practitioner (Doctor) for support, and/or discuss them with someone you trust.

What will happen if I want to stop taking part?

You have the right to stop answering the questionnaire at any point, without needing to give any explanation. Should you wish to do this, simply close the internet browser window containing the questionnaires. Any incomplete questionnaires will be withdrawn from the study and permanently deleted. Unfortunately, once you have completed the study it will not be possible to ask for your data to be removed, as we will have no way of identifying which sets of answers are your own.

What if I am unhappy or there is a problem?

If you wish to complain or have any concerns about any aspect of the way you have been treated during this study, you can approach the study Chief Investigator Dr Catrin Eames (0151 794 5609 or catrin.eames@liv.ac.uk). Alternatively, you can contact the Research Governance Officer (0151 794 8290 or ethics@liv.ac.uk). When contacting the Research Governance Officer, please provide details of the name or description of the study (so that it can be identified), the researcher(s) involved, and the details of the complaint you wish to make.

Will my taking part in this study be kept confidential?

Yes it will. All responses will be anonymised, which means that no one will know your identity or which responses are yours. Any information which identifies you (for example, your contact details, should you wish to provide them) will be stored separately from the questionnaire data. Your anonymous responses will only be viewed by the researchers involved in the study and for auditing purposes. All information collected for this research project will be kept safely and securely on a University of Liverpool password-protected computer for 10 years in a central file store in line with University of Liverpool policy for the storage of research data. Access to data by researchers not involved in the current study will be subject to further ethical review.

What will happen to the results of this study?

The results will form part of a Doctorate thesis in Clinical Psychology. They may also be published in academic journals. If you wish, we will be happy to send you a summary of what we have found at the end of the study in July 2016.

Who can I contact for further information?

James Dudley (Trainee Clinical Psychologist) T: 07500949454; E: jpdudley@liverpool.ac.uk

Dr Catrin Eames (Chief Investigator, Lecturer) T: 0151 794 5609, E: catrin.eames@liverpool.ac.uk

Dr John Mulligan (Field Supervisor, Clinical Psychologist) E: john.mulligan@merseycare.nhs.uk

Thank you for taking the time to read this. You should keep this information sheet for future reference

James Dudley, Trainee Clinical Psychologist, Mersey Care NHS Trust

Dr Catrin Eames, Lecturer, University of Liverpool

Dr John Mulligan, Clinical Psychologist, Mersey Care NHS Trust

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PARTICIPANT CONSENT FORM

Title of Research Project: An exploration of the role of self-compassion and mindfulness

in relation to the experience of distressing voices.

Researcher(s):   James Dudley, Dr Catrin Eames & Dr John Mulligan

Please check

the box

1. I confirm that I have read and have understood the information sheet dated [21/09/14] for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my rights being affected. In addition, should I not wish to answer any particular question or questions, I am free to decline.

3. I understand that, under the Data Protection Act, I can at any time ask for access to the identifiable information I provide and I can also request the destruction of that information if I wish.

4. I understand that confidentiality and anonymity will be maintained and it will not be possible to identify me in any publications.

5. I agree to take part in the above study.

Participant Debriefing Sheet

Thank you for taking the time to share your experiences with us. Your contributions are vital in expanding our knowledge of the experience of hearing voices and will help in the development of psychological approaches to helping people who hear distressing voices.

The study aimed to explore whether those who are more compassionate and kind to themselves would experience less distress from their voices. Past research has shown that being self-compassionate is linked to more positive outcomes for people experiencing psychosis, anxiety, depression and other difficult experiences. We also aimed to investigate whether those who are more 'mindful' of their voices experience less distress than those who are not. Being mindful of voices involves being able to 'take a step back' and accept the presence of a voice instead of reacting with confrontation, resistance or avoidance.

We appreciate that the experience of hearing voices is unique to every individual and that what helps one person may not help the next. We hope that this study will help to add to our understanding of the most effective ways of reducing distress for those who struggle with distressing voices.

Prize draw

If you provided a contact email address you will be entered into a prize draw with a change to win one of six £25 Amazon vouchers as way of thanks for your contribution. If you are selected as a winner you will be contact at the end of the study with information on claiming your prize.

Study updates

We have created a **blog** to keep participants up to date on the progress of the study and

further information in our field of research for those who are interested. You can access

this via the following link: http://hearingvoicesresearch.org.uk

Study results

If you provided a contact email address you will be sent a summary of the study findings

upon completion of the study. This is estimated to be around July 2016.

Has participation in this study caused you any distress?

If the study has caused you any distress and you require support we would strongly advise

contacting one of the following services:

The Samaritans

Around the clock confidential emotinal support line.

Tel: 08457 90 90 90

Email: jo@samaritans.org

(Lines are open 24 hours a day, 365 days a year)

MIND

MIND provide a range of advice and information on the following topics:

- Types of mental health problem
- Where to get help
- Medication and alternative treatments
- Advocacy
  Tel: 0300 123 3393

Email: info@mind.org.uk

(Lines are open 9am to 6pm, Monday to Friday (except for bank holidays)

SANE

Out of hours helpline providing information and advice on mental health. Emotional and

crisis support for people experiencing mental illness and for their families, carers friends.

Tel: 0845 767 8000

(Lines are open 6pm to 11pm, 365 days a year)

Hearing Voices Network

The hearing voices network offer information, support and understanding to people who hear voices and those who support them.

Tel: 0114 271 8210

Email: nhvn@hotmail.co.uk

Alternatively it may be advisable to contact your **GP**.

Do you wish to make a complaint?

If you wish to complain or have any concerns about any aspect of the way you have been treated during this study, you can approach the study Chief Investigator Dr Catrin Eames between 9am and 5pm (0151 794 5534 or catrin.eames@liv.ac.uk).

Alternatively, you can contact the Research Governance Officer (0151 794 8290 or ethics@liv.ac.uk). When contacting the Research Governance Officer, please provide details of the name or description of the study (so that it can be identified), the researcher(s) involved, and the details of the complaint you wish to make.

Who can I contact for further information?

James Dudley (Trainee Clinical Psychologist) T: 07500949454; E: jpdudley@liverpool.ac.uk

Dr Catrin Eames (Chief Investigator, Lecturer) T: 0151 794 5609, E: catrin.eames@liverpool.ac.uk

Dr John Mulligan (Field Supervisor, Clinical Psychologist)

john.mulligan@merseycare.nhs.uk

Thank you for taking the time to read this. You should keep this debriefing sheet for future reference

We are conducting research into unusual sensory experiences such as hearing voices which others cannot hear. Below you will find the details of two research studies; one of these studies also requires people who do not have these experiences at all. You have the option to complete one, both or neither of the studies by clicking on the links listed.

STUDY ONE: Self-compassion, mindfulness and distressing voices

The purpose of the study is to investigate ways people cope with the experience of hearing voices others cannot hear.

It is hoped that the results will help in understanding how to provide more effective therapies for people who hear distressing voices.

Who can take part?

To take part you need to:

- Be over 18 years old

- Be able to read written instruction in English

- Have heard voices that others couldn't hear

What will I be asked to do?

You will be asked to complete a set of online questionnaires by selecting responses from a list, including questions about your experience of hearing voices and how you relate to yourself and others. It is up to you how much information you provide.

It is anticipated that this will take between 20 and 30 minutes.

If you choose to leave your contact details you will also be entered into a prize draw with a chance of winning one of six £25 Amazon vouchers.

Click on this link if you're interested to complete the survey or to find out more:
https://livpsych.az1.qualtrics.com/SE/?SID=SV_0qcSq8AhlDqW1HT

Social media advertisement

Tweet 1

140 character limit:

"Would you like to take part in studies investigating voice hearing? Enter for a chance to win

an Amazon voucher http://tinyurl.com/2unsh"

(139 characters)

Tweet 2

140 character limit:

"Would you like to take part in studies about unusual experiences? Enter for a chance to win

an Amazon voucher http://tinyurl.com/2unsh"

(137 characters)

Advertising poster 2, v1, 02.12.2015

Participants needed for online study looking at the experience of hearing voices!

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"Mindfulness, Self-Compassion & Distressing Voices"

The purpose of the study is to investigate ways people cope with the experience of hearing voices others cannot hear.

It is hoped that the results will help in understanding how to provide more effective therapies for people who hear distressing voices.

To take part you need to:
➢ Be over 18 years old
➢ Be able to read written instruction in English
➢ Have heard voices that others couldn't hear
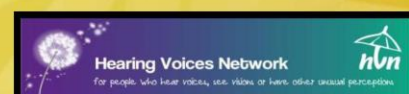
What will I be asked to do?
You will be asked to complete a set of online questionnaires by selecting responses from a list, including questions about your experience of hearing voices and how you relate to yourself and others. It is up to you how much information you provide.

It is anticipated that this will take between 20 and 30 minutes.

If you choose to leave your contact details you will also be entered into a prize draw with a chance of winning one of six £25 Amazon vouchers.

How can I take part?
If you would like more information or to take part just access **hearingvoicesresearch.org.uk** on your laptop, tablet or smartphone! We are recruiting until the end of **March 2016**.

@HVResearch

inter
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Hearing Voices Network
for people who hear voices, see visions or have other unusual perceptions

hvn

Appendix H: Normality Testing

Data for all variables and subscales were explored for normality assumptions testing using skewness and kurtosis values and verified using the Kolmogorov-Smirnov test. All variables except the Southampton Mindfulness of Voices Questionnaire (SMVQ) letting go subscale and total score and the Self-Compassion Scale (SCS) total score were significantly non-normal. Data were transformed using square-root transformation, leaving the total scores for the SMVQ, SCS and Hamilton Programme for Schizophrenia Voices Questionnaire (HPSVQ) meeting assumptions for parametric testing. Full results are displayed in Table G1.

Table G1. Descriptive statistics and normality testing results for all variables and subscales.

Measure	Variable	Mean (SD)	Skewness (SE)	Kurtosis (SE)	Kolmogorov-Smirnov test	
					Score	*p*
RQ	Secure attachment	3.38 (2.05)	.21 (.21)	-1.24 (.43)	.20	<.001*
	Fearful attachment	4.88 (1.98)	-.62 (.21)	-.87 (.43)	.21	<.001*
	Preoccupied attachment	3.24 (1.86)	.27 (.21)	-1.07 (.43)	.18	<.001*
	Dismissing attachment	4.32 (1.89)	-.38 (.21)	-.88 (.43)	.17	<.001*
SCS	Self-kindness	2.61 (.94)	.10 (.21)	-.78 (.43)	.08	.04*
	Self-judgement	3.66 (.91)	-.77 (.21)	.14 (.43)	.14	<.001*
	Common humanity	2.70 (.95)	.31 (.21)	-.56 (.43)	.10	.005*

	Isolation	3.56 (.97)	-.56 (.21)	-.16 (.43)	.10	.002*
	Mindfulness	3.02 (.90)	.01 (.21)	-.76 (.43)	.09	.008*
	Over identification	3.60 (.94)	-.61 (.21)	-.43 (.43)	.12	<.001*
	Total score	2.59 (.75)	.40 (.21)	-.24 (.43)	.07	.20
SMVQ	Mindful observation	12.13 (5.10)	-.03 (.21)	-.69 (.43)	.10	.005*
	Letting go	10.03 (4.71)	.13 (.21)	-.46 (.43)	.08	.06
	Absence of aversion	12.19 (6.07)	.24 (.21)	-.86 (.43)	.15	<.001*
	Non-judgement	10.52 (5.63)	.23 (.21)	-.70 (.43)	.09	.01*
	Total score	44.86 (17.91)	.22 (.21)	-.72 (.43)	.06	.20
HPSVQ	Distress item	2.41 (1.42)	-.30 (.21)	-1.27 (.43)	.20	<.001*
	Total score	21.63 (8.34)	-.34 (.21)	-.63 (.43)	.09	.01*
Transformed variables (Square root)						
	SCS Total	1.60 (.23)	.39 (.21)	-.33 (.43)	.05	.20
	SMVQ Total	6.56 (1.38)	-.16 (.21)	-.79 (.43)	.07	.20
	HPSVQ Total	2.20 (1.04)	.16 (.21)	-.67 (.43)	.06	.20

Note: RQ = Relationships Questionnaire; SMVQ = Southampton Mindfulness of Voices Questionnaire; HPSVQ = Hamilton Programme for Schizophrenia Voices Questionnaire.

Multiple regression normality testing

Upon inspection of histogram and P-P plots, the residuals were normally distributed. Bivariate relationships were linear following checks of scatterplots. Tests for homoscedasticity were conducted with *ZRESID & *ZPRED plots with no evidence of homoscedasticity on visual assessment. No multicollinearity was detected in Variance Inflation Factors (VIF), all VIF scores were below ten and tolerances were above .2. No outliers were found to be influencing the model, all Cook's distance values were below one. Residuals in the model were shown to be independent using the Durbin-Watson test, all values were between 1.5 and 2.5.