Voices, conflict and personal goals: A Perceptual Control Theory perspective on auditory verbal hallucinations

A thesis submitted to the University of Manchester for the degree of Doctor of Clinical Psychology in the Faculty of Medical and Human Sciences

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Filippo Varese

School of Psychological Sciences
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Thesis Abstract

University of Manchester

Candidate: Filippo Varese

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Hallucinations are often considered a sign of psychotic illness, but are also common in other diagnostic groups and individuals without mental health problems. This thesis uses Perceptual Control Theory (PCT), a cybernetic model which explains behaviour and cognition in terms of control processes regulating ongoing perception according to internally represented goals, as a theoretical framework to understand hallucinations.

First, a theoretical/conceptual paper (Paper 1) examines how PCT provides an integrated account of (i) the mechanisms responsible for the formation of hallucinations, (ii) their phenomenological heterogeneity, (iii) the interaction between these mechanisms and environmental factors that might contribute to the formation of hallucinations, and (iv) the processes leading to different affective reactions to hallucinatory experiences (e.g. distress). The main implications of this model are discussed in the context of pertinent theoretical and empirical literature, and relevant clinical and research implications are considered.

Second, this thesis includes an empirical investigation (Paper 2) examining two PCT-informed hypotheses in a cross-section of 22 clinical and 18 non-clinical individuals with auditory verbal hallucinations (“hearing voices”), namely (i) that the content of voices will be thematically linked to the participants’ personal goals, and (ii) that affective reactions to voices will depend on the extent to which voices facilitate and/or interfere with important personal goals. The analysis revealed that 82.5% of participants reported voices that thematically matched at least one of their reported goals. As predicted, affective reactions to voices were strongly associated with measures of interference and facilitation of goals, even when controlling for important covariates (e.g. participants’ history of mental health difficulties; voices’ content, frequency and duration).

Finally, a critical evaluation is provided (Paper 3), where the methodological strengths and limitations of the work presented in the present thesis are discussed with the aim to reflect on the research process, and inform future investigations into the topics considered in this thesis.
Declaration

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.
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Thanks to Maria Haarmans and Dr Zoe Tsivos for their helpful comments on the papers included in this thesis. Most importantly, I would like to thank all the participants who took part in this study - This work would have been impossible without your help, patience, time and curiosity.

This paper has been formatted according to the publication guidelines of Psychological Review (see Appendix A), and will be submitted for publication as Varese, F., Mansell., W. & Tai, S.J., Understanding hallucinatory experiences: A novel integrative framework using Perceptual Control Theory.
Abstract

Hallucinations are often considered a sign of severe mental illness (e.g. psychosis), but are also experienced by individuals without known pathology. Numerous theoretical accounts have been proposed to explain discrete “components” of hallucinations (e.g. processes involved in symptom-formation, processes causing associated distress/impairment). The current paper proposes a novel framework to understand hallucinations based on Perceptual Control Theory (PCT), a cybernetic model which explains human behaviour and cognition in terms of a neural hierarchy of negative feedback control systems regulating ongoing perception according to internally represented goals. Here, we review the theoretical tenets of PCT to provide an account of (i) the mechanisms responsible for the formation of hallucinations, (ii) the varied phenomenology of hallucinations, (iii) the interaction between internal mechanisms and environmental factors that might contribute to the formation of hallucinations; and (iv) the processes leading to different affective reactions to hallucinatory experiences (e.g. distress). In the present account, hallucinations are regarded as a product of mechanisms compensating for prolonged and/or severe lack of control over valued perceptions and goals – a condition which often arise from unresolved conflict between goals. The main implications of the present PCT-account of hallucinatory experiences are discussed in the context of pertinent theoretical and research literature. The paper will conclude with a proposal for further research development and clinical recommendations stemming from a PCT-informed understanding of hallucinatory experiences.
Understanding Hallucinatory Experiences: A Novel Integrative Framework

Using Perceptual Control Theory

Hallucinatory experiences have been the subject of enduring psychological, philosophical and neuroscientific inquiry (Aleman & Larøi, 2008; Jardri, Cachia, Thomas, & Pins, 2013; Leudar & Thomas, 2000; Macpherson & Platchias, 2013; Slade & Bentall, 1988). Despite considerable variation, several shared characteristics can be identified across the numerous definitions proposed in the literature to differentiate hallucinations from other psychological and perceptual phenomena (e.g. Aleman & de Haan, 1998; Aleman & Larøi, 2008; Blom, 2010; Campbell, 2004; Colman, 2003; David, 2004; Horowitz, 1975; Liester, 1998; Slade & Bentall, 1988). These include the presence of sufficient sensory detail to resemble “veridical perceptions” in the absence of direct involvement or appropriate stimulation of sensory organs, the lack of perceived control over the generation of the perceptual experience, and the concomitant sense that the percept is not a self-generated or internally-generated experience.

Hallucinations can occur in any sensory modality. In addition to the auditory modality, hallucinated perceptions in other sensory modalities (visual, gustatory, olfactory and tactile/somatic hallucinations) are relatively common in both psychiatric samples (Bracha, Wolkowitz, Lohr, Karson, & Bigelow, 1989; Delespaul, deVries, & van Os, 2002; Fontenelle et al., 2008; Mueser, Bellack, & Brady, 1990) and the general population (e.g. Johns, Nazroo, Bebbington, & Kuipers, 2002; Ohayon, 2000; Tien, 1991). Auditory verbal hallucinations (AVHs, or “voices”) represent the type of hallucination which has been investigated most extensively, probably due to their enduring association with diagnostic criteria for
psychotic illness (e.g. Schneider, 1959). Although most commonly observed in individuals with schizophrenia-spectrum diagnoses, research suggests that AVHs are also prevalent amongst other psychiatric disorders, including (but not limited to) mood disorders (e.g. Baethge et al., 2005; Goodwin & Jamison, 2007), dissociative disorders (e.g. Dorahy et al., 2009; Honig et al., 1998), post-traumatic stress disorder (e.g. Anketell et al., 2010; Brewin & Patel, 2010; Butler, Mueser, Sprock, & Braff, 1996) and borderline personality disorder (Kingdon et al., 2010). A growing number of studies suggests that AVHs are also experienced by individuals without any mental health difficulties (Beavan, Read, & Cartwright, 2011) although these “non-clinical voice-hearers” often present significantly lower levels of associated distress (e.g. Daalman et al., 2010; Hill, Varese, Jackson, & Linden, 2012; Honig et al., 1998; Sommer et al., 2010).

Researchers and clinicians are faced with an increasing number of models to explain the origins of hallucinations, their heterogeneous characteristics and the diverse emotional, cognitive, and behavioural impact that these experiences may have on different individuals. In the area of AVHs research, a growing number of models have been proposed to elucidate the cognitive and psychological processes involved in the aetiology of these experiences. There is convergent theoretical consensus that AVHs represent internally generated mental events (e.g. verbal thoughts, memories, acts of inner speech) that are perceived as alien or external due to failures in discriminating between internal and external perceptions. However these cognitive models differ considerably regarding the specific mechanisms that might account for these discrimination failures (e.g. Badcock, Waters, & Maybery, 2007; Bentall, 1990; Brookwell, Bentall, & Varese, 2013; Ditman & Kuperberg, 2005; Feinberg, 1978; Frith & Done, 1988; Laroi & Woodward, 2007; Moseley,
Fernyhough, & Ellison, 2013; Waters, Allen, et al., 2012; Waters, Woodward, Allen, Aleman, & Sommer, 2012), and the extent to which similar processes may account for the formation of hallucinations across different sensory modalities and diagnostic populations (e.g. Arguedas, Stevenson, & Langdon, 2012; Barnes, Boubert, Harris, Lee, & David, 2003; Dolgov & McBeath, 2005; Waters, Allen, et al., 2012). These models have been subject to several criticisms, particularly in light of studies which found evidence of phenomenologically distinct clusters of AVHs, and suggestions that separate mechanisms may underlie different AVHs phenomenological subtypes (e.g. Jones, 2010; Larøi et al., 2012; McCarthy-Jones, 2012; McCarthy-Jones, Krueger, Larøi, Broome, & Fernyhough, 2013; McCarthy-Jones, Trauer, et al., 2014; Stephane, 2013; Stephane, Thuras, Nasrallah, & Georgopoulos, 2003). Furthermore, these model are not always able to directly account for the effects of psychosocial risk factors that have been linked to hallucination-vulnerability (e.g. Daalman et al., 2012; McCarthy-Jones, 2011; Shevlin et al., 2011; Varese, Smeets, et al., 2012). Finally, these models often offer little insight into the factors differentiating between pathological and non-pathological hallucinatory experiences. Hence, as a largely independent line of inquiry, several “clinical” models of AVHs - most frequently developed within a cognitive-behavioural therapy framework - have been proposed to explain the processes causing hallucination-related distress and impairment, and inform psychological interventions to ameliorate the difficulties experienced by individuals with distressing voices (e.g. Chadwick & Birchwood, 1994; Chadwick & Birchwood, 1996, 1997; Mawson, Cohen, & Berry, 2010; Morrison, 1998, 2001).

This ongoing proliferation and diversification of models possibly stems from the lack of an integrative theoretical framework to understand the different “components” of hallucinations, and bridge the different levels of analysis.
considered by existing accounts. In the current paper, we propose that Perceptual Control Theory (PCT; Powers, 1973; Powers, 2005), a cybernetic model of human behaviour based on the principle of negative feedback, might provide such an integrative framework. After outlining the theoretical foundations of PCT, we will describe a theory-based account of hallucinatory experiences, placing particular emphasis on how PCT might provide a unified account of (i) the internal mechanisms responsible for the formation of hallucinatory experiences, (ii) the process through which these mechanisms may account for the heterogeneous phenomenology of hallucinations, (iii) the possible interaction between internal mechanisms and environmental factors that might contribute to the formation of hallucinations; and (iv) the processes leading to different affective reactions to hallucinatory experiences (e.g. hallucination-related distress). Throughout, we outline the main implications of the proposed model, and refer to pertinent theoretical and empirical literature to gauge the existing support for these PCT-informed predictions. Although the account outlined in the present paper applies to hallucinations in different modalities, we will refer primarily to AVHs given the richer empirical and theoretical literature on this specific type of hallucinations. The paper will conclude with a proposal for further research development, as well as clinical recommendations stemming from a PCT-informed understanding of hallucinatory experiences.

What is Perceptual Control Theory?

Comprehensive descriptions of PCT have been reported elsewhere (e.g. Mansell, 2005; Mansell, Carey, & Tai, 2012; Powers, 1973, 2005; Runkel, 2003), and the present paper will therefore only cover components of the theory required to
outline a possible PCT-account of hallucinatory experiences. PCT was developed through the 1950s and 1960s by physicist and engineer William T. Powers (Powers, Clark, & McFarland, 1960a, 1960b), with a full description provided in Powers’ seminal book *Behaviour: The Control of Perception* (Powers, 1973, 2005). The origins of PCT lie in control theory as applied within engineering (Powers, 2009), which concerns the study of control systems, i.e. systems configured to determine and maintain predefined conditions rather than simply responding to external stimuli.

The theoretical foundations of PCT are supported by a growing number of experimental psychology and neuroscience studies (for reviews see Mansell & Carey, 2009; Marken & Mansell, 2013; McClelland, 2004; Pellis & Bell, 2011), and it has been recently proposed that PCT represents a promising integrative paradigm to understand human functioning across both the biological, the psychological and the social domains (Carey, Mansell, & Tai, 2014). PCT has informed the development of several control theory approaches in personality and clinical psychology (e.g. Carver & Scheier, 1982). Furthermore, PCT has been applied to the understanding of a wide range of mental health problems, including obsessive compulsive symptoms (Pitman, 1987), depression (Hyland, 1987), addictive behaviours (Webb, Sniehotta, & Michie, 2010), bipolar disorder (Mansell, 2010), dissociative experiences (Johnson, 2009; Mansell & Carey, 2013) and psychosis (Tai, 2009). In recent years, PCT has led to the development of specific therapeutic interventions, most notably a transdiagnostic cognitive therapy known as Method of Levels (Carey, 2006; Mansell et al., 2012).

Similar to other psychological theories (for a review, Austin & Vancouver, 1996), PCT assumes that behaviour is a goal-directed process, although it departs from other theoretical frameworks in providing a greater level of mechanistic details
through which this process is achieved and maintained. According to PCT, perception, cognition and behaviour are integrated components of a functional dynamic system aimed at creating and maintaining predefined or “desired” conditions (Carey & Mansell, 2009; Powers, 2005; Powers et al., 1960a, 1960b). This is achieved through a process in which a perceived variable is maintained or stabilised at specific and predefined values by generating outputs targeted at opposing environmental disturbances that might otherwise perturb these desired perceptions. This process is known as control. Within a PCT framework, the term “control” does not necessarily indicate an effortful, deliberate or constraining process (Mansell et al., 2013). Rather, PCT assumes that control represents an intrinsic property essential to all living organisms (Bourbon, 1995; Powers, 2005; Runkel, 2003). It is important to note that PCT provides a detailed architecture to explain psychological functioning through the operation of many subsystems (Vancouver, 2005). This contrasts with most other psychological theories, which explain the ‘system’ as a whole; self-efficacy theory being one example (Bandura, 1977). Thus, many concepts familiar to psychologists, such as memory, learning, planning, and imagination are explained within PCT through detailed specification of the properties of numerous subsystems and how they are organised. Only those features of the theory necessary to explain hallucinations will be introduced in the current article.

**Perceptual Control Systems**

From a PCT perspective, control is achieved through a process of negative feedback (Ashby, 1952; Wiener, 1948). Three essential components are involved in this process: perception (or, using PCT terminology, an “input function”),
comparison ("comparator function") and action ("output function"). Figure 1 provides a graphical representation of a negative feedback loop comprising these three essential components. In order for control to occur, a perceptual apparatus (e.g. the sensory receptors comprising external sensory organs) must be present to sense the current status of a specific variable in the environment, which is internally represented within the control system as a perceptual signal (perception). The perceptual signal is then compared to an internal reference signal, also known as goal or internal standard, describing the “desired” value of the perceived variable (comparison). The discrepancy between the perceptual and the reference signals results in an error signal which informs the execution of specific outputs (action) aimed at bringing the perceived variable closer to the internal standard. It should be stressed that in this process, the output of the system (behaviour) is not directly controlled. Rather, the perceptual consequences of behaviour are being controlled, thus, behaviour is the control of perception (Powers, 1973, 2005).

It is recognised that a similarly specified system can operate dynamically to counteract variations in the environment so that specific perceptions are maintained closer to a predefined standard, or in other words “bring one’s experiences closer to one’s goals” (Mansell et al., 2013, p. 26). PCT entails a more comprehensive notion of “goal” compared to lay conceptualisation of this term. In line with other theoretical approaches focusing on goal-constructs (Austin & Vancouver, 1996), goals can be described as “internal representations of desired states, where states are broadly construed as outcomes, events and processes” (p. 338), ranging from specific biological set-points for internal physiological processes (e.g. a core body temperature of 37C), to more complex and sophisticated representations of desired
Figure 1: Basic negative feedback loop. A graphical representation of a basic negative feedback loop system controlling a perceived variable in the environment (adapted from Powers, 2008)

outcomes and needs that may be influenced by socio-cultural processes (e.g. to be successful). Similarly, goals provide information pertinent to the ability of the individuals to move towards desired states, but also inhibit or prevent undesirable outcomes (e.g. Austin & Vancouver, 1996; Dickson & MacLeod, 2004; Elliot, Sheldon, & Church, 1997).
The Control Hierarchy

The existence of negative-feedback control processes regulating a number of critical biological variables essential for our survival (e.g. homeostatic systems like the process of regulation of blood glucose levels by insulin release) is uncontroversial (e.g. Cannon, 1929). PCT describes how a multitude of similarly configured negative feedback systems may develop and interact as part of a dynamic and integrated neural architecture able to account for the perceptual and behavioural complexity characteristic of living organisms, including human cognition and behaviour. According to PCT, organisms are born with a number of “intrinsic systems” which monitor and regulate critical variables that ought to be maintained within certain parameters in order to ensure survival (e.g. the organism’s core body temperature). PCT proposes that the continued attempt to minimise error in these intrinsic systems is the force driving the development of increasingly sophisticated perceptual control systems regulating higher-order perceptions, so that variables controlled by intrinsic systems are kept at optimal level. In other words, the organism will develop higher-order control systems allowing for the control of complex internal and external perceptions that will minimise “intrinsic error” (i.e. error in intrinsic systems).

Control systems develop hierarchically and in parallel, leading to “layers of perception” constituting a hierarchically organised neural architecture able to control variables across all levels of perceptual complexity, from momentary sensations to abstract psychosocial variables (Carey et al., 2014; Powers, 1973, 1990, 2005). The control systems at each level of this “control hierarchy” interact so that the output signal of higher-order systems (regulating more abstract/general goals and perceptions) determines the reference values of lower-order systems (regulating
increasingly more “concrete” and specific perceptions), with each control system having the potential for receiving (through their input function) and “transmitting” (through their output function) multiple signals to lower-level systems. Powers (1990, 2005) proposed the existence of 11 levels within the control hierarchy (namely, in ascending order of perceptual complexity: Intensities, Sensations, Configurations, Transitions, Events, Relationships, Categories, Sequences, Programs, Principles and System Concepts). This hierarchical organisation entails that the class of goals and controlled perceptions within the different levels of the hierarchy will vary in terms of their specificity and concreteness. Goals at the highest level of the hierarchy pertain to the perception of “system concepts” (for example, the person’s general self-concept), and regulate a number of lower-order goals pertaining to the “principles” that the individuals aim to adhere to in their lives (e.g. loyalty, compassion), which in turn determine more specific “programs” regulating the individual’s perception of acting in ways in accordance with these principles (e.g. visiting a sick relative), moving down to the lowest levels of the hierarchy (e.g. the Configuration, Sensation and Intensity levels) controlling sensory perceptions directly related to internal and external sensory organs.

Consistent with this PCT account, several studies suggest that cognitive development in primates and humans follows a step-wise pattern corresponding to the development of new “levels” of perceptual control (Plooij & van de Rijt-Plooij, 1990). Furthermore, experimental studies have supported a hierarchical organisation of perception consistent with PCT (Marken, 1986; Marken, Mansell, & Khatib, 2013). It can be noticed that the higher-order internal structures described by PCT have parallels in other psychological theories; for example schemas (Bartlett, 1932), core beliefs (Beck, Rush, Shaw, & Emery, 1979), values (Hayes, Strosahl, &
Wilson, 1999), needs (Maslow, 1943) and self-guides (Higgins, 1987). Despite these parallels, PCT provides a greater level of specification regarding how these higher-order systems function in relation to one another, and in relation to more concrete goals.

In sum, a basic tenet of PCT is the existence, within the human nervous systems, of control systems functioning according to the principles of negative feedback. These basic “building blocks” form an evolving and hierarchically organised neural structure whose function is to maintain continued effective control over the myriad of perceptions necessary for our survival, and ensure that control can be re-established in situations where the regulation of essential perceptions is lacking.

The Underpinnings of Hallucinatory Experiences in PCT

Conflict as a Determinant of Hallucinations

The account of hallucinations we describe assumes that hallucinations represent the product of the intrinsic mechanisms described by PCT that may allow the control hierarchy to minimise perturbed perceptual control. According to PCT, effective control is maintained insofar as the individual is able to control multiple perceptions simultaneously, in accordance to internally determined goals. However, control can be disrupted under a variety of circumstances, such as physical damage (e.g. damage to the sensory receptors so that the system is unable to sense the controlled variable), lack of appropriate means for control, or extreme environmental disturbances affecting controlled perceptions. PCT assumes that the most common cause of loss of control is through the simultaneous pursuit of two or more mutually
exclusive goals, i.e. when two control systems attempt to control the same perception using incompatible reference values; a condition known as “internal conflict” (Carey, 2006, 2008; Mansell, 2005; Mansell et al., 2013; Powers, 1973, 2005; Powers et al., 1960a, 1960b). Powers (1973; Powers et al., 1960a, 1960b) proposed that many behaviours and experiences traditionally regarded as symptoms of mental illness, including hallucinations, arise from conflict and subsequent experiences of loss of or reduced control.

The proposal that conflict might underlie hallucinations is not novel. Within the psychodynamic literature, conflict (i.e. “the situation that exists when two contradictory tendencies oppose each other in a person's mind”; Colman, 2003) is central to the aetiology of psychopathology (e.g. Freud, 1924), including hallucinatory experiences (e.g. Blom, 2010; Erwin, 2002; Jung, 1960; Linn, 1977; Masson, 1992). Theoretical approaches which conceptualise AVHs as dissociative experiences (Longden, Madill, & Waterman, 2012; Moskowitz & Corstens, 2007; Moskowitz, Read, Farrelly, Rudegeair, & Williams, 2009) have regarded hallucinations as the expression of threatening or conflicting strivings, impulses, ideas and feelings that are “disowned” and become separated from conscious awareness. Similarly, Romme and Escher (1993, 2000) and other affiliated researchers described hallucinations as the product of defences against otherwise intolerable or overwhelming psychosocial and/or emotional conflicts stemming from adverse life experiences, which might be expressed in a distorted or metaphorical way in the content of hallucination (Corstens & Longden, 2013; Johnstone, 2012; Longden, Corstens, Escher, & Romme, 2011; Romme, 2012; Romme & Escher, 2000). Within the cognitive-behavioural literature, it has been proposed that hallucinations may arise when thoughts are “externalised” in an attempt to reduce
cognitive dissonance (a state of negative arousal experienced when simultaneously holding conflicting cognitions; Festinger, 1957) resulting from the concomitant experience of intrusive cognitions and maladaptive beliefs about the importance of controlling mental events (Morrison, Haddock, & Tarrier, 1995). Despite the above theoretical propositions implicating forms of psychological conflict in the aetiology of hallucinations, direct empirical support for an association between conflict and hallucinations is lacking. This possibly stems from the sometimes ambiguous or overly general working definition of conflict (or associated constructs, e.g. cognitive dissonance) in these theoretical approaches, and the subsequent intrinsic difficulty in developing precise methods to assess conflicts believed to underpin hallucinations.

In contrast, PCT offers a mechanistically precise and specific description of conflict, which can be mathematically modelled and is amenable to examination using empirical methods.

The Model of Internal Conflict Described by PCT

Figure 2a displays a representation of internal conflict as conceptualised within a PCT framework. The working model of conflict provided by PCT is assumed to involve (at least) three levels within the control hierarchy. In this example, two control systems are in conflict because a higher-order system sets incompatible reference values for the control of the same perception (i.e. in this case, the signal received by a lower control system). Prototypical examples of internal conflict are situations characterised by ambivalence or “approach-avoidance” tendencies (e.g. Miller, 1944; Sincoff, 1990), for example in the case of individuals
Figure 2: Internal conflict and the imagination mode. Diagrammatical representation of the possible configuration of two conflicting control systems (Figure 2a) and a possible clinical example of conflict (Figure 2b). The diagram also displays the hypothetical “short-circuit” caused by switching one of the conflicting systems to imagination mode (Figure 2c).
motivated to achieve social interaction and affiliation, whilst simultaneously pursuing potentially incompatible goals such as avoiding potentially aversive consequences of interpersonal interaction (e.g. risk for rejection or interpersonal victimisation). A clinically-relevant illustration (graphically represented in Figure 2b) might be that of an victim of abuse whose desire to be safe and avoid further victimisation sets discordant “sub-goals” for lower-order systems – becoming withdrawn and isolative, therefore potentially minimising chances of adverse social contact, and the desire to “reach out” to others who might provide support and protection. Similar situations of inner conflict lead to a disruption of control, as achieving one goal necessarily involves substantial discrepancy in the other conflicting goal (Powers, 1973, 2005; Powers et al 1960a). This may be experienced, for example, as a continued fluctuation between the states determined by the conflicting systems (e.g. attempting to make contact with friends only to become rejecting or withdrawn whenever in their company).

Conflict is assumed to be experienced by the individual as inherently aversive and distressing if sufficiently severe or prolonged. This is consistent with empirical findings that distress is linked to measures of personal conflict (e.g. Lauterbach, 1996; Lauterbach & Newman, 1999) and opposition between valued desired states (e.g. Carey, 2008; Emmons, 1986; Emmons & King, 1988; Kelly, Mansell, & Wood, 2011; King & Emmons, 1990; Renner & Leibetseder, 2000; Riediger & Freund, 2004). Furthermore, greater distress maybe experienced whenever the resulting loss of control involves goals that are particularly fundamental to the individual, or directly related to the person’s survival (e.g. Alsawy, Mansell, Carey, McAvoy, & Tai, in press; Powers, 2005; Runkel, 2003).
PCT postulates that unresolved conflict can lead to a state of chronic error in the control hierarchy, which is potentially detrimental to the functioning and survival of the individual. Under normal circumstances, control can be re-established through an intrinsic learning process, known as reorganisation (Powers, 1973, 2005; Powers et al., 1960a). The exact description of the process of reorganisation is beyond the scope of this article, for which it is sufficient to mention that reorganisation involves the action of specialised “reorganising systems” able to monitor intrinsic error at all levels of the control hierarchy. Through these reorganising systems, trial-and-error alterations to the properties of the control systems are produced until alternative configurations enabling the correction of error are achieved (Mansell et al., 2012; Marken & Powers, 1989; Pavloski, Barron, & Hogue, 1990; Powers, 2005, 2008). Reorganisation is assumed to be the only mechanism enabling long-term resolution of internal conflict. However, in cases where conflict is severe and prolonged, alternative means can be employed to compensate for (but not resolve) conflict. These mechanisms can be conceptualised as “defences” (Powers 1973, Powers et al., 1960a, 1960b) that the system uses to “compensate for the parasitic presence of conflicted systems” and defend itself from “the threat of experiencing error due to conflict” (Powers, 2005, pp. 269-270). One of such mechanisms, known as “arbitrary control”, involves the attempt to make a perception conform to a certain goal without regard to other conflicting goals that may also be controlling that perception (Powers, 1973, 2005). It has been proposed that a variety of maintenance processes associated with psychopathology, for example safety behaviours, behavioural and attentional avoidance, or thought and emotion suppression, can be conceptualised as forms of arbitrary control used by individuals to maintain control over a set of “intended” goals while inhibiting other relevant goals, or being momentarily
unaware of their importance (Mansell, 2005, 2012). Another possible compensatory mechanism for conflict is the potential for parts of the control hierarchy to operate in a mode of functioning, which Powers (1973) named the imagination mode, that virtually “short-circuits” control systems so that internally-generated information is substituted to the uncontrollable perceptions from the conflicted systems (Powers et al., 1960a, 1960b). PCT proposes that this specific mode of functioning is central to the formation of internally-generated perceptions, including hallucinations.

**The Imagination Mode**

PCT proposes the existence of different modes of functioning involving alterations in the way information is transmitted between control systems at different levels of the hierarchy. In the default modality of functioning so far considered, known as the control mode, all signals from different levels of the hierarchy are bi-directionally connected, i.e. higher-level systems receive input and provide output to lower levels. The manipulation of these two streams of information (output signals from, and input signals to higher levels systems) allows for further modes of functioning to emerge. In imagination mode, higher levels systems are signalling reference values that are rerouted to the input functions of that level, rather than providing reference values to lower systems. This could be considered a short circuit within the control hierarchy, or separation between control systems that would otherwise be hierarchically connected. A diagrammatic representation of the functioning of a control system in the imagination mode is highlighted in Figure 2c. Whilst in full control mode (Figure 2a) the control system “perceives” information transmitted by lower-order systems. Switching to the imagination mode involves bypassing connections between the control system and lower level of the hierarchy.
(or the controlled variables in the organism’s internal or external environment, in the case of control systems at the lowest levels of the hierarchy). The perceptual information received by the control system is provided, instead, by the output function of the same system. PCT predicts that these internally-rerouted perceptions will be closely related to memories of past perceptual signals. PCT, in fact, assumes that control systems in the hierarchy have the intrinsic ability to store and subsequently retrieve perceptual signals, and that the reference signals (i.e. goals) received by control systems are constituted from retrieved recordings (or combination of recordings) of past perceptual signals that are triggered by higher-order systems (for a more detailed account of the function of memory in PCT, see Powers, 1973, 2005; Runkel, 2003).

Within PCT, the imagination mode allows for current perceptions to be internally-generated, and it is assumed, to be implicated in a variety of mental processes involving the immediate control of internally-generated perceptions such as planning, conscious remembering and mental simulations (Mansell, 2005; Mansell & Carey, 2013; Powers, 1973; Powers et al., 1960a, 1960b; Runkel, 2003). Furthermore, as mentioned previously, Powers (1973, 2005; Powers et al., 1960b) suggested that the imagination mode might represent an alternative means of re-establishing short-term perceptual control and thus compensate for the presence of conflict. In the hypothetical internal conflict scenario presented in Figure 2a, the two conflicting systems are unable to effectively bring the perception they are simultaneously trying to control closer to their respective goals – at any one time one or both systems (and the overarching higher-level system which “drives” the conflict by setting their reference values) will be in error. In the absence of effective reorganisation this impasse could be circumvented (at least momentarily) by
switching one of the two conflicting systems to the imagination mode (Figure 2c). The system in the control mode, now freed from the perturbing influence of the other conflicting system, will be able to bring its controlled perception closer to its goal. Similarly, the control system “isolated” in the imagination mode will no longer be in error as its current perception is provided by an internally-generated signal that will eventually match the system’s goal. As a consequence of this, error in the higher-level system will also be reduced as both underlying systems will now be closer to their reference values.

**How Conflict and the Imagination Mode Lead to Perceptual Experiences of Hallucinations**

The imagination mode, despite being a means to accomplish short-term control over desired perceptions, would be unfeasible if employed exclusively and as a long-term strategy as it may serve to maintain conflict (Powers, 1979, 2005). For example, an individual torn between concerns of avoiding social rejection and the desire to make new friends will be unable to resolve the above conflict if compensatory strategies based on the imagination mode (e.g. conjuring an imaginary friend) are chronically implemented. Furthermore, the imagination mode has the potential to produce internally-generated sensory phenomena that may appear as unwanted or unintended, particularly in instances where the portions of the control hierarchy that operate in the imagination mode include lower-order systems afflicted by severe internal conflict. PCT enables predictions regarding some of the conditions that may be necessary for these sensory phenomena to present the defining features of hallucinatory experiences, namely the potential for the individual to experience
these internally-generated perceptions as unintentional, out of control and lacking a sense of agency or “ownership”.

Here, we propose that the uncontrollable and “alien-like” character of hallucinated perceptions may arise as a consequence of the limited awareness of higher-order goals regulating lower-order systems in imagination mode, resulting in diminished sense of perceived control of the resulting internally-generated perceptions. Awareness (or attention) is, in PCT, a phenomenon closely linked to the system responsible for reorganisation within the control hierarchy (Powers, 1980, 2005). According to Powers (1973, 2005), the ability of attending to specific elements of current perception is linked to the capacity of reorganizing systems of receiving perceptual signals and monitoring error at all levels of the control hierarchy. This provides individuals with the ability to shift their awareness to different parts of the hierarchy, and voluntarily attend to higher- and lower-order goals and perceptions (Powers, 1992; Mansell 2005). However, only a small portion of the myriad of perceptions that are simultaneously controlled will be accessible to awareness at any one time. PCT also assumes that the mobility of awareness throughout the control hierarchy may be compromised in situations of internal conflict, as it will tend to gravitate towards the error produced by the conflicting control systems (Carey, 2006). Furthermore, awareness might become focused on specific “sides” of conflict as a consequence of arbitrary control. The systematic or chronic implementation of arbitrary control (which could take several forms, e.g. behavioural/attentional avoidance, thought and emotion suppression; Mansell, 2005) may promote a narrowing of the person’s awareness on one “intended” side of the conflict. For hallucinations to arise, it is plausible that awareness might be focused on goals driving one side of the internal conflict, whilst other conflicting goals are, at
least momentarily, outside of conscious awareness. Due to limited awareness, the internally-created perception that may arise when systems within this inhibited/unattended side of the conflict are switched to the in imagination mode will be experienced as inconsistent with the individual’s goals and intentions currently in awareness. This discrepancy might be responsible for the percept to be experienced as unintentional, uncontrollable, and its content to be “egodystonic”, to such an extent that it may induce individuals to experience the perception as alien or external to the self.

In sum, the proposed PCT model assumes that the perturbed sense of agency that characterises hallucinations is linked to a lack of perceived control resulting from the discrepancy with goals currently accessible to awareness. This conceptualisation matches experimental evidence suggesting that reduced self-agency may be experienced when large discrepancies arise between predicted consequences of an intended actions/events (information that in PCT is assumed to be internally represented as goals) and the actual perceived consequences of the resulting experience (e.g. Renes, Vermeulen, Kahn, Aarts, & van Haren, 2013; Sato & Yasuda, 2005). Furthermore, the present proposal is in line with studies of AVHs suggesting that perceived lack of control and the “distinctiveness” of the hallucination’s content (i.e. content that was distinct from the experiencer’s usual mental events) represent the most salient experiential features discriminating between ordinary self-generated cognitions and hallucinatory experiences (Hoffman et al., 2008). It should be noted that the proposed conceptualisation is reminiscent, but independent, of neurocognitive accounts which implicated disrupted intentionality and perceived control in the aetiology of hallucinatory experiences. For example, Hoffman (1986) proposed that AVHs arise from abnormal
preconscious (inner) speech planning consisting in the involuntary generation of a

discourse that is incongruent with the conscious goals and intentions of the speaker,

which would then induce the individual to attribute involuntary speech to an external


Similarly, self-monitoring accounts (Feinberg, 1978; Frith & Done, 1988) have

proposed that hallucinations arise when internal mechanisms for signalling the

expected sensory consequences of self-initiated acts are disrupted or lacking, leading
to reduced ability to discriminate between self-generated actions and something

occurring outside one’s control (Blakemore, Wolpert, & Frith, 2002; Fletcher &

Frith, 2009; Frith, Blakemore, & Wolpert, 2000). In contrast to these previous

theoretical proposals, within the present model the experience of hallucinations is not

explained in terms of defective or “abnormal” underlying mechanisms, but as

experiences emerging from normal and functional properties of the perceptual

systems involved (i.e. the imagination mode) within certain psychological conditions

(e.g. presence of internal conflict, limited or restricted awareness of underlying goals).

**Explaining the Phenomenological Heterogeneity of Hallucinations**

Studies suggest that the content and phenomenological characteristics of

hallucinated perceptions are extremely varied (Gauntlett-Gilbert & Kuipers, 2003;

Larøi et al., 2012; McCarthy-Jones, Trauer, et al., 2014; Stephane, 2013; Stephane et

al., 2003). The mechanisms described by PCT, and the elaborate, “multi-layered”

working model of perception and mental functioning provided by this theory can

account for this phenomenological heterogeneity. PCT also allows for specific

predictions regarding the nature of the content of hallucinatory experiences, and the
relationship between hallucinations and other cognitive and perceptual phenomena that may “lie on a continuum” with hallucinations (e.g. vivid mental events, intrusive cognitions).

**Sensory Vividness and Detail**

Despite being often included amongst the qualifying features of hallucinations (e.g. David, 2004; Slade & Bentall, 1988), sensory vividness is not sufficient to explain hallucinations as other distinct mental processes may also present “realistic” sensory qualities, such as vivid imagery, vivid memories and vivid daydreaming. Similarly, research suggests that the vividness of hallucinatory experiences is varied, and may not represent an essential discriminant between hallucinations and other kind of cognitive and perceptual events (e.g. intrusive thoughts/imagery, ordinary verbal thoughts; Hoffman, Varanko, Gilmore, & Mishara, 2008; Moritz & Larøi, 2008). This variability in the vividness of hallucinatory experiences, and other internally-generated perceptions, is potentially accounted for by PCT.

Within PCT, the relative vividness of internally-generated perceptions is explained by the specific level of the control hierarchy where the imagination mode operates. Mental phenomena involving the control of “abstract” internal perceptions, such as planning, verbal thought and mental simulations, arise when the imagination mode involves higher-levels of the control hierarchy (for example, the System Concept, Principle or Program levels) whilst lower-order systems remain engaged in the environment. Conversely, for internally-generated perceptions presenting sufficient sensory detail to resemble “veridical perceptions”, the systems operating in imagination mode will extend to lower-order level systems controlling more
“concrete” and vivid perceptions; in particular control systems that are proximal or directly interface with external sensory organs (for example, the Intensities, Sensation and Configuration levels). The “looping” operating at these lower-levels systems are therefore assumed to enable the experience of vivid perceptions, in the absence of the direct involvement or appropriate stimulation of sensory organs, and is therefore expected to be involved in the formation of vivid hallucinatory experiences. Hallucinations presenting less sensory detail are also possible according to the present model, and are assumed to arise when the imagination mode will operate on systems controlling less concrete goals and perceptions rather than the lowest levels of the controlled hierarchy.

Different Sensory Modalities and Other Phenomenological Variances

For simplicity and explanatory purposes, the examples so far considered to illustrate the alleged PCT underpinning of hallucinatory experiences were limited to a handful of control systems and are therefore undoubtedly inadequate to explain the complex phenomenology of hallucinatory experiences. Phenomenological studies of hallucinations suggest that individuals rarely hallucinate single, discrete sensations (a tune, a colour, a single phoneme or verbal utterance), but relatively complex experiences that may comprise multiple perceptual dimensions (e.g. Gauntlett-Gilbert & Kuipers, 2003; Nayani & David, 1996; Stephane, 2013; Stephane et al., 2003). For example, in the hypothetical case of an individual experiencing a hallucinated voice providing advice on a difficult personal decision (e.g. “You should just take the phone, call her and ask her out for a date”) the hallucinated perception may encompass information pertaining to the sensory quality and “physical” features of the voice (e.g. the loudness, pitch, intonation and spatial
location of the voice), but also more sophisticated perceptual dimensions (e.g. the sequence or “program” of actions implicated in the advice provided by the voice). The generation of hallucinatory experiences is therefore likely to involve a large number of control systems across multiple levels of the control hierarchy.

Powers (1973, 2005) proposed that the imagination mode can operate on a single system or groups of systems simultaneously, therefore having the potential to generate phenomenologically complex and varied experiences. Within a PCT framework, hallucinations occurring in a specific sensory modality (e.g. auditory) are expected to involve control systems regulating perceptions specific to the corresponding sense (e.g. control systems involved in audioception and, in the case of AVHs, systems involved in language and speech perception). From this perspective, variability in the modality of hallucinations are not necessarily indicative of distinct aetiological mechanisms responsible for different types of hallucinations, but of the action of shared mechanisms (the imagination mode) on systems responsible for the control of perceptions corresponding to different senses. Previous research findings are consistent with this idea as there is evidence that hallucinations in different sensory modalities can co-occur in the same individuals as independent experiences and/or “fused” multimodal hallucinations (Fontenelle et al., 2008; Goodwin & Rosenthal, 1971; Hoffman & Varanko, 2006; Langdon, McGuire, Stevenson, & Catts, 2011; Oorschot et al., 2012). This could reflect shared aetiological processes contributing to the formations of hallucinations across modalities. Similarly, intra- and inter-individual variability of other phenomenological characteristics within different “types” of hallucinatory experiences (e.g. in the case of AVHs, variation in the loudness, inner-outer spatial locations, and the verbal/dialogical complexity of hallucinated perceptions; Stephane
et al., 2003) are explained in terms of the involvement of systems responsible for the control of different classes of perceptions.

**The “Content” of Hallucinations**

The nature of perceptual signals received by control systems operating in the imagination mode, and the notion that hallucinatory experiences may be aetologically related to internal conflicts, allows for making predictions regarding the nature of the “content” of hallucinatory experiences. As mentioned previously, systems in the imagination mode control internal perceptions which correspond to their reference signals, which are in turn determined by higher-order perceptual systems. On this basis, the content of hallucinations is expected to correspond to the individual’s goals for specific controlled perceptions, more specifically goals that might be unaccomplished, or in error, as a consequence of internal conflict.

Anecdotal evidence for an association between goals and hallucinatory experiences can be traced to clinical observations by notorious 19th and early 20th century psychopathologists. For example, Bleuler (1950), whilst considering the case of AVHs, argued that “the voices of our patients embody all their strivings and fears” (p.96), and that their content underpins “wishes and fears, strivings and their obstacles” (p.388). Similarly, other scholars linked the content of hallucinatory experiences to salient hopes, wishes and concerns of the experiencer (e.g. Freud, 1900/1913; Jaspers, 1963; Jung, 1963). Research has documented a thematic correspondence between goals and the content of other complaints that frequently covary with hallucinations (delusional beliefs, intrusive cognitions; Jakes, Rhodes, & Issa, 2004; Reid, 2009; Rhodes & Jakes, 2000). However, no systematic studies have specifically examined possible associations between hallucinations and goals. This
perhaps results from the paucity of studies examining hallucination content directly (Beavan & Read, 2010), as other hallucination characteristics have been often assumed to bear greater clinical and diagnostic significance (e.g., the “form” of AVHs, such as voices conversing with each other; Nordgaard, Arnfred, Handest, & Parnas, 2008; Schneider, 1959). In the area of AVHs research, studies examining the similarities between hallucinations and inner speech have recognised that hallucinated voices often appear to have motivational and/or admonitory component that seemingly encourages (and sometimes compels) individuals to perform or inhibit certain actions (e.g., Leudar & Thomas, 2000; Leudar, Thomas, McNally, & Glinski, 1997; McCarthy-Jones, 2012), which could suggest a link with goals. Similarly, the self-referential nature of the content of many AVHs (e.g., Nayani & David, 1996) could be suggestive of links with goals. Further indirect evidence can perhaps be inferred from studies suggesting that voices could serve a positive “function” for the individual, which might be linked to frustrated or unmet strivings and goals. Research findings indicate that in some voice-hearers AVHs can fulfil important social needs (e.g., need for love, company and protection) when these are unmet in “real-world” relationships (e.g., Beavan, 2010; Miller, O’Connor, & DiPasquale, 1993), and that a sizable number of AVHs are regarded as useful and constructive experiences in the hearer’s perspective as they can provide advice, comments and instructions functional to several areas of the individual’s life (e.g., supporting decision-making, helping with daily activities; Fenekou & Georgaca, 2009; Jenner, Rutten, Beuckens, Boonstra, & Sytema, 2008). It has been also proposed that the seemingly adaptive function of AVHs is not necessarily restricted to pleasurable/pleasant voices, with some case studies suggesting that adaptive motives (e.g., encouraging resilience) may also underpin voices with apparent
threatening or distressing (e.g. that the hearer was weak and deserved to die; Corstens, Longden, & May, 2011; Moskowitz & Corstens, 2007).

**Links Between Memory and Hallucinations**

PCT proposes an intrinsic relationship between memory and goals, as goals can often be retrieved recordings, or combinations of recordings, of past perceptual signals stored within the control hierarchy (Powers, 1973, 2005; Powers et al, 1960a, 1960b). On this basis, it is expected that the content of hallucinatory experiences may correspond to memories of past perceptual events. The assumed associations between memory function and hallucinations parallels other models implicating memory processes in the aetiology of hallucinatory experiences (e.g. Jones, 2010; Waters, Badcock, Michie, & Maybery, 2006), as well as neuroimaging evidence suggesting that structures mediating memory functions maybe implicated in the formation of AVHs in psychosis (e.g. Jardri, Pouchet, Pins, & Thomas, 2011). Despite the scarcity of studies specifically considering hallucination content, findings from a small number of investigations are seemingly consistent with this notion and suggest that the content of hallucinatory experiences can reflect characteristics of past life events (e.g. the voice of the abuser the case of the hallucinated voices experienced by abuse victims; Hardy et al., 2005; McCarthy-Jones, 2011; McCarthy-Jones, Trauer, et al., 2014; Read, Agar, Argyle, & Aderhold, 2003; Thompson et al., 2010) or resemble “real” conversation from the voice-hearers’ past (McCarthy-Jones, Trauer, et al., 2014).
Other Phenomena on a Continuum with Hallucinations

The processes we regard as implicated in the aetiology of hallucinations within the present account are not, in PCT, specific to hallucinations. Rather, they are assumed to be involved in the generation of other phenomenologically distinct cognitive and perceptual phenomena, some of which may be regarded as “comorbid” or related to hallucinations. For example, the imagination mode is assumed to be involved in the generation of vivid internally-generated experiences (e.g. vivid imagery and daydreaming) as well as intrusive cognitions (Mansell, 2005; Reid, 2009). Similarly, other PCT accounts have implicated the same mechanisms considered in the present model to explain dissociative phenomena (Mansell & Carey, 2013). This non-specificity is explained by the fact that the imagination mode can produce phenomenologically diverse experiences depending on variations in the levels of the hierarchy involved, the number of systems operating in imagination mode, and the systems currently within the individual’s awareness – which may in turn influence the perceived level of “intrusiveness” and lack of control of the resulting sensory experiences. Thus, differences among these phenomena (vivid thoughts/imagery, cognitive intrusions, dissociative experiences, hallucinated perceptions) may be better conceptualised as dimensional rather than categorical according to the present model. Consistent with the above points, there is considerable evidence suggesting that vivid mental events may lie on a continuum with hallucinatory experiences (e.g. Launay & Slade, 1981; Levitan, Ward, Catts, & Hemsley, 1996; Slade & Bentall, 1988; Waters, Badcock, & Maybery, 2003). Furthermore, evidence from studies with clinical and non-clinical samples suggests that intrusive cognitions are strongly associated with hallucinations (e.g. Jones & Fernyhough, 2006; Lobban, Haddock, Kinderman, & Wells, 2002; McCarthy-Jones
et al., 2011; Morrison & Baker, 2000; Varese, Barkus, & Bentall, 2011). Strong associations have also been observed between hallucinations and dissociation (e.g. Perona-Garcelán et al., 2012; Perona-Garcelán et al., 2008; Varese, Barkus, et al., 2012), which parallel proposals that hallucinations and dissociative experiences may be aetio logically-related phenomena (Longden et al., 2012; Moskowitz & Corstens, 2007; Moskowitz et al., 2009).

Distal and Proximal Environmental Factors Influencing the Risk for Hallucinations

Although the putative processes involved in the formation of hallucinations are internal to the organism, the present PCT-informed account predicts that these mechanisms might be influenced and interact with a range of external conditions. These might include both distal factors in the individual’s ontogenetic history that might promote trait-like vulnerability to experience hallucinations, as well as proximal environmental factors in the person’s immediate environment that may promote or appear to trigger the formation of hallucinations.

Distal Factors

In terms of distal factors, exposure to environmental conditions that might be causal for enduring internal conflict and/or promote the use of compensatory mechanisms that block reorganisation of conflict (i.e. arbitrary control and the chronic use of the imagination mode to “escape” error caused by conflict) are expected to contribute to hallucination-vulnerability. Mansell (2005) described a number of plausible determinants leading to conflict arising, including a range of
potential external causes. Interpersonal control is, within PCT, a particularly toxic factor that might be conducive to internal conflict. Interpersonal control is conceptualised as a form of arbitrary control occurring between individuals, where one person is asked to conform to goals that are arbitrarily set by others, therefore potentially causing conflict whenever these interfere with other valued or essential personal goals (Mansell, 2005; Powers, 1973, 2005). The risk for prolonged unresolved conflict might be particularly elevated in cases involving intense, prolonged or repeated exposure to life circumstances characterised by high levels of interpersonal control that individuals might be unable to escape. For example, experiences of interpersonal trauma (e.g. experiences of emotional, physical and sexual abuse), as well as exposure to deprived or “controlling” environments that block individuals in achieving important goals and needs (e.g. experiences of early physical and emotional neglect, social deprivation), or in other words disrupt the individual’s ability to control. Findings suggesting that early experiences of lack of control may promote vulnerability to psychopathology (e.g. Chorpita & Barlow, 1998) are seemingly consistent with these predictions, and have parallels in the area of psychosis research, where exposure to adverse/traumatic life experiences (e.g. Daalman et al., 2012; Shevlin, Dorahy, & Adamson, 2007; Shevlin et al., 2011; Varese, Smeets, et al., 2012) social isolation (e.g. Hoffman, 2007), and social deprivation/inequality (e.g. Kirkbride, Jones, Ullrich, & Coid, 2014; Wickham, Shryane, Lyons, Dickins, & Bentall, 2014) has been linked to increased risk of psychotic experiences, including hallucinations.

Uncontrollable life adversities might also encourage the use of compensatory mechanisms in response to conflict. For example, a child might resort to different forms of arbitrary control when interacting with an emotionally neglectful and
punitive parent (e.g. avoid crying and suppress negative affect) to ensure that certain essential goals are met (e.g. having sufficient food, avoid corporal punishment), but at the expense of other important goals and needs (e.g. being soothed and comforted). Furthermore, the imagination mode might be implicated in strategies used by the same child to compensate for the perceived lack of control over these important unmet needs; for example, replaying in memory the rare episodes where the child was comforted by the parent, or the creation of an “imagery companion” who provides comfort, company and support (e.g. McLewin & Muller, 2006). In the absence of successful reorganisation, the use of such mechanisms might become increasingly automatic and chronic, possibly leading to different trait-like proneness to employing these compensatory mechanisms in response to perturbed control experienced as a result of conflict, in turn possibly increasing proneness to hallucinations.

**Proximal factors**

In addition to the above factors that might promote vulnerability to hallucinations in the long-term, certain conditions in the person’s immediate environment might contribute to the formation of hallucinatory experiences. For example, changes in the individual’s internal or external environment may create disturbances in the perceptions controlled by conflicting systems, therefore plausibly increasing error. Alternatively, the environment could “activate” certain control systems that may conflict with other systems already controlling the same perception. For example, the presence of internal conflict between potentially incompatible goals (e.g. the desire to express anger or resentment, and the desire for social affiliation) might not necessarily be “felt” or experienced by the individual, as
one or both conflicting goals might be contingent on additional circumstances (e.g. being unfairly criticised by a friend). The increase in error that would result in these circumstances could lead to the use of the compensatory strategies described previously, potentially appearing to trigger the onset of hallucinatory experiences. In this respect, the current PCT account provides an alternative and possibly more detailed perspective on the widely accepted notion that stressful events may act as triggers for hallucinations and other psychotic experiences, as implied by many adaptations the stress-vulnerability model of psychosis (e.g. Myin-Germeys & van Os, 2007; Walker & Diforio, 1997; Zubin & Spring, 1977). PCT highlights the importance of the context provided by the individual’s goals to understand otherwise generically defined “psychosocial stressors”, and assumes that only events that may disrupt control (either in the form of disturbances to controlled perceptions, or by activating dormant conflicting systems that may cause loss of control) are expected to lead to subsequent “symptoms”, including hallucinations.

The processes involved in the aetiology of hallucinatory experiences considered in previous sections can perhaps be understood in terms of “top-down” processes, in which the experience of hallucinations is driven by internal structures and mechanisms. However, the working model of cognition and behaviour provided by PCT also allows for potential “bottom-up” contributions to the formation of hallucinatory experiences. It is plausible that lower-order systems in the control hierarchy might spontaneously operate in the imagination mode in cases, for example, where they no longer receive meaningful sensory input from the environment. This could result from restricted input due to sensory deprivation/perceptual isolation as well as congenital or acquired sensory impairment; conditions that have been linked to increased likelihood of experiencing
hallucinated perceptions in numerous investigations (e.g. Atkinson, 2006; Mason & Brady, 2009; Menon, Rahman, Menon, & Dutton, 2003). Exposure to “monotonous” or unstructured stimulation (e.g. Feelgood & Rantzen, 1994; Margo, Hemsley, & Slade, 1981) and sensory overload (e.g. Ludwig, 1972) may similarly induce the spontaneous “looping” of lower-order control systems. Lower-order control systems under these conditions of sensory stimulation may give rise to sensory phenomena ranging from unstructured vivid perceptual distortions (when the internal connections of lower-order systems are made at random), to more structured and perceptually complex hallucinatory experiences, possibly due to interactions with the processes described previously, and the top-down influences of the control systems at higher levels of the control hierarchy.

Affective Responses to Hallucinatory Experiences

Numerous studies have documented marked variations in peoples’ emotional reactions to hallucinations, ranging from the debilitating levels of distress experienced by many individuals with distressing psychosis, to more positive and even pleasurable affective reactions described by clinical as well as nonclinical individuals (e.g. Daalman & Diederen, 2013; Dudley et al., 2012; Gauntlett-Gilbert & Kuipers, 2003; Gauntlett-Gilbert & Kuipers, 2005; Jenner et al., 2008; Menon et al., 2003; Sanjuan, Gonzalez, Aguilar, Leal, & Van Os, 2004; Sommer et al., 2010). In addition to providing a mechanistic explanation of the etiological underpinnings of hallucinatory experiences, the principles of PCT can similarly account for these different affective reactions.
Hallucination-Related Distress

Distress, from a PCT perspective, is the phenomenological manifestation of reduced or lost control over desired perceptions. Hence, the extent to which hallucinations are perceived as distressing or problematic depends on whether they maintain or exacerbate error in valued/important goals. Based on this premise, there are several plausible routes through which hallucinations might contribute to distress. Firstly, Powers (1973, 2005) recognised that the compensatory strategies which we propose might underlie hallucinations are likely to interfere with effective reorganisation and therefore contribute to the long-term maintenance of internal conflict and associated distress. Secondly, as the content of hallucinations may reflect goals that the individuals might actively suppress through arbitrary control, or be incompatible with goals currently in the individual’s awareness, hallucinations can be experienced as distressing due to their unwanted nature and possible “egodystonic” content, as indicated by research suggesting the content of hallucinatory is a robust predictor distress, and that the mere presence of hallucinations can be associated with high levels of distress in some individuals (e.g. Beavan & Read, 2010; Morrison, Nothard, Bowe, & Wells, 2004; Varese et al., under review). Additional routes to distress might involve goals that may not be directly related to the internal conflict involved in the generation of hallucinatory experience in the first place. In some cases, the presence of hallucinations may be sufficient to cause error in goals valued by the individual, therefore contributing to distress. An example would be the case of an individual holding higher-order goals placing emphasis on values of sanity and conformity (e.g. “I want to be normal”) or the importance of control over their own mental processes (“I need to be in control of my mind all the time”). Hallucinatory experiences and/or other unwanted mental
events might be experienced as intrinsically inconsistent with these goals, therefore leading to distress. Furthermore, individuals might utilise behaviours in an attempt to control or suppress hallucinatory experiences, some of which could lead to unintended consequences causing further interference with the person’s valued goals, therefore escalating distress. An example could be the case of individuals who heavily self-medicate or socially withdraw in the attempt to control their voices, to the detriment of other personally salient goals, e.g. maintaining a job and social support networks. Some corroboration for these proposals is provided by research evidence suggesting that maladaptive beliefs about the importance of controlling mental events are associated with higher levels of hallucination-related distress (Brett, Johns, Peters, & McGuire, 2009; Hill et al., 2012), and that several “natural coping methods” individuals spontaneously use to regulate or control AVHs (especially those characterised by high levels of active resistance/suppression of voices; e.g. Farhall, Greenwood, & Jackson, 2007) are often ineffectual and/or potentially detrimental to the person’s wellbeing (e.g. Escher, Delespaul, Romme, Buiks, & van Os, 2003; Falloon & Talbot, 1981; Farhall et al., 2007; Favrod, Grasset, Spreng, Grossenbacher, & Hodé, 2004; Mann & Pakenham, 2006). Research informed by cognitive-behavioural models of hallucinatory experiences (e.g. Chadwick & Birchwood, 1994; Collerton & Dudley, 2004; Morrison, 1998; Morrison, 2001) have also implicated other prominent predictors of distress, including negative beliefs and appraisals about hallucinatory experiences (e.g. Chadwick & Birchwood, 1997; Dudley et al., 2012; Mawson et al., 2010; Peters, Williams, Cooke, & Kuipers, 2012; van der Gaag, Hageman, & Birchwood, 2003), and the individuals’ “relationship” with their hallucinated perceptions (e.g. Birchwood et al., 2004; Birchwood, Meaden, Trower, Gilbert, & Plaistow, 2000;
From a PCT perspective, distress will depend on the extent to which these factors contribute to maintaining or causing further loss of control over the individual’s goals. Further research is however required to appropriately test this PCT-informed hypothesis.

“Benign” and Pleasant Hallucinations

As an extension to the above considerations of distress, other affective reactions to hallucinations can also arise. Specifically, it is possible that hallucinations may, on occasions, directly or indirectly facilitate the individual’s ability to progress towards certain valued goals. It is possible that in these circumstances the experience of hallucinations may be experienced as pleasurable and pleasant – an occurrence that is not uncommon amongst both hallucinating psychiatric patients (e.g. Oorschot et al., 2012; Sanjuan et al., 2004) and non-clinical individuals (e.g. Daalman & Diederen, 2013; Honig et al., 1998; Pierre, 2010). Research findings suggest that goal attainment and perceived movement towards valued desired states is, in fact, associated with satisfaction and positive affect (e.g. Austin & Vancouver, 1996; Bandura, 1989, 1991; Carver & Scheier, 1990; Srull & Wyer, 1986). Evidence suggestive of an involvement of goal facilitation in the perceived pleasantness of voices is provided by studies suggesting that a sizable number of AVHs are regarded as “useful” in the hearer’s perspective, often as a result of the apparent positive impact of the voices on several areas of the individual’s life (e.g. encourage activity to avoid apathy/inertia, instructions on how to handle specific social relationships, supporting decision-making etc; Beavan, 2010; Fenekou & Georgaca, 2009; Grimby, 1993; Jenner et al., 2008).
Summary and Implications of the Current Account

In sum, within PCT, hallucinations can be regarded as a consequence of prolonged and/or severe lack of control over perceptions regulated by internally represented goals – a condition which often (but not always) arise from internal conflict. The present account assumes that hallucinations represent a product of intrinsic mechanisms that may allow the individuals to compensate for perturbed perceptual control caused by conflict. The primary underlying mechanism of hallucinations - the imagination mode – is functional to the mental life of all individuals, allowing for the control of internally-generated perceptions and higher-order mental processes. Hallucinations can be conceptualised as a manifestation of processes that are not in themselves pathological, but serving a potentially adaptive psychological function, namely the minimisation of lack of perceived control in situations where control over important goals/perceptions is severely compromised. The imagination mode and other compensatory mechanisms for the presence of conflict become detrimental only when used chronically and/or automatically. Although potentially effective in re-establishing short-term perceptual control, these “defences” may maintain conflict in the long-term, as well as associated manifestation of conflict, including hallucinations. We proposed that some of the features of hallucinatory experiences, in particular the perceived lack of control and self-agency that often characterises these experiences, stems from a lack of awareness of the underlying goals regulating systems functioning in the imagination mode, and associated discrepancy with goals that are within the individual’s awareness. The model assumes that variations in phenomenological characteristics of hallucinations reflect the action of the imagination mode on different neural structures controlling different classes of goals and perceptions. Similarly, the
mechanisms considered are not unique to hallucinations, but shared with a range of other phenomenologically distinct experiences (e.g. intrusive thoughts and imagery, dissociative experiences), which could be regarded as a lying on continuum with hallucinations. The present account also allows for potential interactions between the abovementioned mechanisms and a range of conditions external to the organisms that might influence the formation of hallucinatory experiences, ranging from factors promoting the formation of conflict and the chronic use of defences (e.g. interpersonal control, trauma, deprivation), to more proximal environmental conditions that may “trigger” hallucinations (e.g. disturbances in controlled perceptions, variations in sensory stimulation so that meaningful perceptual input is compromised). Furthermore, the principles of PCT suggest that hallucinatory experiences may be associated with a range of negative and/or positive affective reactions, depending to the extent to which they influence the person’s perceived discrepancy with important goals and desired perceptions.

Research Implications

The current model bears a number of implications for future research. PCT assumes that the content of hallucinatory experiences should be meaningfully related to personal goals, in particular goals that might be “conflictual” or unaccomplished as a consequence of conflict. The current state of the evidence for such associations remains largely indirect and anecdotal, as no systematic studies have yet attempted to examine the possible overlap between goals and hallucinations. Similarly, although various approaches have implicated the concept of conflict in the formation of hallucinations on a theoretical level, empirical studies are lacking. PCT provides a more precise working definition of conflict that, in concomitance with
methodological developments in assessment measures of goal constructs, including conflict (e.g. Austin & Vancouver, 1996; Michalak, Heidenreich, & Hoyer, 2008), makes this empirical analysis conceivable. Following previous investigations which examined associations between hallucinations and other contextual/idiographic variables (e.g. characteristics of past traumatic experiences; Hardy et al., 2005), as well as studies examining the correspondence between goals and other symptoms of psychopathology (e.g. delusional beliefs, intrusive imagery; Jakes et al., 2004; Reid, 2009; Rhodes & Jakes, 2000), future studies may examine the thematic overlap between content of hallucinated perceptions and goals. Furthermore, measures of goal conflict could be employed to examine whether the goals that may be expressed in the content of hallucinated perceptions are experienced as “conflictual”. Several instruments could be adapted for these purposes, including goals ambivalence rating scales (i.e. the experience of contradictory feelings towards the same goal, possibly resulting from goal conflict; e.g. Emmons, 1986; Emmons & King, 1988; Kelly et al., 2011), goal facilitation/interference matrices (i.e. measures examining the interrelations and possible conflicts between multiple goals; e.g. Emmons & King, 1988; Klinger & Cox, 2011; Palys & Little, 1983) as well as more indirect measures of intrapsychic conflict developed in the context of psychotherapy research, such as the Computerised Intrapersonal Conflict Assessment (Lauterbach, 1996; Lauterbach & Newman, 1999).

In line with the principles of PCT, the present account proposes that affective reactions to hallucinations depend on the extent to these experiences maintain or exacerbate loss of control over important personal goals (leading to hallucination-related distress), or conversely promote the individuals’ ability to progress towards valued goals (leading to positive affective reactions). It should be noted that the
current conceptualisation of distress highlights the importance of goals that are idiosyncratically valued by the individual, which may depart considerably from externally defined disruptions in occupational, social and psychological functioning as defined by standardised diagnostic classification systems (e.g. APA, 2013) and widely used clinical/research assessment instruments for hallucinations (e.g. Haddock, McCarron, Tarrier, & Faragher, 1999; Kay, Fiszbein, & Opler, 1987). Conversely, it parallels recent proposals highlighting the value of subjectively defined approaches to the assessment of impact of psychotic experiences which takes into account the idiosyncratic wishes, needs and goals of the person (Greenwood et al., 2010; Haddock et al., 2011; Pitt, Kilbride, Nothard, Welford, & Morrison, 2007). The development and use of assessment methods specifically designed to assess the impact of hallucinatory experiences on personally salient goals may allow examining the directional predictions of this model.

Studies may also attempt to examine the expected relationships regarding the environmental factors that may promote the formation of hallucinatory experiences. For example, cross-sectional and/or longitudinal studies may be conducted to determine whether the well-documented relationship between exposure to adverse life experiences and hallucinations is mediated by the impact of these potentially toxic events on conflict and lack of control over personally salient goals/needs, and whether these may in turn be expressed in the content and characteristics of hallucinatory experiences. Furthermore, carefully designed experience sampling and/or case studies may be used to examine possible dynamic relationship that may be expected on the basis of the proposed model; for example, whether usual “triggers” to hallucinatory experiences may represent disturbances to conflicting
controlled perceptions, and that “error” in these systems may precede the onset of hallucinations.

**Clinical Implications**

PCT provides several clinical implications for the psychological treatment of distressing hallucinations. Many therapeutic approaches for hallucinations (e.g. Cognitive Behaviour Therapy, currently the treatment of choice for distressing psychotic experiences given its established evidence base; NICE, 2014; van der Gaag, Valmaggia, & Smit, 2014) employ a strong symptom-focus approach emphasising the modification of maladaptive idiosyncratic appraisals and unhelpful responses to symptoms (e.g. Morrison, Renton, Dunn, Williams, & Bentall, 2004; Thomas et al., 2014). Conversely, PCT places greater emphasis on the notion that hallucinatory experiences result from underlying unresolved conflicts of which hallucinations may be one of the many manifestations. Based on a PCT understanding of psychotic experiences, Tai (2009) proposed that exclusive clinical focus on ameliorating psychotic experience, for example improving coping strategies to control the AVHs, might overshadow underlying conflicts driving these complaints, therefore contributing to their long-term maintenance. From this perspective, the consideration of symptoms as the primary focus of therapy may be less beneficial to clients than identifying and addressing possible underling difficulties (i.e. conflicts). Based on the notion that the content of hallucinations may relate to conflicting goals causing error, the collaborative and detailed exploration of hallucinations, their content and meaning, and individuals’ reactions to these experiences in the context of their goals and biographical history may provide a route to the identification of underlining conflicts that may benefit from suitable
support. Similarly, the contextual framework provided by the client’s idiosyncratic goals should be taken into account in therapeutic intervention of hallucinatory experiences. This parallels other therapeutic approaches which regard hallucinations as an expression of deeper-rooted difficulties that are expressed in the content and characteristics of hallucinations, as well as recommendations already introduced in psychological therapies for psychosis highlighting the importance of understanding the meaning and context of symptoms, including the individuals goals, values, internalised norms and life difficulties that occurred prior to the onset of symptoms (e.g. Corstens & Longden, 2013; Gumley & Schwannauer, 2006; Hoffman, 2012; Johnstone, 2012; Romme, 2012; Romme & Escher, 2000; Thomas et al., 2014).

PCT postulates that conflict and its manifestations will endure unless resolved through the reorganisation of underlying systems causing conflict. As PCT assumes that reorganisation only operates on systems that are currently within the “attentional spotlight” of conscious awareness (Carey, 2006; Powers, 1973, 2005), effective therapy should encourage clients to shift their awareness to higher-order goals that may be involved in the origin of conflict, therefore promoting the action of reorganising systems and resolution of conflict. PCT approaches to psychotherapy assume that the efficacy of all psychological therapies relies on their different ability to promote awareness of higher-order goals and conflict (Carey, 2006; Higginson, Mansell, & Wood, 2011; Mansell et al., 2012). The Method of Levels (MoL; Carey, 2006; Mansell et al., 2012), a transdiagnostic cognitive approach to psychotherapy that directly applies the principles of PCT, focuses specifically on this “active ingredient” of therapy by promoting and sustaining awareness of higher order-goals and perceptions to maximise opportunities for resolution of conflict and psychological change. Although no randomised controlled studies of this approach
are yet available, MoL has demonstrated promising outcomes in terms of good effect sizes in large pragmatic studies in primary and secondary care settings with clients with various presenting difficulties (Carey, Carey, Mullan, Spratt, & Spratt, 2009; Carey, Tai, & Stiles, 2013). There are also initial proposals that clients with distressing psychosis may benefit from this therapeutic approach (Tai, 2009). MoL may therefore prove beneficial in terms of resolving conflicts underlying hallucinatory experiences and/or reduce the possible distress associated with these experiences, and its efficacy as treatment options for clients with distressing hallucinations should be explored in future studies.

**Merits and Limitations of the Current Account**

PCT enables the formulation of a psychological model of hallucinatory experiences based on a comprehensive, yet elegant, general theory of human behaviour, perception and cognition, which is parsimoniously grounded on the mechanistic principles of control theory. Compared to existing accounts, the present theoretical proposal presents several relative strengths. Firstly, PCT provides a unified, integrated framework encompassing aspects of hallucinatory experiences that have been generally considered in isolation in previous theoretical accounts. Furthermore, several components/processes that are alluded to, but remained unspecified, in other theories, for example the role of conflict in the formation of hallucinations, are clarified by the precise working definitions provided by PCT, and therefore encourage empirical investigations in these areas. Also, the explanatory model of hallucinations we describe departs considerably from accounts which regard hallucinatory experiences as intrinsically pathological, or as a product of
underlying “deficits” and abnormalities, and has a clear transdiagnostic value; the notion that hallucinations may arise from intrinsic properties of perceptual control systems implies that hallucinations cannot be uniquely ascribed to any specific disorders, which is consistent with the accumulating evidence suggesting that the presence of hallucinations may cross traditional diagnostic boundaries. Finally, the framework provided by PCT can directly inform psychological interventions that may be beneficial to individuals with distressing hallucinatory experiences; hence, the present PCT account has a direct clinical value.

Despite the above merits, the present model may be subjected to several criticisms. Firstly, our account emphasises the possible role of internal conflict in the formation hallucinatory experiences, and could be criticised for failing to account for hallucinations emerging from other causal factors, e.g. organic pathology. Although conflict is often assumed the most common and potentially incapacitating disruption to effective perceptual control, other causes of loss of control are contemplated by PCT, including damage to perceptual systems and extreme environmental disturbances. It is plausible that the hallucinations reported in the context of several neurological conditions (e.g. Parkinson’s and Alzheimer’s disease; Bassiony & Lyketsos, 2003; Fénelon, Mahieux, Huon, & Ziégler, 2000) as well as the acute, fleeting hallucinatory experiences sometimes reported by non-clinical individuals in the context of extreme stress, fatigue or life-threatening circumstances (McCarthy-Jones, 2012) may be driven by severe lack of control unrelated to conflict. However, the basic mechanisms implicated in the formation of hallucinations as a result of conflict (e.g. the compensatory function of the imagination mode) may be similarly involved in the generation of hallucinatory experiences in these conditions of disrupted control.
The applicability of the proposed model to any hallucinatory experience, irrespective of sensory modality or other phenomenological characteristics, may be criticised on the grounds of being overly generic, and therefore of limited value to the understanding of specific types of hallucinations. It should be remarked that the model considers the basic underlying mechanisms of hallucinations as described by PCT, which are assumed to underlie hallucinatory experiences presenting different characteristics. However, we do not deny that differences must exists between hallucinations presenting marked phenomenological differences (e.g. “visions” and dialogical AVHs), but propose that these stem from variances in underlying control systems operating in the imagination mode, (e.g. whether they control vision- or language/speech-related perceptions). Future theoretical and research development focusing on how PCT may account for the systems and processes underlying psychological and perceptual phenomena possibly implicated in different types of hallucinations (e.g. speech/language development and perception in the case of AVHs) may enable the formulation of more precise models accounting for these differences. Another limitation of the present account is the current lack of empirical evidence to evaluate several of its components, which should be addressed by future research. Further challenges to a PCT understanding of hallucinations may be raised on the basis of the wealth of empirical and experimental evidence in support of more established and widely investigated accounts of hallucinatory experiences (e.g. Bentall, 1990; Brookwell et al., 2013; Frith & Done, 1988; Waters, Woodward, et al., 2012). Although there is growing empirical support for PCT (Mansell & Carey, 2009; Marken & Mansell, 2013; McClelland, 2004; Pellis & Bell, 2011), its applications in the fields of experimental psychopathology and clinical neuroscience are still limited. Examination of whether processes that have been linked to
hallucination formation (e.g. self-monitoring processes traditionally evaluated on the basis of feed-forward models of action control; Blakemore et al., 2002; Fletcher & Frith, 2009) can be better understood in terms of the control processes described by PCT. PCT may help to further develop the understanding of hallucinatory experiences from a PCT perspective, and integrate existing experimental evidence within PCT.
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This paper has been formatted according to the guidelines of Clinical Psychology and Psychotherapy (Appendix B), and will be submitted for publication as Varese, F., Mansell., W., Pearson, L. & Tai, S.J., Hearing voices and personal goals: A study of clinical and non-clinical auditory verbal hallucinations informed by Perceptual Control Theory.
Abstract

Background: The content of voices (auditory hallucinations) is often self-referent, and related to salient aspects of voice-hearers’ lives. Based on a cybernetic theory of cognition and behaviour known as Perceptual Control Theory, this study examined whether the content of voices is thematically linked to the more fundamental construct of goals, i.e. internal representations of desired and undesired states. We also examined whether voice-related distress is a consequence of the degree to which voices interfere with goals, and whether positive affective reactions (perceived pleasantness of voices) are determined by the extent to which voices facilitate goals.

Method: 22 clinical and 18 non-clinical voice-hearers completed interviews and self-report measures assessing (i) personal goals, (ii) content, characteristics and affective reactions to voices, and (iii) ratings of the extent to which voices facilitated and/or interfered with achievement of important personal goals.

Results: The analysis of the interview-data revealed that 82.5% of participants reported voices that thematically matched at least one of their reported goals. As predicted, affective reactions were strongly correlated with measures of goal interference/facilitation. Regression analyses revealed that these associations remained significant when controlling for important covariates (e.g. participant grouping; voices’ content, frequency and duration). Goal interference was specifically associated with distress, whereas goal facilitation was specifically associated with perceived pleasantness of voices.

Conclusions: This study provides preliminary evidence that the content of voices is frequently associated with voice-hearers’ goals, and that the perceived impact of voices on important personal goals is strongly predictive of emotional reactions to voices.
Hearing Voices and Personal Goals: A study of Clinical and Non-clinical Auditory Verbal Hallucinations Informed by Perceptual Control Theory

Hearing voices is frequently regarded as pathognomonic for psychotic illness, but are also relatively common amongst individuals with other diagnoses such as bipolar disorder, post-traumatic stress disorder, depression, dissociative disorders and personality disorders (Aleman & Larøi, 2008; McCarthy-Jones, 2012). Furthermore, individuals without mental health difficulties experience voices (e.g. Beavan, Read, & Cartwright, 2011; Johns, Nazroo, Bebbington, & Kuipers, 2002), as well as members of Spiritualist (e.g. Andrew, Gray, & Snowden, 2008; Hill, Varese, Jackson, & Linden, 2012) and Evangelical congregations (Davies, Griffin, & Vice, 2001). Comparisons of clinical and non-clinical voice-hearers suggest that non-clinical voices are characterised by lower levels of negative content and distress (e.g. Daalman et al., 2010; Daalman & Diederen, 2013; Hill & Linden, 2012). However, previous studies indicate that positive/pleasant voices are also relatively common amongst clinical voice-hearers (e.g. Jenner, Rutten, Beuckens, Boonstra, & Sytema, 2008; Miller, O'Connor, & DiPasquale, 1993; Oorschot et al., 2012; Sanjuan, Gonzalez, Aguilar, Leal, & Van Os, 2004). The reasons for such variability in emotional responses are unclear, with the majority of existing studies primarily focusing on the ways in which voices are idiosyncratically appraised by individuals (Chadwick, Lees, & Birchwood, 2000; Morrison, Nothard, Bowe, & Wells, 2004; Peters, Williams, Cooke, & Kuipers, 2012).

Whilst orthodox medical conceptualisations often construe voice-hearing as an organic pathology presenting arbitrary content, humanistic traditions within psychology and psychiatry have regarded voices as meaningful and understandable.
in the context of the voice-hearers’ psyche and life context (Bentall, 2003; Berrios, 2002; McCarthy-Jones, 2012; McCarthy-Jones & Longden, 2013). In both clinical and non-clinical voice-hearers, the content of voices appears to be extremely varied. Despite this, it has been recognised that the content of voices “often reflect a relatively small number of the hearer’s specific hopes, wishes and fears” (Wykes, 2008, p.90). Research suggest that voice content can express themes that are meaningful and salient to voice-hearers, presenting links with, amongst other factors, past adverse/traumatic experiences (e.g. Hardy et al., 2005), voice-hearers’ socio-cultural milieu (Al-Issa, 1977, 1995; Kent & Wahass, 1996) and other idiosyncratic characteristics of persons’ psychological “make-up”, such as their self-representation (e.g. self-esteem and self-critical thinking; Connor & Birchwood, 2013; Smith et al., 2006). Furthermore, voices are often related to voice hearers’ ongoing activities (Leudar, Thomas, McNally, & Glinski, 1997). In a sizable number of individuals they provide comments or instructions that are pertinent or even “functional” to several areas of the hearer’s life (e.g. Beavan, 2010; Fenekou & Georgaca, 2009; Grimby, 1993; Jenner et al., 2008).

Personal goals are a psychological construct that may provide an integrative perspective on the apparent variability in voice content and affective reactions to voices. Previous research demonstrated substantial thematic overlaps between other psychotic experiences, namely delusional beliefs, and the goals described by patients with psychosis (Jakes, Rhodes, & Issa, 2004; Rhodes & Jakes, 2000). To date, no studies have attempted to examine possible associations between voices and voice-hearers’ personal goals. Within the psychological literature, goals have been defined as ‘internal representations of desired states, where states are broadly construed as outcomes, events or processes’ (Austin & Vancouver, 1996, p. 338). Goals can
convey both information facilitating an individual in moving toward or maintaining desirable outcomes (e.g. to be successful), and also inhibiting undesirable end states (e.g. to avoid failure; Dickson & MacLeod, 2004; Elliot & Sheldon, 1998; Elliot, Sheldon, & Church, 1997). Several theories propose that goals are internally organised within hierarchical structures of interrelated internal standards, ranging from innate or gene-driven needs and predispositions (e.g. the range of optimal blood sugar levels, hunger, need for affiliation) to more complex desired states formed from past perceptual experiences and sociocultural influences (e.g. a desired body shape, the person’s self-concept; Austin & Vancouver, 1996).

The processes through which goals are achieved and maintained has been often defined in terms of negative feedback control (e.g. Ashby, 1952; Wiener, 1948), a process which reduces the “gap” between a desired state (a goal) and the person’s current experience, so that any deviation from the desired state is dynamically corrected. Previous research has demonstrated that successful pursuit of personally valued goals is related to positive affect and subjective well-being (Diener, 1984; Emmons, 1986; Oishi, Diener, Suh, & Lucas, 1999). In contrast, when important personal goals are threatened and remain unachieved, negative affect and distress may be experienced (Emmons, 1986; Martin, Tesser, & McIntosh, 1993; McIntosh, Harlow, & Martin, 1995; Srull & Wyer, 1986). A common cause of disruption to an individual’s ability to achieve goals (therefore leading to distress) is conflict - i.e. the simultaneous pursuit of multiple mutually exclusive goals and strivings – a notion that has received some empirical support in studies which linked emotional distress to measures of goal conflict (e.g. Emmons & King, 1988; Kelly, Mansell, & Wood, 2011; King & Emmons, 1990; Lauterbach, 1996; Lauterbach & Newman, 1999).
Although numerous theories have considered, to varying degrees, goals and related constructs, a theoretical framework which provides a functional and internally coherent account of the abovementioned processes is found within Perceptual Control Theory (PCT; Powers, 1973, 2005; Powers, Clark, & McFarland, 1960a, 1960b). PCT provides a robust and empirically supported mechanistic account of normal human behaviour and cognition (for reviews see Mansell, 2005; Marken & Mansell, 2013; McClelland, 2004; Pellis & Bell, 2011), which has been applied to understanding of a wide range of mental health difficulties, including bipolar disorder, dissociation and psychotic experiences (Mansell, 2005; Mansell & Carey, 2013; Mansell, Carey, & Tai, 2012; Tai, 2009). PCT asserts that all living organisms function according to specifically defined control systems based on the principles of negative feedback. Through these systems, all variables/experiences the individual “wishes” to control (e.g. the taste of my espresso) are compared to goals representing desired or “ideal” standards for these experiences (e.g. sugary, but still quite bitter). Subsequent actions (behaviours) are driven by these comparisons, which aim to reduce any discrepancies (error) and bring current perceptions closer to these internal standards (e.g. stirring in half a teaspoon of sugar). The exact description of the mathematical relationships regulating these control systems is beyond the scope of this article and are described in detail elsewhere (e.g. Powers, 1973, 2008).

In parallel with other psychological theories, PCT proposes that control systems are arranged hierarchically, with control systems at any one level controlling their own perceptual input by manipulating the goals of control systems at lower levels. Higher levels within this “control hierarchy” are involved in the control of complex and abstract perceptions (e.g. self-concepts/self-representations are
assumed to be situated at the highest level of the perceptual hierarchy; Powers, 1973), and regulate increasingly concrete goals and perceptions at lower levels, right down to systems directly interfaced with the environment (Powers, 1973, 2005; Mansell, 2005). Implicit to this hierarchical organisation is the notion that lower-order goals/perceptions and associated behaviours (e.g. to avoid social interaction, to be vigilant to threat) can be “traced” to more abstract and general higher order goals (to be safe/avoid appearing vulnerable).

In parallel with other proposals in the goals literature (e.g. Emmons & King, 1988), PCT proposes that distress results from unresolved conflict due to simultaneous pursuit of multiple incompatible goals, reducing ability to control one’s desired perceptions or, in other words, reduced ability to achieve goals (e.g. Mansell, 2005; Mansell et al 2013; Powers, 1979, 2005). Conflict is a common occurrence in everyday life for all individuals and commonly resolved with minimal rearrangements of underlying control processes. However, when conflict is prolonged, and/or the goals involved are particularly salient to the individual, conflict is experienced as distressing due to the subsequent lack of perceived control over valued goals (Mansell, 2005; Powers, 1973).

In PCT, common mental health difficulties, such as anxiety and depression, are regarded as directly resulting from conflict. Furthermore, PCT proposes that under severe conditions of conflict between higher-order goals, unwanted internally generated perceptual experiences in lower levels systems may also arise. These sensory phenomena are explained as control systems, which are “short-circuited” in the attempt to minimise perceived lack of control caused by conflict, and operate in such a way that their input will consist of internally generated information matching their own internal standards/goals (for a detailed discussion, see Varese, Mansell &
Tai, in preparation; i.e. Paper 1). Depending on the specific level of the hierarchy that will be affected by conflict, and the relative level of intrusiveness and perceived control of the resulting percept, these phenomena could be experienced as intrusive verbal thoughts or imagery, but also hallucinations resembling veridical perceptions when the systems affected are situated at the lowest levels of the hierarchy – i.e. the control systems regulating goals and perceptions directly interfacing with the sensory organs.

PCT provides a number of hypotheses regarding voice content and the mechanisms leading to different affective reactions to voices. Firstly, PCT predicts that voice content (and other internally-generated perceptual/cognitive events e.g. intrusive imagery) will reflect the content of an individual’s goals. Furthermore, as distress is the manifestation of reduced or lost control over desired states (and in line with findings suggesting that positive and negative affect are experienced when individuals are successful or unsuccessful in attaining/progressing towards valued goals; e.g. Emmons, 1986), PCT would predict that different affective reactions to voices depends on the extent to which voices either facilitate or interfere with important goals. The aims of the current study were twofold. Firstly, to examine whether voice content is thematically linked to personally salient goals. Secondly, to explore if affective responses to voices were related to the impact of voices on goals. Specifically in relation to the latter research question, we examined: (i) whether voice-related distress is associated with the degree to which voices interfere with goals attainment, and whether perceived pleasantness of voices is related by the extent to which voices facilitate goal attainment, and whether these hypothesised associations remained significant after accounting for other determinants of affective reactions to voices, (i.e. amount of negative voice content, frequency and duration of
voices, and the amount of “disruption” to daily functioning caused by the voices; Haddock, McCarron, Tarrier, & Faragher, 1999; Morrison et al., 2004; Varese et al., under review)

Method

Participants

Forty voice-hearers were recruited for this study. In line with evidence that voice-hearing may be transdiagnostic, no restriction was placed on eligible psychiatric diagnoses. All participants met the following eligibility criteria: (i) aged above 16-years-old, (ii) had experienced voices in the two weeks prior to participating in the study, (iii) history of voice-hearing had a minimum of six months duration, (iv) the experience of voices was not due to organic illness (e.g. traumatic brain injury), hypnagogic/ hypnopompic states, sleep disorders (e.g. sleep paralysis), or alcohol/ drugs intoxication. Demographic characteristics for the sample are reported in Table 1.

For the purpose of some of the analyses included in the present paper, two participant subgroups were created: a non-clinical voice-hearers group (n = 18), comprising individuals with no current or past difficulties requiring contact with mental health services and/or formal psychiatric diagnoses, and a clinical voice-hearers group (n = 22), comprising individuals who disclosed having received a psychiatric diagnosis and/or use of inpatient and/or outpatient mental health services. Group allocation was informed by self-reported information provided as part of a short structured interview adapted from the “Demographic Data”, “Education and Work History” and “Treatment and Hospitalization History” sections of the Structural Clinical Interview for DSM-IV- TR; Axis I Disorders (First, Spitzer,
Table 1: Demographic and research measures summary statistics

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<tr>
<td>Age</td>
<td>38.8 (14.5)</td>
<td>37.8 (12.3)</td>
<td>39.9 (16.9)</td>
<td>95% CI [-12.86, 7.52]</td>
<td>.70</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>17 Males</td>
<td>10 Males</td>
<td>7 Males</td>
<td>Fisher’s exact test</td>
<td>.80</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td>35 White</td>
<td>19 White</td>
<td>16 White</td>
<td>Fisher’s exact test</td>
<td>.94</td>
<td></td>
</tr>
<tr>
<td><strong>Clinical/voice-related measures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYRATS-AH frequency/duration</td>
<td>4.5 (2.2)</td>
<td>5.7 (2.1)</td>
<td>3.0 (1.3)</td>
<td>95% CI [0.86, 3.52]</td>
<td>.007</td>
<td></td>
</tr>
<tr>
<td>PSYRATS-AH negative content</td>
<td>3.7 (2.7)</td>
<td>5.6 (2.3)</td>
<td>2.1 (2.4)</td>
<td>95% CI [1.98, 5.31]</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>PSYRATS-AH disruption</td>
<td>1.0 (1.2)</td>
<td>1.7 (1.2)</td>
<td>0.2 (0.4)</td>
<td>95% CI [1.02, 2.16]</td>
<td>.002</td>
<td></td>
</tr>
<tr>
<td>PSYRATS-AH distress</td>
<td>3.3 (2.7)</td>
<td>4.7 (2.3)</td>
<td>1.9 (2.4)</td>
<td>95% CI [1.12, 4.46]</td>
<td>.004</td>
<td></td>
</tr>
<tr>
<td>self-reported distress</td>
<td>4.1 (3.3)</td>
<td>5.9 (2.6)</td>
<td>2.2 (2.8)</td>
<td>95% CI [1.79, 5.75]</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>self-reported pleasantness</td>
<td>4.8 (3.9)</td>
<td>3.6 (3.7)</td>
<td>6.1 (3.7)</td>
<td>95% CI [-5.12, 0.17]</td>
<td>.08</td>
<td></td>
</tr>
<tr>
<td>DASS-21</td>
<td>24.6 (16.9)</td>
<td>31.1 (17.1)</td>
<td>17.7 (13.7)</td>
<td>95% CI [3.46, 23.97]</td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td><strong>Goals measures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of goals generated</td>
<td>6.1 (1.5)</td>
<td>5.8 (1.1)</td>
<td>6.4 (1.8)</td>
<td>95% CI [-0.37, 1.85]</td>
<td>.21</td>
<td></td>
</tr>
<tr>
<td>Facilitation scores</td>
<td>4.2 (3.7)</td>
<td>2.5 (3.1)</td>
<td>5.9 (3.6)</td>
<td>95% CI [-5.70, -0.91]</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>Interference scores</td>
<td>3.8 (3.3)</td>
<td>5.7 (2.7)</td>
<td>1.8 (2.7)</td>
<td>95% CI [1.82, 5.77]</td>
<td>.002</td>
<td></td>
</tr>
</tbody>
</table>

Gibbon & Williams, 2002; see Appendix C). The two groups were comparable in terms of age, gender and ethnicity (White Caucasian vs other ethnicity; see Table 1). The non-clinical voice-hearers group included participants recruited from Spiritualist churches (n = 7), the University of Manchester student population (n = 7), and the general public (n = 4). Clinical voice-hearers largely included participants recruited from mental health services (n = 11) and Hearing Voices Network groups (n = 6), although others were approached through other recruitment strategies (n = 5; see Procedure section). Psychiatric diagnoses in this group included schizophrenia (n = 15), drug-induced psychosis (n = 1), bipolar disorder (n = 2), borderline personality disorder (n = 2) and depression (n = 2). The mean length of time since diagnosis was 11.7 years (SD = 12.5, range years 1-39). Four clinical voice-hearers were no longer using services for mental health difficulties, but the remaining were service-
users (15 outpatients; 3 inpatients). Sixteen clinical participants were prescribed antipsychotic medication at the time of the study.

**Measures**

**The modified Goal Task.** The Goal Task developed by Dickson and MacLeod (2004) was adapted to assess the participants’ personal goals. Similar versions of this task have been used in previous studies investigating associations between goals and other mental health complaints (e.g. Reid, 2009). The task employed in the current study was modified following piloting work with two clinical voice-hearers and three non-clinical pilot participants, with the aim of adapting the procedure to match current study aims and participant population. The current version of the task involved two separate stages. Firstly, participants were asked to generate as many goals that came to mind within a 3-minute period (i.e. goals were described to participants as experiences that individuals typically try to accomplish or avoid; see Appendix D for the verbatim instructions provided to participants), and rate the perceived importance of each goal on a 11-point scale (i.e. “How important is it for you to accomplish this goal?”, 0 = “Not at all”, 10 = “Very much so”). Secondly, as pilot work indicated that the goals generated using the above procedure were often “concrete” (context- or activity-specific e.g. “finish my nursing degree by September”, “travel to Kenya”), an additional component was included to encourage participants to generate more abstract and general goals. This involved the participants being asked a series of “why questions” (a questioning style used in some talking therapies to encourage individuals to generate more abstract and general goals; Carey, 2006; Mansell et al., 2012) inquiring why they considered important achieving a certain goal (“Finish my nursing degree by September”). This
was repeated until the participant described a more general cross-situational or self-definitional goal (“Being a helpful person”) that underpinned the more concrete goal previously generated. This procedure was limited to the three goals rated as the most salient/important by the participant, and follow-up questions were used to ensure that the information provided during this procedure were indeed regarded as salient goals by the participant (“Is being an helpful person one of your goals?, “How important is for you to accomplish this goal on a scale from 0 to 10”). Examples of the questions used in this procedure are provided in Appendix D. The mean number of goals generated by participants during the first phase of modified Goal Task was 6.10 (SD =1.54), in addition to the three “abstract” goals from the second phase of the task. Clinical and non-clinical participants generated a comparable number of personal goals on this task ($p = .31$, see Table 1)

**The Hearing Voices Interview.** Voice content and characteristics were assessed through a semi-structured interview developed by combining existing standardised measures of voice-hearing, and additional items designed to examine the research questions within the present study (see Appendix E). Firstly, the interview schedule included the auditory hallucinations subscale of the Psychotic Symptoms Rating Scale (PSYRATS; Haddock et al., 1999), a multi-dimensional semi-structured interview assessing 11 separate cognitive, affective and “physical” (e.g. voices frequency, loudness, location) dimensions of voices on a 5-point scale (0 to 4). The PSYRATS has demonstrated good validity and reliability in previous studies with psychotic samples (Drake, Haddock, Tarrier, Bentall, & Lewis, 2007; Haddock et al., 1999; Steel et al., 2007), and has been previously employed in studies with non-clinical voice-hearers (e.g. Sommer et al., 2010). Three separate
scores were computed from the PSYRATS ratings, based on previous factor analytic findings (Ratcliff, Farhall, & Shawyer, 2011; Steel et al., 2007; Varese et al., under review): a total distress score, defined as the combination of the amount and intensity of distress items of the PSYRATS (Spearman-Brown reliability coefficient = .96 in this sample); a total negative content score, defined as the amount and degree of negative content items (Spearman-Brown reliability coefficient = .94 in this sample), and a total score comprising the PSYRATS frequency and duration items (Spearman-Brown reliability coefficient = .76 in this sample). We also used the PSTRATS single-item disruption scale, assessing the impact of voices on the hearer’s daily living functioning. Given the focus of this investigation on the content of voices, additional items drawn from the “voice content” and “affective content” sections of the Cognitive Assessment of Voices interview (Chadwick & Birchwood, 1994, 1996) were also included to ensure a more comprehensive qualitative assessment of voices. Furthermore, as the PSYRATS only provides measures of distress, but not other affective responses to voices, participants were asked to provide self-reported ratings of voice pleasantness (“On a scale from 0 to 10, how pleasant are the voices?”; 0 = “Not at all”, 10 = “Very much so”). A similar item assessing voice-related distress (“On a scale from 0 to 10, how distressing are the voices?”) was also included to ensure that similar measures of distress and pleasantness were available for statistical analysis.

**Goal interference and facilitation scores.** A set of questions specifically developed for this study was used to explore further the extent to which the voices described by participants influenced their ability to achieve important goals (see Appendix F). Firstly, participants were asked a series of open questions to explore
the degree to which voices facilitate and/or interfere with their ability to achieve their goals. Participants also rated how much voices facilitated and/or hindered their achievement of the three “abstract” goals they previously generated in the modified Goal Task on a scale of 0 to 10 (e.g. “how much do the voices help with achieving this goal?” and “how much do the voices interfere with achieving this goal?”; 0 = not at all, 10 = very much so). These ratings were averaged within participants to provide two summary facilitation and interference scores to be used in the analyses. Both scores presented good internal consistency in the present study (Cronbach’s αs = .89 and .91, respectively).

The short Depression, Anxiety and Stress Scales (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 is a 21-item questionnaire measuring emotional distress, including symptoms of anxiety, depression and stress. The measure was included to increase comparability of our findings with those of previous studies which have included measures of emotional symptoms in addition to or instead of voice-related distress (e.g. Peters et al., 2012). The DASS-21 requires participants to rate the extent to which they experienced each of the symptoms described in the items in the past week on a 4-point scale (0 = “Did not apply to me at all”, 3 = “Applied to me very much or most of the time”). Previous reports indicate the scale has good validity and internal consistency in both non-clinical (e.g. Badcock, Chhabra, Maybery, & Paulik, 2008) and clinical individuals with psychotic experiences (e.g. Ng et al., 2007). In this study, the DASS-21 presented excellent internal consistency (Chronbach’s α = .96)
Procedure

All participants were recruited in the Greater Manchester region, and approached through a variety of recruitment strategies including: liaison with mental health services, mental health charities and Hearing Voices Network groups; display of poster adverts on University of Manchester premises, GP surgeries and public venues; liaison with local Spiritualist churches; adverts on social network groups, specialist websites (e.g. Intervoice) and NHS and Local Authority patient and public involvements projects.

Testing took place in locations convenient to participants, including offices on University premises, hospitals, community mental health centres, Spiritual churches and the participants’ homes. After providing informed consent, participants were asked to complete the demographic and clinical history interview and the DASS-21. Participants then completed, in counterbalanced order, the modified Goal Task and the Voice-Hearing Interview. Interviews were audio-recorded and transcribed verbatim prior to data analysis. Participants provided goal interference and facilitation scores after completing the abovementioned measures. Additional research measures that are to be analysed in a separate report were also administered (see Appendix H). Participants were then fully debriefed, and received £7 reimbursement for their time.

Data Analysis

Exploring the thematic correspondence between voices and goals. To examine the hypothesised thematic correspondence between content of voices and personal goals, a within-subject variable-oriented coding procedure (an approach to
qualitative data which focuses on predefined, theory-driven variables and their relationships rather than pursuing the identification of emerging themes across cases; Miles, Huberman, & Saldana, 2014; Ragin, 1987) was developed for the current study. This involved identifying thematic matches between the qualitative description of the voice content provided by participants during the Voice-Hearing Interview, and the personal goals described by participants during the modified Goal Task. The analytic procedure developed for the current study involved a series of sequential steps, including:

1) **Transcription**: All audio-records of the Hearing Voices Interviews were transcribed for subsequent analysis.

2) **Familiarisation**: Prior to the analysis, the first author read through each transcript to familiarise himself with the context and content of the interview, and annotated sections of the interview transcript containing information about the content of the voices described by participants.

3) **Data extraction**: For each participant, a coding matrix was created to include the personal goals generated by participants during the modified Goal Task, and all sections of transcript where participants provided a description of their voices; either following specific prompt questions included in the interview schedule (e.g. “What type of things does the voice generally say?” “Does the voice give you any advice or suggestions?”), or other spontaneous descriptions provided by the participant during the interview. Only recent or typical examples of voices were extracted, rather than examples from the participant’s distant past (e.g. voices heard during past hospitalisations). Both precise “quotations” of the voice (e.g. “the voice said <<Slash your wrists!>>”) and more indirect descriptions of voice content in the participants’ own words (e.g. “the voice keeps telling me I am a low life”) were
included. An example of a coding matrix developed for this study is presented in Appendix K.

4) **Data matching**: Every extract was systematically contrasted to each goal generated by the participant and the presence of any match between goals as content of voices was coded as present or absent. A match was coded as present whenever the description of the content of the voice included comments, instructions, commands or advice, which was either consonant or dissonant with the goal considered. Appendix K provides examples of the above criteria with associated qualitative examples from the data collected as part of this investigation. All matrices were compiled and coded by the first author (FV) and a subsample of 20 coding matrices also analysed by an independent coder (LP) to examine agreement rates and Cohen’s kappa for inter-coder agreement. Descriptive statistics were used to report the number of cases where thematic associations between voice content and goals were identified.

**Associations between goal interference/facilitation scores and affective reactions to voices.** To examine whether affective reactions to voices depend on the extent to which voices facilitate or interfere with personal goals, correlational analyses were carried out to test whether (i) goal interference scores were positively associated with measures of distress, and negatively related to voice pleasantness; and whether (ii) goal facilitation scores positively associated with voice-pleasantness but negatively related to distress measures. Furthermore, regression analyses were used to examine whether these hypothesised associations remained significant after accounting for other important determinants of affective reactions to voices. These
included PSYRATS measures of frequency/duration of voices, measures of negative content and the amount of disruption to life functioning.

To ensure that these analyses reflected genuine associations between the variables considered, between-group differences on all research variables were examined prior to the main analyses. Subsequent analyses were carried out both within the entire participant sample and separately within the clinical and non-clinical groups in order to examine consistent and divergent patterns of findings between groups. All regression analyses controlled for participant grouping to ensure that the findings reported were unbiased by possible group-differences (Fox, 2008). All analyses were carried out using SPSS version 20.

Results

Differences Between Clinical and Non-clinical Participants

Visual inspection of box-and-whiskers plots found no evidence of outliers in the variables considered. Bootstrap for independent sample tests (with 1000 bootstrap samples) were carried out to examine differences between clinical and non-clinical voice-hearers (see Table 1). Clinical voice-hearers scored significantly higher on the PSYRATS-AH measures of distress, voice frequency/duration, negative voice content, and disruption to daily life caused by the voices. They also presented significantly higher DASS-21 and self-reported voice-related distress scores. There was a trend towards significance for the analysis of voice pleasantness, suggestive of lower pleasantness scores amongst clinical voice-hearers. In terms of goal interference/facilitation scores, clinical participants presented significantly
higher interference scores, and lower facilitation scores compared to non-clinical voice-hearers.

Exploring the Thematic Correspondence Between Content of Voices and Goals

A thematic match between the content of voices and at least one reported goal was identified in 82.5% of the total sample (n = 33), with the majority of participants describing voices that could be matched with at least two or more of their reported goals (i.e. n = 23, corresponding to 69.7% of cases where a match was found). There was no significant difference between the clinical and the non-clinical groups in terms of number of cases where thematic associations were observed (77.3% and 88.9% respectively, Fisher’s exact test p = .43). Qualitative examples of voices and associated goals are presented in Table 2. A more comprehensive and detailed list of examples can be found in Appendix K. A review of qualitative descriptions of voices provided by the seven participants for which no thematic match was found revealed that these participant often did not provide specific detail regarding the content of their voices during the interviews. Nonetheless, in three of these participants (7.5% of the total sample), a qualitatively distinct association between goals and voices, where the identified link pertained to the participant’s description of the function of voices, was apparent despite the lack of clear description of voice content. When either type of association was considered, thematic associations were found in 90% of the total sample. Inter-coder agreement with an independent coder was calculated at 95%, with a Cohen’s kappa = .78, indicating a substantial agreement between coders.
### Table 2: Qualitative examples of thematic correspondence between goals and voices

<table>
<thead>
<tr>
<th>Participant age, gender and group</th>
<th>Goals</th>
<th>Associated voice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Link with the participants’ description of the content of voices</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>58, Female (Non-clinical)</td>
<td>Being a confident and competent person</td>
<td>“People think you are stupid”, “You don’t even know what you are talking about’. That would give me quite serious doubts about myself. “You are useless, you are hopeless, you will never be good at anything”</td>
</tr>
<tr>
<td>31, Male (Clinical)</td>
<td>Protect myself and my family</td>
<td>“You are going to have to watch yourself mate, because he is going to attack you. So why don’t you retaliate by grabbing hold of his neck and pushing him to the floor”</td>
</tr>
<tr>
<td>26, Female (Clinical)</td>
<td>Lose weight</td>
<td>The only negative thing that he does say is “You need to lose weight.” That is the reason I am running. To lose the weight. He says he wants me to be a size 10.</td>
</tr>
<tr>
<td>19, Female (Clinical)</td>
<td>Be more responsible and mature</td>
<td>I struggled to pay the rent last week, and they were like “Stop being so reckless please!”</td>
</tr>
<tr>
<td><strong>Link with the participants’ description of the function of voices</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>44, Male (Non-clinical)</td>
<td>Develop my academic and non-academic writing</td>
<td>I’m certainly looking at things, and hearing my voice in the words, and trying to debate with it and get a better bit of writing. It’s giving me suggestions. It’s rehearsing. It gives me a chance to hear how things sound</td>
</tr>
<tr>
<td>40, Female (Non-clinical)</td>
<td>Keep growing/personal development</td>
<td>The message the voices give me is guidance. It’s guidance for my own growth – that I may keep learning and searching</td>
</tr>
</tbody>
</table>

**Goal Interference/Facilitation Scores Are Associated with Voice-Related Distress and Pleasantness**

Two separate analyses were conducted to examine associations between goal interference/facilitation scores and measures of voice-related distress and
Table 3: Spearman’s rho between goal interference/facilitation scores and the distress and voice pleasantness measures

<table>
<thead>
<tr>
<th></th>
<th>Whole sample (N = 40)</th>
<th>Clinical (n = 22)</th>
<th>Non-clinical (n = 18)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Facilitation</td>
<td>Interference</td>
<td>Facilitation</td>
</tr>
<tr>
<td>DASS-21 total</td>
<td>-.66 ***</td>
<td>.81 ***</td>
<td>-.60 **</td>
</tr>
<tr>
<td>PSYRATS distress</td>
<td>-.70 ***</td>
<td>.89 ***</td>
<td>-.65 **</td>
</tr>
<tr>
<td>Self-report distress</td>
<td>-.71 ***</td>
<td>.93 ***</td>
<td>-.55 *</td>
</tr>
<tr>
<td>Self-report pleasantness</td>
<td>.86 ***</td>
<td>-.69 ***</td>
<td>.69 **</td>
</tr>
</tbody>
</table>

Note: * p < .05; ** p < .01; *** p < .001

pleasantness. Firstly, non-parametric correlational analyses (Spearman’s rho) were used to test for associations between goal interference/facilitation scores and distress measures (PSYRATS distress, self-reported voice-related distress, and DASS-21 scores), and the self-reported measures of voice pleasantness. To examine whether these associations were consistent in both clinical and the non-clinical participants, separate analyses were carried out within the two participant groups, and the Fisher’s procedure for comparing independent correlation coefficients (Fisher, 1921) was used to identify any significantly difference in findings obtained from these two subgroup analyses. Furthermore, hierarchical regression analyses were employed to examine whether goal interference/facilitation ratings significantly predicted distress and voice pleasantness when controlling for participant group and other characteristics of voices that might influence affective reactions to voices.

Results of correlational analyses are displayed in Table 3. Goal interference and facilitation ratings were significantly associated within the whole sample ($r_s = -.72, p = .001$) and within subgroup analyses ($r_s = -.56, p = .021$ in clinical and $r_s = -.73, p = .001$ in non-clinical participants). For the total sample, the associations between interference scores and the distress measures (DASS-21 scores, PSYRATS
distress, and self-reported voice-related distress ratings) were all robust and significant. Conversely, significant inverse relationships were found between goal facilitation and all distress measures. Analyses also revealed that perceived pleasantness of voices was inversely related to interference ratings, whereas a large positive association was observed between voice pleasantness and goal facilitation scores. Subgroup analyses for the clinical and the non-clinical groups are also displayed in Table 3. Fisher’s z test indicated that the association between goal facilitation and voice pleasantness was significantly larger in the non-clinical group compared to the clinical group ($z = 3.60, p = .001$). All remaining analyses were non-significant (all $zs < 1.96$, all $ps > .05$), indicating that the effects observed in the two groups were comparable in magnitude.

Two separate hierarchical multiple regression analyses were then used to test whether goal interference and facilitation scores were significant predictors of: (i) self-reported voice-related distress ratings when controlling for the effect of other voice characteristics (frequency/duration, negative content and amount of disruption to life) and the dichotomous predictor “group” (0 = clinical, 1 = non-clinical), and of (ii) voice pleasantness when controlling for the same covariates. Interference and facilitation ratings were included as separate predictors as their bivariate associations, although large, were not of a magnitude that may create spurious findings due to perfect or quasi-perfect collinearity (i.e. $r ≥ .80$ or .90; Field 2009). For both models there was no evidence of violations of the assumption of independence of errors (Durbin-Watson test = 1.80 for both analyses), linearity, homoscedasticity and normally distributed errors (examined through visual inspection of standardised residuals). Inspection of collinearity diagnostics found no evidence of multicollinearity amongst the predictors in the regression models (i.e. all
Variance Inflation Factor statistics were < 10; all Tollerance statistics were > .10; Field, 2009).

Results of regression analyses are displayed in Table 4. For voice-related distress, with participant group and other voice-characteristic included in the first step of the analysis, the adjusted $R^2$ was estimated at .85, indicating that the predictors explained 85% of the variance in distress. In the first step of the analysis, negative voice content and disruption to life caused by the voices significantly predicted distress. At step 2, the inclusion of goal interference and facilitation scores significantly improved the prediction of distress scores, explaining an additional 4% of the observed variance ($R^2 = .89$, significance of $R^2$ change $p = .017$). In the final model, goal interference, but not goal facilitation, significantly predicted distress when controlling for the other variables included in the model. The effects of negative content and voice disruption were also significant, whereas frequency/duration of voices and group were not associated with distress.
A similar hierarchical regression model was estimated with voice pleasantness as the dependent variable. After the inclusion group and other voice-characteristic at step 1, the adjusted $R^2$ was estimates at .39, indicating that the model accounted for 39% of the observed variance in voice pleasantness. In the first step of the analysis, only negative voice content significantly predicted pleasantness scores. The inclusion of goal facilitation and interference at step 2 largely improved the prediction of pleasantness scores, and accounted for an additional 38% of the observed variance ($R^2 = .77$, significance of $R^2$ change $p < .001$). In the final step of the analysis, goal facilitation was the only significant predictor of pleasantness.

**Discussion**

The current study aimed to investigate (i) whether voice content is related to voice-hearers’ important personal goals, and (ii) whether affective reactions to voices (voice-related distress and pleasantness) are linked to the extent to which voices interfere or facilitate the persons’ ability to achieve important personal goals. Consistent with our first aim, a thematic correspondence between personal goals and the content of voices was found in over 80% of the participants recruited for this study. With regards to our second aim, our results revealed that goal interference was significantly associated with higher distress and lower perceived voice pleasantness, whereas goal facilitation was significantly related to higher pleasantness and lower voice-related distress. Subsequent regression analyses revealed that goal interference specifically predicted distress, and that goal facilitation was specifically associated with perceived pleasantness of voices. These analyses found that the extent to which voices are perceived as facilitating or
hindering personal goals is strongly predictive of affective reactions to voices. Furthermore, these effects remained statistically significant after accounting for several covariates that might influence affective reactions to voices.

**Thematic Correspondence Between Goals and Voices**

A main finding of this study was the apparent association between self-reported goals and the content of voices. This finding is consistent with our PCT-informed prediction that hallucinations may relate information consistent with the individuals’ goals, and is in line with previous research which identified associations between goals and the content of other clinical and non-clinical mental health complaints (e.g. intrusive imagery; Reid, 2009). Results also extend previous findings demonstrating thematic associations between psychotic experiences and personal goals and motives (Jakes et al., 2004; Rhodes & Jakes, 2000). Furthermore, they corroborate the notion that the content of voices is often not arbitrary, but understandable and meaningful in the context of the persons’ motives and life circumstances (e.g. Bentall, 2003; Corstens & Longden, 2013; Hardy et al., 2005; Longden, Corstens, Escher, & Romme, 2011; Romme & Escher, 2000; Romme, Escher, Dillon, Corstens, & Morris, 2009).

Within a PCT-framework, these findings are explained by the notion that hallucinations, like any internally generated mental events, are goal-driven phenomena and their content will necessarily convey information about an individual’s personal goals. However, other theoretical models can also account for this finding. Several misattribution models (i.e. psychological models assuming that hallucinations represent misattributed or “externalised” internally generated cognitive events) assume that voices arise when acts of inner speech (”thinking in
word” or ‘the overlapping region of thought and speech’ (Jones & Fernyhough, 2007, p. 148) are misattributed to sources external or alien to the self (e.g. Bentall, 2003; Fernyhough, 2004; Leudar & Thomas, 2000). Inner speech is regarded as a central self-regulation process which is acquired early in development through verbal interactions with care-givers, eventually enabling for the internal representation of goals and the regulation of goal-directed action (e.g. Vygotsky, 1934/2012). If voices represent instances of misattributed inner speech, it is reasonable that their content will preserve meaningful links with goals. In this respect, the observed correspondence between content of voices and goals would be consistent with the findings of studies suggesting that the content and the pragmatic dialogical function of hallucinated voices is consistent with the characteristics of “normal” inner speech (e.g. Leudar et al., 1997; Nayani & David, 1996). Other misattribution models have also proposed that the raw material of voices consists of intrusive verbal cognitions (e.g. Hoffman, 1986; Morrison, Haddock, & Tarrier, 1995), which might be particularly susceptible to being misattributed to a non-self-source due to the low sense of “cognitive effort” associated with these experiences (Bentall, 1990; Bentall, Baker, & Havers, 1991; Bentall & Fernyhough, 2008). In parallel, it has been proposed that the origin of intrusive cognitions is linked to the activation of latent personally salient goals unrelated to the person’s current activity (e.g. Clark & Rhyno, 2005; Klinger, 1996) and that their content might relate to the person’s goals and concerns (e.g. Reid, 2009). In both these misattribution accounts the thematic correspondence between voices and goals would be considered a by-product of association between goals and the raw material assumed to underlie hallucinatory experiences (e.g. inner speech, verbal intrusions).
Future investigation may help to clarify the current findings in a number of ways. Within PCT, the experience of hearing voices is assumed to result from unresolved conflict (Mansell, 2005; Powers, 1979, 2005). It is therefore expected that goals represented in the content of voices might be experienced as “conflictual”.

Available instruments may be adapted to address this research question, (for a review, see Michalak, Heidenreich, & Hoyer, 2004) including self-report measures of goal ambivalence and goal-conflict matrices (Emmons, 1986; Emmons & King, 1988) as well as computerised assessments measuring the multidimensional features of goal conflict (e.g. Computerised Intrapersonal Conflict Assessment; Lauterbach, 1996; Lauterbach & Newman, 1999). Furthermore, future studies could consider a broader number of voice-related variables to identify more specific associations between voices and goals. For example, considering the usual “triggers” and the social contexts where specific voices generally arise may provide additional information regarding the specific goals and conflicts associated with voices. PCT assumes goals often represent retrieved memories of past perceptual experiences, or varied combinations of past perceptual experiences (Powers, 1979). Hence, additional research development could include the consideration of the voice-hearers’ biographical context and life experiences. This line of enquiry is also justified by studies suggesting that the content of certain hallucinated voices reflects memories of past events in the voice-hearer’s life (e.g. Hardy et al., 2005; Jones, 2010; McCarthy-Jones et al., 2014), and preliminary evidence suggesting associations between voices and emotional conflicts stemming from past adverse life experiences (Longden et al., 2011; Romme et al., 2009).

It is noteworthy that several participants did not provide a detailed description of voice content during the Hearing Voices Interview. In the case of four
participants, this might be a consequence of the “type” of voices they experienced (i.e. two participants exclusively experienced auditory hallucinations of thought echo, one participant reported an incomprehensible “crowd” of voices, and one participant only experienced recurrent musical hallucinations with verbal content similar to “earworms” phenomena). Interestingly, in a small number of voice-hearers who provided no description of voice content it was possible to identify an association between the participants’ goals and their description of the function of voices. This finding should be interpreted tentatively, as the variable-oriented approach used in this study (although appropriate for summarising hypothesised relationship amongst discrete qualitative variables in relatively large samples) may have overshadowed important distinctions/emerging findings in the data (e.g. the existence of different or more complex types of associations between goals and voices other than those specifically examined in this study). The use of alternative qualitative methods (e.g. Interpretative Phenomenological Analysis; Smith, 1996) might be desirable in order to explore in greater detail the possible associations between voices and goals, including the potential perceived function played by the voices described by some voice-hearers.

**Associations Between Goal Interference/Facilitation and Affective Reactions to Voices**

The current study suggests that the extent to which individuals experience voices as facilitating or interfering with personally meaningful goals, may play a central role in determining whether voices are perceived as distressing or as pleasant experiences. In contrast with previous investigations which often assessed the impact of hearing voices using arbitrarily defined measures of psychosocial and
occupational functioning (e.g. Hall, 1995) or disruption to daily life activities (Haddock et al., 1999), the present study employed a more “idiographic” approach where the impact of voices was subjectively measured in relation to self-generated and personally meaningful goals. This can be regarded as a relative strength, in accordance with recommendations of employing subjective/idiographic methods to understand the idiosyncratic nature of psychotic experiences (e.g. Haddock et al., 2011; Pitt, Kilbride, Nothard, Welford, & Morrison, 2007).

Our findings provide a novel perspective on processes that might contribute to distress in people who hear voices. Within PCT, psychological distress is experienced whenever control over personally meaningful and salient goals is disrupted (e.g. Carey, 2006; Mansell et al., 2012; Powers, 1973, 2005). Findings of a significant relationship between goal interference and distress are therefore in line with the principles of PCT. Of notable interest, our results compare favourably with previous investigations of other possible psychological determinants of distress in voice hearing. For example, the effects on distress observed in the present investigation seem to be more robust than reports from previous studies focusing on negative beliefs and appraisals of voices (e.g. Chadwick et al., 2000; Morris, Garety, & Peters, 2014; Morrison et al., 2004; Peters et al., 2012), maladaptive metacognitive beliefs (e.g. Brett, Johns, Peters, & McGuire, 2009; Hill et al., 2012), insecure attachment styles (e.g. Berry, Wearden, Barrowclough, Oakland, & Bradley, 2012; Robson & Mason, 2014) and, to a lesser extent, measures of the perceived relationship between voice-hearers and their voices (e.g. Birchwood, Meaden, Trower, Gilbert, & Plaistow, 2000; Vaughan & Fowler, 2004). Future studies could help to clarify the current findings by examining the possible interrelationships between other predictors of distress (e.g. negative beliefs) and the
goal interference measures considered in the present study. It is possible, for example, that goal interference may represent a more “proximal” predictor of distress that could mediate the observed association between the way specific voices are appraised and subsequent distress. Conversely, a reverse association might be also plausible, with specific positive and negative beliefs/appraisals developing as a consequence of the perceived impact of voice hearing on personal goals.

The relationship between goal facilitation and voice pleasantness is also of interest given the paucity of studies investigating the specific determinants of pleasant hallucinatory experiences, and more generally, possible positive aspects of psychotic experiences (e.g. Haddock et al., 2011). In both clinical and non-clinical voice hearers a robust association was observed between the degree to which voices were perceived as facilitating the ability to achieve personal goals and the extent to which the voices were experienced as pleasant. This is consistent with previous surveys suggesting that voices are experienced as useful and constructive events by a substantial proportion of voice-hearers (e.g. Jenner et al., 2008; Sanjuan et al., 2004). Furthermore, our comparisons between clinical and non-clinical voice-hearers (in addition to replicating well-documented differences on several voice-related variables, e.g. distress, frequency/duration and negative content of voices; Daalman et al., 2010; Daalman & Diederen, 2013) suggest marked differences in the extent to which voices are perceived in relation to the ability to progress towards valued goals, with clinical voice-hearers reporting significantly higher interference, and lower levels of facilitation.
Additional Methodological Considerations

A number of caveats should be considered when interpreting the current findings. As with most psychological investigations relying on voluntary participation and informed consent, the present study might be vulnerable to selection bias, which could have influenced the results. The sample consisted primarily of white, British participants with a mean age of approximately 39 years old. This may pose limitations in the external validity of our findings, and caution should be taken when attempting to generalise these findings to other populations.

The analytic procedure through which associations between goals and voices were tested has potential limitations. Although participants were uninformed of the study aims until after being debriefed, the same researcher who designed the study conducted all research interviews and data analyses. Therefore, the procedure used might be vulnerable to experimenter-expectancy effects and confirmatory biases. Although the substantial inter-coder agreement with an independent coder for a sizable subsample of the data provides some confidence in the validity of our findings, future investigations should consider ways of adapting the design and method to address these potential sources of bias. The use of interviewers blind to the specific aims of the study may considerably decrease chances that the observed correspondence between goals and voice content might stem from experimenter effects. Similarly, the use of independent coders for all data analyses could provide a more robust approach to data analysis. Additional source of corroboration for this finding could be sought by involving research participants in the matching between goals and the content of the voices they described, to reduce chances that thematic matches may be unduly influenced by the researcher’s own expectations.
The correlational nature of our data precludes the unambiguous determination of causal relationships. Future investigations employing alternative research designs might clarify the nature of these relationships (e.g. using experience sampling methods to examine temporal dynamics amongst the variables considered, and/or intervention studies considering treatment approaches specifically targeting the extent to which voices interfere with valued goals). Furthermore, the study relied on self-report measures, some of which were specifically developed for the present study, and therefore not previously validated. Although it can be argued that self-report measures are unavoidable when investigating phenomena that are exclusively accessible through introspection, it is recognised that these methods are vulnerable to several biases (e.g. retrospective reporting, demand characteristics, social desirability), and may lead to overinflated relationships between the constructs considered (e.g. Razavi, 2001). The results of this study should be interpreted in the light of these limitations. Finally, the study did not incorporate a validated diagnostic tool to assign participants to the clinical and non-clinical groups and only relied on participant’s self-reported diagnosis and service history. Although this is not problematic for the transdiagnostic approach employed in this instance, the authors recognise that the lack of such instruments might have introduced bias in our subgroup analyses. Future studies aiming to consider potential effects of specific diagnoses, or investigate more precisely differences between clinical and non-clinical voice-hearers may benefit from similar measures.

Clinical Implications

This study provides preliminary evidence that the content of voices is frequently associated with voice-hearers’ goals. On this basis, it is proposed that
enquiring about the content and characteristics of voices may prove a useful way of exploring goals that are important/valued by the voice-hearers, and possibly highlight potential areas of difficulty that could benefit from psychosocial support or interventions. Furthermore, the careful exploration of voices as part of a comprehensive clinical assessment may represent an opportunity to assist clients in accessing goals which might be otherwise inaccessible. This approach parallels proposals that voices should be regarded as sign of more salient and deeply rooted psychological and emotional difficulties of which voices are just one of their possible manifestations (Corstens & Longden, 2013; Longden et al., 2011; Romme & Escher, 1993, 2000), and the increasing expert consensus that psychological therapies for voices should include direct work with content of voices, rather than a preferential focus on appraisals and/or coping enhancement (e.g. Morrison & Barratt, 2010; Thomas et al., 2014). The finding that voice-related distress is closely associated to interference with important goals also stresses the importance of placing individual’s valued goals at the core of any psychological intervention for distressing voices. Interventions focusing on promoting the client’s ability to progress towards valued life goals might represent a meaningful treatment option for individuals with distressing voices. An example of such approaches is Acceptance and Commitment Therapy interventions for distressing voices (Shawyer, Thomas, Morris, & Farhall, 2013; Thomas, Morris, Shawyer, & Farhall, 2013), which have increasingly been used with individuals with distressing voices, with encouraging preliminary outcomes (e.g. Valmaggia & Morris, 2010). Within PCT, the understanding that hallucinatory experiences are consequences of unresolved conflict assumes that long-term resolution can only be achieved when information pertaining to the higher-order goals which create the conflict is accessed. The exploration of
voices and their relationship to valued goals may therefore help the identification of potential sources of conflict, and promote the voice-hearers’ ability to resolve these conflict. Method of Levels therapy (MoL), a transdiagnostic cognitive therapy based on PCT (Carey, 2006; Mansell, Carey & Tai, 2012), is a type of therapy, which specifically aims to shift awareness to higher-level goals and perceptions to promote long-term resolution of conflict. The application of MoL may therefore prove beneficial to clients with distressing voices in terms of resolving conflicts underlying voices and/or reduce the possible distress associated with these experiences.
References


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Vaughan, S., & Fowler, D. (2004). The distress experienced by voice hearers is associated with the perceived relationship between the voice hearer and the


Paper 3: Critical Reflection
Paper Overview

This paper outlines the researcher’s reflective and critical account of the work undertaken as part of the present thesis. The main theoretical and clinical implications of a Perceptual Control Theory (PCT; Powers, 1973, 2005) understanding of hallucinatory experiences, and the PCT-informed hypotheses tested in the current empirical research have been discussed in Papers 1 and 2 respectively. Within the present paper, the researcher will focus on the underlying rationale and the methodological considerations that informed this thesis. Firstly, the present paper reflects on the researcher’s motivation for employing PCT as an explanatory account for work conducted by the researcher both within the current thesis and in previous work. The challenges encountered in outlining the model of hallucinations presented in Paper 1 will also be considered. Furthermore, this paper will clarify the rationale for the selection and/or development of the recruitment procedures, research measures and the analytic approach employed in the empirical investigation presented in Paper 2. The strengths and limitations of the methodological choices made will be highlighted throughout the paper with the aim of informing future research.

PCT as a Theoretical Framework to Understand Hallucinations

The Rationale for Using PCT

The researcher has been investigating hallucinations for the past seven years. The work presented as part of the present thesis arose predominantly from an interest in reconciling some of the theoretical and clinical perspectives considered as part of his continued development as a both a research and clinical psychologist. The
researcher’s initial interest centred around the cognitive underpinnings of hallucinations, and then extended to several other aspects of voice-hearing, such as the potential aetiological role played by trauma and social adversity, and the putative mediating mechanisms that may explain this apparent association. This was driven by information provided through the life stories spontaneously shared by many participants involved in the researcher’s preliminary studies on voices. The researcher’s previous work on hallucination-proneness in university students, and contact with experts-by-experience through organisation like the Hearing Voices Network (HVN) brought to realisation the non-pathological nature of many hallucinatory experiences. In parallel, the researcher developed a growing recognition that many models proposed within the cognitive sciences (which largely focus on the role of discrete “deficit” or combinations of deficits in explaining these phenomena), may not adequately explain the complex and varied hallucinations reported by many non-clinical individuals. Also, contact with service-users experiencing distressing voices, as well as the appreciation of the limited clinical value of some of the mechanistic processes covered in the researcher’s early experimental studies of voices, gradually increased his interest in models that could have greater clinical applicability; for example, models of voices developed within cognitive-behavioural theories (e.g. Chadwick & Birchwood, 1994; Morrison, 1998, 2001; Morrison, Haddock, & Tarrier, 1995).

In this process, the researcher developed an appreciation of the strengths and limitations of models pertaining to different “levels of analysis” of hallucinatory phenomena. For example, cognitive models of symptom formation present an obvious appeal to many “mechanistically inclined” researchers, as they attempt to account, in a parsimonious (but possibly simplistic) fashion, for the processes that
may lead to the formation of hallucinatory experiences. These models, however, are often unable to explain the factors differentiating between pathological and non-pathological voices, the potential influence of social factors in the aetiology of these experiences, and the varied form and characteristics of hallucinations. Conversely, many “clinical” models provide more robust accounts of the factors leading to distress and impairment in some voice-hearers, with clear applications for clinical practice, but without consideration of the possible aetiological underpinnings of hallucinatory experiences – a factor which has been highlighted as a significant limitation of most models guiding psychological interventions for voices in recent expert reviews (Thomas et al., 2014).

The researcher’s interest in PCT was motivated by his desire to provide a more “internally coherent” account of these different levels of analysis. In recent years, there has been an increasing emphasis on integrating the wide-ranging findings gathered through studies in many research fields, with the proposal of several integrative explanatory models of hallucinations attempting to account for the plethora of findings (e.g. Aleman & Larøi, 2008; Waters et al., 2012). Although the researcher recognises the pragmatic value of these models in promoting intra- and interdisciplinary dialogue on voices, these models sometimes fail to genuinely integrate the primary research they try to reconcile. As a result, they are reduced to a collection of varied research findings lacking shared theoretical background. Furthermore, these models, in their attempts to construct novel explanatory accounts based on the integration of existing findings and varied theoretical perspectives, may be criticised for being forcibly inclusive in their attempt to create expert consensus, and for being overly inductive - which may cast doubt over their scientific value.
The use of PCT as an integrative framework represents, in the researcher’s opinion, a valuable theory-driven and deductive alternative to the “patchwork” approach that has been used to develop other integrative explanations of hallucinatory experiences. The researcher had been exposed (although superficially) to PCT prior to developing an interest in hearing voices, and was struck by the integrative potential of this theory, as attested by its application to a variety of research topics within several scientific disciplines (e.g. robotics, sociology, clinical psychology, biology and neurosciences, developmental psychology; Bell, Judge, Johnson, Cade, & Pellis, 2012; Carey, Mansell, & Tai, 2014; Mansell, 2005; McClelland, 2004; Pellis & Bell, 2011; Plooij & van de Rijt-Plooij, 1990). Although the researcher maintained an interest in PCT over the past few years, he never had the opportunity to directly apply PCT to his research on psychotic experiences. The work presented as part of the present thesis was therefore a welcomed opportunity to apply PCT to the understanding of hallucinatory experiences, and in the process increase the researcher’s knowledge and understanding of PCT.

The Format of the Work Presented in Paper 1

Although it is customary for Clin.Psy.D. theses to include a systematic review, the inclusion of a theoretical/conceptual paper was deemed more appropriate in this instance. In addition to the researcher’s primary aim to provide an integrative explanatory account of hallucinations based on PCT, a number of pragmatic factors were considered when opting for this theoretically driven as opposed to a systematic review format.

The researcher carried out early exploratory database searches (using PsychInfo) for papers that may be relevant to a PCT account of hallucinations (e.g.}
using various combinations of the search terms “hallucinat*”, “AVH”, “hearing voices” and “goal*”, “striving*”, “conflict*”). No empirical studies were identified that specifically investigated the associations between these constructs; thereby the value of perusing a systematic review on these topics appeared minimal. The option of a systematic review on the notion of “control” in hallucinatory experiences was also considered, given the potentially richer literature available. However, the inclusion in the present thesis of an empirical study which specifically examined several PCT-informed hypotheses called for a full description of the theoretical principles that informed the research. PCT has been previously applied to the understanding of other symptoms of psychopathology (e.g. Hyland, 1987; Mansell, 2010; Mansell & Carey, 2013; Pitman, 1987), but no detailed account of hallucinatory experiences from a PCT perspective has been previously proposed in the literature. Furthermore, although Powers (Powers, 1973, 2005) proposed that the mechanisms of PCT could account for the formation of hallucinatory experiences, this proposition was not discussed in detail, or considered at its full potential. Hence, it was felt that a more elaborate consideration was required to highlight the possible contribution of PCT to the understanding of hallucinations. In this respect, the theoretical paper represents an original and valuable contribution to the literature in this area of hallucination theory and research.

Challenges and Limitations

The merits and limitations of a PCT conceptualisation of hallucinatory experiences have already been discussed in Paper 1. Here, we consider some of the challenges and limitations arising from the process through which the arguments presented in in Paper 1 were developed.
A major challenge faced by the researcher in carrying out the work presented in Paper 1 was settling on the scope of the manuscript, and consulting varied literature sources in sufficient detail to gauge the available empirical support for the proposed PCT model of hallucinations. The main aim of Paper 1 was clarifying how the principles of PCT might apply to the understanding of several “facets” of hallucinatory experiences that have been largely considered in isolation in previous models. For this reason, a systematic and/or exhaustive comparison with existing models and associated empirical literature was deemed unsuitable in the context of the paper, given the comprehensive nature of theoretical account proposed. Nonetheless, in addition to a thorough review of the original descriptions of PCT (Powers, 1973, 2005; Powers, Clark, & McFarland, 1960a, 1960b), and more broadly other PCT literature relevant to the formulation of the model outlined in Paper 1, the researcher attempted to integrate pertinent empirical literature, and/or contrast PCT to other theoretical proposals where this felt relevant, or beneficial to outlining the implications of the proposed model. The lack of the structured and clear scope provided by a systematic review format (a process of inquiry the researcher is versed with) was particularly challenging for the researcher. Although attempts to interrogate relevant literature on hallucinations were guided by the predictions formulated on the basis of PCT (e.g. the literature considering the role of “conflict” in the aetiology of hallucinations), this process relied heavily on the researcher’s pre-existing knowledge of the literature on hallucinatory experiences. Furthermore, it became apparent that PCT could be applied to a more extensive number of research issues/areas covered in previous hallucination research than those eventually included in the final version Paper 1 (e.g. how PCT may provide an alternative explanation the perturbed cognitive processes considered by self-monitoring
accounts; Fletcher & Frith, 2009; Frith & Done, 1988). The researcher’s pre-existing research interests largely guided the scope of the paper, as well as considerations of what would be feasible to incorporate within a single paper. This process can be criticised for being excessively selective, or on grounds of inherent risk of unintentional suppression of evidence that may disconfirm the proposed theoretical account (i.e. “cherry picking”, or fallacy due to incomplete evidence). Furthermore, many elements of the proposed theoretical mode remain speculative as they are backed up only indirectly by existing empirical evidence. Arguably, these are not significant limitations, considering the early stages of development of this theoretical proposal, and the lack of empirical investigations specifically designed to examine research questions pertinent to the proposed model. It is nonetheless essential for future reviews to contrast more directly and systematically this PCT account with alternative theoretical models of hallucinations, and for future studies to specifically examine the PCT-informed empirical predictions we described in Papers 1 and 2. Despite the above limitations, the work presented in Paper 1 makes an original contribution to the literature by applying a theoretical framework that has not been previously applied to the study of hallucinatory phenomena. Furthermore, our model enables the integration of different aspects of hallucinations that previous accounts have struggled to account within a unified theoretical framework.

Selection, Adaptation and Piloting of the Research Measures

The primary aim of Paper 2 was to evaluate several PCT-informed hypotheses based on the theoretical considerations outlined in Paper 1. This empirical paper provides initial evidence suggesting that the content of voices is
frequently associated with goals. In general, the study adds to existing evidence suggesting that often the content of voices is not random or arbitrary, but meaningfully linked to salient aspects of the hearer’s life (e.g. McCarthy-Jones, 2012; Wykes, 2008). More specifically in relation to our PCT understanding of hallucinations, our findings are suggestive that the construct of goals may integrate the seemingly diverse concepts assumed to be expressed in the content of voices in previous literature (e.g. the voice-hearers’ hopes, wishes, strivings, fears and concerns; Bleuer, 1950; Wykes, 2008). The study also provides preliminary evidence that voice-related distress and pleasantness are closely related to the extent to which voices are perceived as facilitating or interfering with important personal goals – a finding in line with the central tenets of PCT. These findings add to the growing literature on the psychological determinants of voice-related distress, and suggests that consideration of voice-hearers’ personal goals may be beneficial to both the understanding and (conceivably) the amelioration of distress in voice-hearers.

Further clinical and research implications of the empirical research included in this thesis are discussed in Paper 2. Here, we consider in further detail the main methodological considerations that informed this research. As the topics covered in Paper 2 are largely novel areas of research, there are no established methodologies to specifically address these research questions. Hence, a number of measures were adapted or purposely developed to match the purposes of the present investigation. In this section, further detail is provided regarding the rationale and procedure that guided these amendments and adaptations. The advantages and limitations that may have resulted from these methodological choices are also discussed.
Patient and Public Involvement (PPI)

Although the research questions and measures employed in this investigation were originally selected by the researcher on the basis of prior studies (e.g. Reid, 2009), feedback from service-users/experts-by-experience (i.e. individuals with lived experience of hearing voices) made a significant contribution to the adaptation of instruments and procedures employed in this study. The expert feedback was gathered in several stages, including: (i) A consultation meeting with members of the University of Manchester Community Liaison Group - a PPI initiative providing, amongst other services, consultation on design and delivery of clinical psychology research studies; (ii) a presentation/consultation meeting the researcher delivered in September 2012 at a Hearing Voices Network (HVN) group in Greater Manchester, and (iii) further consultation and collaborative work with a service-user researcher who assisted with the development of the study measures and information material (e.g. Participant Information Sheets, Debriefing Sheets, advertisement posters, information leaflets etc).

The above activities were particularly beneficial in terms of considering the perceived value of the research questions considered, and the possible burden of the proposed procedures to research participants - especially participants who may be hospitalised/heavily medicated, and therefore struggle with some of the originally proposed procedures. Further feedback from experts-by-experience was gathered whilst piloting the study procedures with two clinical voice-hearers (identified through the above PPI activities) and three non-clinical participants. The involvement of experts-by-experience in early stages of research design is regarded as a relative strength of the study, in line with recommendations and national strategic plans highlighting the importance of active service-users involvement in
clinical research (e.g. NIHR, 2014). From a personal learning perspective, this represented an opportunity to appreciate the value of active service-user involvement. Furthermore, it proved valuable in planning further PPI activities that informed other research projects/grant applications the researcher subsequently prepared.

**Personal Goals Measures**

Following previous studies which examined similar research questions (i.e. Reid, 2009), the Goal Task, developed by Dickson and MacLeod (2004) was initially chosen as a measure to assess participants’ idiosyncratic personal goals. Service-user/experts-by-experience feedback highlighted that some individuals might benefit from a more extensive description of experiences that may be regarded as “goals” compared to that provided in the Dickson and MacLeod task. Furthermore, as discussed in Paper 2, initial piloting work revealed that the goals generated in this task were often situation- or activity specific, and often did not reflect more abstract/general goals that may have been of interest in the context of the present study.

In the light of the above observations, the verbal instructions of the task were considerably expanded in collaboration with a service-user expert, with the intent to clarify the construct of goals (see Appendix D). Furthermore, as described in Paper 2, a procedure was developed to encourage participants to access more abstract, “higher-order” goals underlining the more concrete goals generated by participants as part of the Goal Task. This procedure used questioning styles informed by PCT and other goal constructs approaches to demonstrate the hierarchical nature of goals (Carey, 2006; Mansell, Carey, & Tai, 2012). In particular, “why questions” were
used to explore the possibly more salient motives which underpin mundane goals and behaviours.

The piloting of this procedure, and subsequent use of the modified Goal Task as part of the study, indicated that the above mentioned amendments were successful in increasing the feasibility of the task. The task was in fact completed without difficulty by both clinical and non-clinical voice-hearers. Interestingly, as reported in Paper 2, clinical and non-clinical participants generated similar numbers of goals in this task, evidencing acceptability of this procedure amongst individuals with distressing mental health difficulties. Furthermore, all participants identified and verbally described higher-order goals with relative ease using the novel procedures developed for this study.

The use of these procedures, however, also presented a number of methodological shortcomings that could potentially threaten the validity of the reported findings, and would need to be addressed in future research. Firstly, these procedures were only piloted, and not formally validated, prior to their employment to test the substantial hypotheses examined in Paper 2. Additional evaluation and development of these procedures could, for example, benefit from examination of relevant psychometric characteristics of the measures employed (e.g. test-retest reliability; bias resulting from administration of different researchers/interviewers), and the construct validity of the procedure used to assess higher-order goals (e.g. by coding the level of “concreteness” of the different goals generated during the modified Goal Task, and examining within-subject differences between alleged abstract/higher-order goals, and the goals generated during the first phase of the task). Furthermore, the procedure relied on the skills of the interviewer in asking follow-up questions to facilitate the identification of higher-order goals. The active
role played by the researcher may be associated with experimenter effects. In retrospect, the use of procedures involving less researcher-participant interaction (e.g. questionnaire measures) may have been preferable in terms of minimising these potential threats to the validity of the study. In this respect, the use of alternative research instruments assessing constructs that parallel the notion of higher-order goals as considered within PCT may prove beneficial in future studies (e.g. self-report measures of “self-guides” or “life values”; Carver, Lawrence, & Scheier, 1999; Francis, Boldero, & Sambell, 2006; Hayes, Strosahl, & Wilson, 1999; Higgins, 1987; Wilson, Sandoz, Kitchens, & Roberts, 2010), whilst taking into account other methodological shortcomings that may result from the use of these alternative methods compared to those used in the present investigation (e.g. increased burden to participant if multiple instruments for assessing higher- and lower-goals are required; excessive cognitive priming that may render certain questionnaire items/goals artificially salient when they are not personally significant).

**Characteristics, Content and Affective Reactions to Voices Measures**

The research questions considered in the present study required the assessment of different characteristics of voices, in particular measures of positive and negative affective reactions to voices (i.e. voice-related distress and voice pleasantness), as well as qualitative descriptions of the content of voices to allow for the analysis of the thematic correspondence between voice content and goals. Consistent with recommendations for the multidimensional assessment of hallucinatory experiences in clinical research (Waters et al., 2012), the auditory hallucination subscale of the Psychotic Symptoms Rating Scales (PSYRATS;
Haddock, McCarron, Tarrier, & Faragher, 1999) was originally selected as the primary voice-hearing measure to be included in the study. However, it became apparent that the exclusive use of the PSYRATS may have been insufficient in terms of answering the research questions considered in the present study. Firstly, as the PSYRATS was originally developed as an assessment tool of auditory hallucinations in the context of psychotic disorders, its items and response anchors only consider a restricted number of features of the distressing voices frequently described by patients with psychosis. For example, the PSYRATS only includes measures of negative voice content and distress, but neglects other “types” of voices, such as the pleasant/pleasurable voices reported by non-clinical but also clinical voice-hearers (Jenner, Rutten, Beuckens, Boonstra, & Sytema, 2008; Miller, O’Connor, & DiPasquale, 1993; Oorschot et al., 2012; Sanjuan, Gonzalez, Aguilar, Leal, & Van Os, 2004). Furthermore, the structured format and preferential focus of the PSYRATS on voices presenting negative content may prevent participants from providing detailed and more comprehensive descriptions of their voices, thereby reducing opportunities to gather data pertinent to the analysis of hypothesised thematic correspondence between voice content and the personal goals.

Several additional measures were included to overcome the potential limitations of the PSYRATS in relation to our research objectives. First, we included additional items drawn from the “voice content” and “affective reactions” sections of the Cognitive Assessment of Voices Interview (Chadwick & Birchwood, 1994), an interview schedule which includes a more detailed and comprehensive array of questions about the content of voices compared to the PSYRATS. Furthermore, a single item scale assessing voice-related pleasantness (i.e. “On a scale from 0 to 10, how pleasant are the voices?”; 0 = “Not at all”, 10 = “Very much...
so” was also included to provide a quantitative measure of positive affective reactions to voices. The wording of this voice pleasantness item was informed by previous cross-sectional studies of pleasurable voices in psychosis (Sanjuan et al., 2004), as well as measures used in other studies designed by the researcher to investigate the psychological predictors of pleasant hallucinations in the daily life of patients with psychosis (Varese et al., in preparation). Although the PSYRATS comprises scales assessing distress associated with/ caused by voices, a single item rating scale assessing voice-related distress was also included. The use of measures presenting a similar response format was in fact expected to aid the interpretation of some of the planned analyses (i.e. the correlational and regression reported in Paper 2), as it may permit ruling out the possibility that divergent findings could be attributable to differences in data-gathering/response format of the measures considered. To reduce the risk of excessive burden to participants, the above mentioned additional measures where integrated in the PSYRATS interview schedule rather than being administered separately. Additional ratings of fluctuations in affective reactions to voices were originally included in the interview schedule (see Appendix E), but these were later dropped because of concerns regarding the validity of the information gathered through these items. The exclusion of these measures did not alter the scientific value of the study, as these were not functional to any of the specific hypotheses considered in this investigation.

A possible limitation of the voice-related measures used in this investigation was the lack of a measure specifically assessing positive content of voices. In line with previous findings investigations (e.g. Beavan & Read, 2010), the regression analyses outlined in Paper 2 indicated that (negative) voice content was a robust predictor of voice-related distress. Based on the measures administered as part of this
study, it is impossible to determine whether voice pleasantness may similarly depend on the degree/amount of positive voice content. It would be useful to investigate this more thoroughly in future research. Future studies could also consider development and validation of more comprehensive measures of voices which discriminate between amount/degree of positive and negative voice content, and amount/intensity of positive and negative affective reactions to voices (perhaps in the form of additional scales that could be augmented to existing multidimensional measures of voices like the PSYRATS).

**The Short Depression Anxiety Stress Scale**

A more generic questionnaire assessing symptoms of emotional distress— the 21-item version of the Depression Anxiety Stress Scale (DASS-2; Lovibond & Lovibond, 1995) - was also used alongside other measures of voice-related distress.

It could be argued that in this respect some of the measures included in the study may be redundant. However, the additional consideration of this measure bore several advantages to the present study. Firstly, the inclusion of a measure of emotional symptoms increases the comparability of the present findings with those of previous studies which used similar instruments (e.g. Zigmond & Snaith, 1983) to assess distress in voice-hearing (e.g. Peters, Williams, Cooke, & Kuipers, 2012).

Secondly, the use of multiple measures of distress with varied data-gathering and response formats (i.e. a semi-structured clinical interview, a single-item self-report rating, and multi-item questionnaire scale) corroborates the robustness of our findings suggesting an association between distress and the extent to which voices interfere with personal goals, as reported in Paper 2.
Measures of Goal Interference and Goal Facilitation

Two new scales were developed specifically for the research within this thesis to assess the extent to which voices either facilitated or interfered with important personal goals. To the researcher’s knowledge, the only validated measure assessing the positive and negative impact of psychotic experiences is the Subjective Experiences of Psychosis Scale (Haddock et al., 2011). However, this instrument is not specific to voices, and only considers a limited number of pre-selected aspects of well-being rather than person-specific and personally meaningful goals/strivings. For these reasons, this instrument was deemed inappropriate for the purposes of the present study.

The two novel scales developed for this study were informed by existing measures used in goal constructs research to assess the positive and negative impact of pursuing specific goals on other goals/strivings that are salient to the person (Emmons, 1986; Emmons & King, 1988; King & Emmons, 1990). Rather than creating a single index of interference/facilitation, two separate measures were developed as it was hypothesised that goal interference and facilitation may not necessarily be redundant dimensions. This was supported by the results of the correlational analyses reported in Paper 2, where these measures were found to be strongly associated (Spearman’s rho ranging between .5 and .7), but not perfectly dependent.

Our goal-interference and facilitation measures demonstrated good internal consistency in the sample considered in Paper 2. More interestingly, these measures were highly predictive of affective reactions to voices, which is consistent with the hypotheses developed on the basis of PCT. These associations cannot simply be dismissed on the ground of redundancy between the items used to assess these
constructs. The observation of large associations with a range of measures of distress/emotional reaction to voices further support this conclusion. As discussed in Paper 2, the effects observed in this study compare favourably, in term of effect sizes, to other psychological determinants of distress examined in the literature, and should be explored in further detail in future investigations. However, as with other measures included in this study, these scales are not validated and further investigations of their psychometric properties are therefore warranted.

It should be noted that the vast majority of the participants included in the present study reported multiple voices, with a large proportion of voice-hearers reporting both distressing and pleasant voices. This is consistent with previous studies (e.g. Leudar, Thomas, McNally, & Glinski, 1997; McCarthy-Jones et al., 2014; Nayani & David, 1996; Sanjuan et al., 2004). On this basis, it is plausible that different voices may present different patterns of interaction with goals, with some voices facilitating and others interfering with goals. Similarly, the same voice may be facilitating certain goals, whilst at the same time hindering the person’s ability to achieve other goals. This level of complexity could not be captured through the measures included in the present investigation. Our measures of goal interference/facilitation required participants to rate the impact of their voices in general, rather than the impact of specific voices. Similarly, our measures of affective reactions to voices (e.g. self-reported rating of voice related distress and pleasantness) referred generally/collectively to all the voices experienced by the participant rather than specific voices. Although the research team initially considered assessing the impact of specific voices as well as specific characteristics of voices on goals, this option was not pursued as our initial piloting of the study procedures demonstrated the potential for this to be lengthy and burdensome for
participants experiencing multiple voices. Despite the potential loss of interesting/valuable information, we believe that the final version of the measures was more manageable and reduced the risk of overburden and/or fatigue to participants, particularly given the large number of research measures already included in this investigation. Future studies could nonetheless consider exploring in more detail the impact of specific voices – or specific types of voices – on goals, and associations with affective reactions to specific voices.

**Other Research Measures Not Reported in Paper 2**

Several other research measures were administered as part of the present thesis. These data were not included in Paper 2 as they were beyond the scope of the thesis, but will be fully analysed and considered in separate research reports. In addition to the abovementioned goal interference/facilitation ratings, the study included a small set of qualitative questions exploring the degree to which participants perceived their voices as facilitating and/or interfering with their ability to progress towards valued goals. These questions were included as a possible “contingency plan” in case the recruitment target for this investigation was not reached, making the analyses of the quantitative hypotheses reported in Paper 2 unfeasible. Additional quantitative measures to examine the association between voices and conflict were also included. As discussed in Paper 1, PCT predicts that the content of voices will correspond with goals that are “conflictual” or in error as a consequence on conflict. A number of goal-related measures were collected as part of this investigation to examine this hypothesis. For each goal generated as part of the modified Goal Task, participants were asked to provide goal attainment ratings (“Please rate the extent to which you feel you are currently attaining or achieving...
this goal”; 0 = “not at all”, 10 = “completely”) and goal ambivalence ratings (“How unhappy would you feel if you succeeded at this striving/goal”; 0 = “not unhappy at all”; 10 = “extremely unhappy”; Emmons, 1986; Emmons & King, 1988; Kelly, Mansell, & Wood, 2011). Additionally, participants rated the conflict existing between different combinations of their goals using the Striving Instrumentality Matrix (Emmons & King, 1988); one of the most widely used measures in previous research on goal-conflict (for a review, see Michalak, Heidenreich, & Hoyer, 2008). The planned analyses for these data included dependent t-tests (or appropriate non-parametric counterparts) to examine whether goals found to be thematically linked to voices were associated with higher conflict and ambivalence, and perceived attainment compared to goals for which no thematic association with voices was observed. Given the particular importance of this research question to the PCT model of voices we outlined in Paper 1, these analyses will be carried out at a later date, and will be submitted for publication as part of a separate research paper.

**Participant Recruitment and Testing**

**Recruitment Strategies**

From a participant recruitment perspective, the study carried out in the current doctoral thesis presented a number of challenges, as well as learning/reflection opportunities. The study, in fact, employed a transdiagnostic approach with no restriction placed on eligible diagnoses, and aimed to recruit clinical but also non-clinical voice-hearers – which was a novel experience for the researcher. This is consistent with the accumulating evidence that voice-hearing may cut across traditionally defined diagnostic boundaries, as well as symptom-specific approaches to the investigation of psychotic symptoms (e.g. Bentall, 2003;
McCarthy-Jones, 2012; Waters et al., 2012). The population of interest required the design of a range of recruitment strategies to identify prospective participants; in particular non-clinical voice-hearers, a population that may “shy away” from participation in clinical research due to the widespread stigma and negative societal attitudes towards the experience of hearing voices (e.g. Hill & Linden, 2012; Leudar & Thomas, 2000; Vilhauer, 2014). With these considerations in mind, the researcher devised (with the support of experts-by-experience) study information and recruitment material stressing a “depathologising” perspective on hearing voices (see Appendix J).

In addition to more conventional recruitment through NHS/independent mental health services and HVN groups, a varied range of recruitment strategies were implemented to support the recruitment of non-clinical voice-hearers. These included: (i) liaison and submission of poster adverts to over 100 GP surgeries across Greater Manchester; (ii) display of approximately 250 recruitment posters in places of great public within the University of Manchester and across Greater Manchester (e.g. libraries, cinemas, community adverts boards, supermarkets); (iii) adverts on social media, websites and newsletters (e.g. Facebook, the Intervoice website); (iv) newsletter adverts on NHS and Local Authority research public involvement projects (e.g. the Salford Citizen Scientist project); (v) display of posters and study information leaflets in concomitance at two hearing voices conferences/workshops which took place at the University of Manchester in 2012; (vi) a press release organised in collaboration with the University of Manchester Press Office to further increase public awareness of the study (a copy of the press release is provided in Appendix J); (vii) presentations, liaison and display of poster adverts in several Spiritualist churches in Greater Manchester.
Reflection on the Recruitment and Testing Process

Whereas previous studies carried out by the researcher focused exclusively on hallucinating patients with diagnoses in the schizophrenia-spectrum, the participants recruited for this investigation reported having received a range of psychiatric diagnoses. This provided the researcher with an opportunity to appreciate some of the remarkable similarities in the experiences of voice-hearing described by individuals presenting with seemingly different mental health difficulties.

Consistent with previous studies documenting a high incidence of pleasant and positive voices amongst clinical voice-hearers (e.g. Jenner et al., 2008), a large number of participants in the present study described pleasant hallucinatory experiences in addition to distressing ones. Perhaps more interestingly, there was also substantial variability in affective reactions and levels of distress described by non-clinical voice-hearers. It was surprising for the researcher to recognise that some non-clinical voice-hearers presented levels of distress which were comparable to those reported by clinical participants with troubling voices. Despite this, all participants in the non-clinical group remained non-help-seeking. The reasons why these participants avoided seeking support in relation to their distressing voices are open to speculation, but notably some individuals voiced cynical beliefs about the usefulness of psychiatric treatment, or concerns about the possible negative consequences of being diagnosed as “schizophrenic” (e.g. losing their job). This may suggests that stigma and a devalued perception of services as excessively “medicalised” may play a significant role. It would be interesting for future research to consider whether these factors may represent a barrier to accessing potentially beneficial support amongst non-clinical voice-hearers with distressing experiences,
which could help planning forms of support which is more acceptable/accessible to these individuals.

The observation of several non-clinical individuals experiencing considerable voice-related distress prompted careful and thorough debriefing of these participants, placing particular emphasis on demystifying common misconception about voices (e.g. the association between voices/psychosis and violent behaviour), provide psychoeducation about these experiences (e.g. the life-time prevalence of hallucinatory experiences in the general population), and redirect participant towards further sources of information, self-help material (e.g. Hayward, Strauss, & Kingdon, 2012) or support.

Potential for Selection Bias

Some of the advertisement and study material used as part of this investigation specifically mentioned some of the hypotheses considered in the study (i.e. that the study aimed to elucidate whether distress could be linked to the extent to which voices as interfering with personal goals), and that researchers were particularly keen to investigate participants who reported pleasant/non-clinical voice-hearing experiences. Although participants were recruited through a number of strategies/pathways, the possibility that the aforementioned factors might have influenced our findings, or introduced bias stemming from participant self-selection, cannot be excluded. Furthermore, many non-clinical participants (but also some clinical voice-hearers) reported that the study was the first opportunity they had to discuss their voices openly. A small number of participants also reported that their motivation for taking part to the study was to seek confirmation that they were not mentally ill. This raises the interesting possibility that the “depathologising”
approach employed in the study advertisement and recruitment material (although functional to our objective of attracting voice-hearers presenting a range of experiences of hearing voices) might have especially appealed to voice-hearers wishing to understand better the nature of their voices, or to be reassured about the normality of their experiences. This and other potential selection biases should be addressed in future studies, for example by employing more “neutral” advertisement material, and more representative sampling methods.

**The Voices of Spiritualist Participants**

A considerable number of non-clinical voice-hearers who participated in the empirical study were mediums and/or members of Spiritualist churches (n = 7). The recruitment and interaction with these participants presented a particular challenge for the researcher, largely stemming from the potential “conflict” of respecting their beliefs system and engage them in research, whilst at the same time being intellectually honest about his empiricist-rationalist perspective of hearing voices as mental, and not paranormal, phenomena. This conflict is not uncommon in clinical research and practice, as many individuals hold strong paranormal/meta-physical beliefs about the origin of voices (e.g. Morrison et al., 2004). However, this dilemma was felt more strongly in this context as voice-hearing is embedded in the religious practices of Spiritualism, and many participants appeared to have an “invested interest” in attempting to persuade the researcher of the paranormal origins of their experiences. Many Spiritualist participants openly questioned the researcher’s beliefs about the origin of voices, and although mostly disagreed with some of the perspectives he presented, they remained committed to support the study, possibly reassured by the perceived value of research looking at voice-hearing not as
intrinsically pathological or dangerous experiences, but as a relatively common experience which may be constructive and positive in many individuals.

Although not directly pertinent/related to the research topics considered in this investigation, the inclusion of Spiritualist mediums provided the researcher with interesting observations regarding the characteristics of the voices described in this participant group, that may be explored in further detail in future investigations. The recruitment of participants from Spiritualist congregations is not uncommon in research considering non-clinical voice-hearers (e.g. Andrew, Gray, & Snowden, 2008; Hill & Linden, 2012; Hill, Varese, Jackson, & Linden, 2012). Consistent with the notion that the voices described by this group of participants may be akin to the experiences reported by other voice-hearers, most Spiritualist participants described their voices as separate entities/experiences clearly distinct from their own thought process, and that could often (but not always or exclusively) manifest themselves as voices presenting auditory qualities. However, as the researcher became more acquainted with the experiences described by these participants, it became apparent that the voices of Spiritual participants (although generally consistent with the hypotheses considered as part of the present investigation, i.e. most participants described meaningful associations between their goals and the messages they received from “the spirit world”) presented a number of distinctive features which could not be captured using the research measures of the present study. For example, the voices described by Spiritualist participants were characterised by a relative lack of “self-referential” content of voices (i.e. voices or “spirits” that are personally known to the medium, and provided messages directly pertinent/directed to medium). Rather, the identity of the voices described by these participants was often unknown to the hearer (i.e. the medium), and the messages provided by the voices
were directed and/or functional to other individuals (e.g. a person receiving a “reading”), often consisting of words of advice, comfort or confirmation of the spirits’ survival in the afterlife. The description of these voices was extremely homogeneous in this group, and their “appearance” (onset) almost invariably followed a consistent sequence in which the voices will first “make themselves known” by providing details about their identity (e.g. their name) and subsequently provide a message. Furthermore, this group described a far greater level of control over these experiences compared to other voice-hearers – all claiming to be able to “tune in” to the voices at will. A final notable difference was the fact that many Spiritualist reported that they gradually developed their ability to hear voices, often through prolonged “training” received within their congregations (often referred to as “Development” in many congregations).

The above mentioned observations are intriguing, and perhaps suggest that the experience of hearing voices described by this group may be qualitatively different from those of other voice hearers. Interestingly, many of these aspects (including the role played by the “spiritual training” that may encourage the experience of hearing “spirits”) are reminiscent of the findings of anthropological studies of hallucinations described by members of American Evangelical congregations (Luhrmann, 2012). It has been proposed that the voices experienced by these individual may be explained by implicit and explicit cultural learning which focus attentional processes towards inner sensory experiences, which in turn may lead to “sensory overrides”, i.e. inner experiences presenting the compelling sense of reality of “actual” perceptions (i.e. hallucinations; Luhrmann, 2011). From this perspective, the ability to hallucinate may be regarded as an “acquired skill” that could be induced or developed in some individuals. This resonates with a PCT.
conceptualisation of the basic underpinnings of hallucinatory experiences (although not necessarily with the notion that conflict may be driving these experiences), as well as with other recent theoretical proposals within the cognitive-behavioural literature (Wells, 2007).

From a PCT standpoint, it is intriguing to speculate whether this “skill” may be a response to inner conflicts or frustrated important goals. In the context of the present study, many Spiritualist participants described goals related to the importance of finding proof/evidence of the existence of the spirit world – a goal that can perhaps be regarded as being constantly challenged by the materialistic views common in contemporary Western societies, and more in general by the awareness of our own mortality. Many Spiritualists also described themselves as “sceptics”, placing particular importance on the need for evidence to support their beliefs. In this respect, the experience of hallucinated perceptions may be regarded as a way to override error in these goals and possible conflicts. This is of course entirely speculative, but it would be interesting for future studies to investigate further hallucinatory experiences in the context of Spiritualisms (and Evangelical Christianity) in order to explore these intriguing possibilities.

Critical Evaluation of the Analytic Approach

Alternative Approaches to the Analysis of the Thematic Correspondence between Voices and Goals

The analysis of the thematic links between content of voices and goals was conceptually informed by previous studies which examined associations between goals and other mental health complaints, in particular the study carried out by Reid (2009), which examined the thematic correspondence between goals and the content
of intrusive imagery in clinical and non-clinical participants. In this respect, the current study aimed at employing a similar methodology within the context of voice hearing. The method employed in the Reid (2009) study, however, was not described in sufficient detail to allow for straightforward replication or adaptation to the present research aims. Description of the specific analytic steps, or the coding framework used, were not provided.

The analytic methods employed by studies which examined the correspondence between goals and delusional beliefs (Jakes, Rhodes, & Issa, 2004; Rhodes & Jakes, 2000) were also reviewed in order to develop a suitable analytic procedure for the current data. However, these methods seemed excessively inductive, as the alleged link between goals and delusions depended on the authors’ interpretation of the meaning of the symptom considered. Although this is not necessarily a fatal shortcoming within the qualitative frameworks employed in these studies, the researcher valued pursuing a “low-inference” approach to the analysis of the voice-hearing data collected as part of this investigation, which more directly mapped on the content of voices rather than interpretations of their meaning. In this respect, an approach akin to the one used by Reid (2009) was regarded as preferable despite the lack of methodological detail in the original report. The analytic approach described in Paper 2 was therefore only loosely modelled on Reid (2009), and the specific steps undertaken in the analyses were independently developed for the current study, and were informed by other qualitative methodologies (i.e. within-subjects variable oriented approaches; Miles, Huberman, & Saldana, 2014).

As outlined within the Discussion section of Paper 2, the analytic procedure employed in this investigation presents a number of important limitations, and is not immune to criticism or sources of bias. In retrospect, the use of alternative analytic
strategies might have provided greater rigour in the identification of an association between participants’ goals and the content of their voices. A possible alternative approach to be employed in related future research could involve the separation of goal data and the descriptions of the content of the participant’s voices. An independent coder who is blind to the participants’ identity could then be instructed to identify which goals and voices were likely to have been produced by the same participant (i.e. matching the goal data with the voice data). This approach could have the added advantage of being amenable to statistical analysis to examine whether the number of correct matches identified using the above procedure significantly exceeds chance level. However, such an approach would have been unfeasible given the limited time frame and resources available for the present doctoral thesis.

On reflection, the researcher’s ability to identify meaningful links between goals and voices may have been influenced by the access to contextual information that may facilitate the recognition of these meaningful links. The researcher personally carried out all the research interviews considered in this investigations, and transcribed the majority of these interviews (others were transcribed by a voluntary research assistant). Furthermore, the analytic approach undertaken specifically involved the familiarisation with the interview transcripts in order to have a better awareness of the context in which the description of the content of voices were provided. Rather than being a limitation, consideration of the person’s biographical/idiosyncratic context may have facilitated the identification of meaningful and accurate thematic associations between voices and goals. It is possible that alternative methods for the analysis of these data, such as the one
described above, may be unable to similarly identify links between voices and goals unless this type of contextual information is also available.

A primary limitation of the analytic method employed in this study is the potential of overshadowing important distinctions/emerging findings in the data (e.g. the existence of different or more complex types of associations between goals and voices other than those specifically examined in this study). Despite being still confident of the value of pursuing a more hypothesis-driven approach to data analysis, in hindsight the researcher recognises that the use of more sophisticated data-driven qualitative methods (e.g. Interpretative Phenomenological Analysis or Grounded Theory; Charmaz, 2006; Smith, 1996) might have been valuable, particularly in the light of links between voices and goals that pertained more to the participants’ description of the function of voices rather than their content. Similarly, the use of methods developed in the qualitative literature to reduce expectancy bias might have been also beneficial. These might have included, amongst others, the use of member checking procedures (e.g. Lincoln & Guba, 1985) and more explicit narrative methods to reduce risk of “directiveness” and leading questions during the interview process (e.g. Chase, 2005; Miles et al., 2014).

**Statistical Analyses and Power Considerations**

The participant sample considered in the study reported in Paper 2 was modest in size (N = 40), and deemed sufficient to conduct analyses used to examine the main quantitative hypotheses considered in this thesis. The researcher originally aimed to recruit 44 participants for the present investigations on the basis of a-priori power analysis for the detection of a moderate-to-large correlational effect size (i.e. \( r = .4 \); Lipsey & Wilson, 2001) with \( \alpha = .05 \) and the minimum recommended level of
power of .8 (Cohen, 1988). The effect size used for these power calculations was estimated based on the literature of other known psychological determinants of voice-related distress (negative beliefs about voices; Mawson, Cohen, & Berry, 2010), and the (in retrospect, arbitrary) assumption that the effects investigated as part of the present study (the association between goal interference/facilitation and affective reactions to voices) may be comparable in magnitude.

The correlational analyses presented in Paper 2 clearly showed that the effects detected in the present study were considerably larger than the effect size used for our a-priori sample-size calculation. Despite the modest sample size considered, the researcher carried out regression analyses to examine the associations between goal facilitation/interference scores and measures of voice-related distress and pleasantness when controlling for a number of additional covariates. It should be noted that the sample size of the current investigation is comparable with previous studies which examined the predictors of voice-related distress using regression methods (e.g. Hill et al., 2012; Peters et al., 2012).

Although the regression analyses included in Paper 2 may have sufficient statistical power to examine the primary predictors of interest (goal facilitation and interference scores), it is possible that they may have been unsuited (i.e. underpowered) for the detection of smaller effects, especially since some of the predictors included in the model accounted for large proportions of observed variance in the dependent variables considered in the different analyses (i.e. distress and voice pleasantness). The interpretation of the effect of some covariates included in these models (e.g. voice frequency/duration, a variable found to be significantly associated with voice-related distress in previous studies; Morrison, Nothard, Bowe, & Wells, 2004; Varese et al., under review) should be undertaken cautiously, as the
failure to observe significant effects may be due to the small sample size considered, and the concomitant inclusion of independent variables which are highly predictive of affective reactions to voices. Future studies interested in the relative contribution of these factors in addition to, or in interaction with, goal facilitation/interference may therefore benefit from the recruitment of substantially larger samples.

**Concluding remarks**

This critical and reflective review has evaluated several aspects of the research conducted, and considered methodological issues that might be employed in future studies considering some of the empirical predictions of the PCT model of hallucinatory experiences. Although the research included in this doctoral dissertation presents a number of limitations that may have influenced the study findings, the theoretical proposals and empirical findings covered as part of this doctoral thesis nonetheless make a valuable contribution to the literature, and it is hoped they will inform future research into these topics.
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**Assessments:** Articles reporting useful information and data about new or existing measures.
**Practitioner Reports:** Shorter articles that typically contain interesting clinical material.
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Example: Charlotte and Emily Bronte were polar opposites, not only in their personalities but in their sources of inspiration for writing (Taylor, 1990). Use the last name only in both first and subsequent citations, except when there is more than one author with the same last name. In that case, use the last name and the first initial.

B. If the author is named in the text, only the year is cited.
Example: According to Irene Taylor (1990), the personalities of Charlotte. . .

C. If both the name of the author and the date are used in the text, parenthetical reference is not necessary.
Example: In a 1989 article, Gould explains Darwin's most successful. . .

D. Specific citations of pages or chapters follow the year.
Example: Emily Bronte "expressed increasing hostility for the world of human relationships, whether sexual or social" (Taylor, 1988, p. 11).

E. When the reference is to a work by two authors, cite both names each time the reference appears.
Example: Sexual-selection theory often has been used to explore patterns of various insect matings (Alcock & Thornhill, 1983) . . . Alcock and Thornhill (1983) also demonstrate. . .

F. When the reference is to a work by three to five authors, cite all the authors the first time the reference appears. In a subsequent reference, use the first author's last name followed by et al. (meaning "and others").
Example: Patterns of byzantine intrigue have long plagued the internal politics of community college administration in Texas (Douglas et al., 1997) When the reference is to a work by six or more authors, use only the first author's name followed by et al. in the first and all subsequent references. The only exceptions to this rule are when some confusion might result because of similar names or the same author being cited. In that case, cite enough authors so that the distinction is clear.
G. When the reference is to a work by a corporate author, use the name of the organization as the author.
Example: Retired officers retain access to all of the university’s educational and recreational facilities (Columbia University, 1987, p. 54).

H. Personal letters, telephone calls, and other material that cannot be retrieved are not listed in References but are cited in the text.
Example: Jesse Moore (telephone conversation, April 17, 1989) confirmed that the ideas.

I. Parenthetical references may mention more than one work, particularly when ideas have been summarized after drawing from several sources. Multiple citations should be arranged as follows.
Examples:
List two or more works by the same author in order of the date of publication: (Gould, 1987, 1989)
Differentiate works by the same author and with the same publication date by adding an identifying letter to each date: (Bloom, 1987a, 1987b)
List works by different authors in alphabetical order by last name, and use semicolons to separate the references: (Gould, 1989; Smith, 1983; Tutwiler, 1989).
All references must be complete and accurate. Where possible, the DOI for the reference should be included at the end of the reference. Online citations should include date of access. If necessary, cite unpublished or personal work in the text but do not include it in the reference list. References should be listed in the following style:

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**Book**

**Book with More than One Author**


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DOI 10.1002/hep.20941, becomes http://dx.doi.org/10.1002/hep.20941
Appendix C: General demographic and clinical history interview – Adapted from First et al. (2002)
## Contact information

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<td>Email:</td>
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<td>GP name and address:</td>
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**Demographic information**

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<td>(2) Recruited from general population;</td>
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<td>(2) Recruited from general population;</td>
<td>(3) Recruited from student population;</td>
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<td>Black</td>
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<td></td>
<td>Mixed-race</td>
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<td></td>
<td>Other:</td>
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<th>First Language:</th>
<th>English</th>
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<tbody>
<tr>
<td></td>
<td>Other:</td>
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| Are you married?                            | 1. married or living with someone as if married |
| IF NO: Were you ever?                       | 2. widowed |
|                                             | 3. divorced or annulled |
|                                             | 4. separated |
|                                             | 5. never married |

| How far did you get in school?              | 1. grade 6 or less |
|                                            | 2. GCSE (without doing A-levels) |
|                                            | 3. A-levels |
|                                            | 4. part university |
|                                            | 5. graduated from university |

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<thead>
<tr>
<th>How many years did you spend at school all together?</th>
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| Are you working or studying at the moment? | 1. Unemployed  
2. Working  
3. Studying |
|---|---|

**Overview of present illness**

| Have you been in any kind of treatment in the past month? | 1. Current inpatient  
2. Current outpatient  
3. No current patient |
|---|---|

**IF IN-PATIENT: When did you come to hospital?**

| 1. < 1 week  
2. 1-4 weeks  
3. > 4 weeks |
|---|---|

**Sometimes people hear voices, whispers or noises that other people can’t hear**

| In the past two weeks? | 1. YES  
2. NO |
|---|---|

| When first?  
When last? |  |
|---|---|

**Treatment history**

<table>
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<tr>
<th>Have you ever saw someone for emotional or psychiatric problems?</th>
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<th>When was the first time you saw someone for emotional or psychiatric problems? What was it for?</th>
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<tr>
<th>Have you ever been a patient in psychiatric hospital?</th>
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<p>| IF YES: What was that for? (How many times?) |  |</p>
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<th>Do you take any medication?</th>
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<td>(Write down the name of the medication and the dose).</td>
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Appendix D: The modified Goal Task
GOAL TASK

INSTRUCTION for the researcher:

“In this part of the study I would like to find out more about goals that are important to you. By “goals” we mean future experiences that people generally try to achieve or accomplish (for example, trying to exercise regularly, or spend more time with your friends) as well as experiences that people generally try to avoid (for example, smoking or drinking too much”).

“Goals can be related to something you are already doing, and you want to keep doing, or even something realistic that you would like to achieve in future. Also, goals can be either very specific (such as something that you would like to do, like going for an holiday in a specific place) or they can be more general (like getting on with your family members)”. 

“In the next couple of minutes, I would like you to describe as many of your goals as come to mind. Remember that there are no right or wrong answers in this task. Similarly, there are no “good” or “bad” goals – The goals that are important to you are not necessarily important to other people. As you speak, I will be writing down the goals you listed – of course this information will be kept confidential. Do you have any questions before we start?”

LET THE PARTICIPANT DESCRIBE VERBALLY ANY GOAL THAT COMES TO MIND, AND RECORD RESPONSES ON THE SHEET. AFTER THE 3 MINUTES ASK PARTICIPANT TO PROVIDE RATINGS OF GOAL IMPORTANCE/SALIENCE FOR EACH GOAL THEY GENERATED
Below is a list of goals you described in the previous task. Please rate how important is it for you to accomplish each goal on a scale from 0 (not at all) to 10 (very much so).

<table>
<thead>
<tr>
<th>YOUR GOALS</th>
<th>IMPORTACE</th>
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<td>10)</td>
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</table>
Goal Task Part 2 - Modified Downward Arrow Technique

Instructions for the researcher

“In the next part of the study, I would like you to work more on the three most important goals you listed in the previous task. We would like to know more about why these goals are important to you. I will ask you to tell me why achieving is this goal important to you.”

“Let’s start the first goal you listed as your most important one. This was [goal].”

- Prompt questions e.g.s: “Why is [goal] important to you?”
  “Why does this help?”
  “Why do you like [goal]?
  “What would be good about achieving [goal]?”
  “If you had to achieve that goal, what would that mean to you?”

- Record participants response and repeat until the respondent is unable to generate further “higher order” goals (or stop when the goal generated is self-descriptive and/or cross-situational) and check rating of goal importance.

- Repeat procedure for the two remaining goals.
Appendix E: The Hearing Voices Interview

Note: The interview schedule integrates the auditory hallucination subscale of the Psychotic Symptoms Rating Scale (Haddock et al., 1999), additional taken from the “voice content” and “affective reactions” section of the Cognitive Assessment of Voices interview (Chadwick & Birchwood, 1994) and items developed for the present study to assess self-report ratings of voice-related distress, and voice pleasantness. Visual scales for the latter measures was also presented to participants to aid their ratings.
“In this part of the study, I will ask you a number of questions about your experience of hearing voices”

1) “Sometimes people (not necessarily people with mental health difficulties) can hear voices, whispers or noises that other people can’t hear. In the past two weeks, have you heard voices that other people can’t hear?”

YES       NO

2) How many voices do you hear?

3) How often do you experience the voices?

   Frequency:
   0  Voices not present or present less than once a week
   1  Voices occur for at least once a week
   2  Voices occur at least once a day
   3  Voices occur at least once an hour
   4  Voices occur continuously or almost continuously. i.e. stop for only a few seconds or minutes

4) When you hear your voices, how long do they last?

   (e.g., few seconds, minutes, hours, all day long)

   Duration:
   0  Voices not present.
   1  Voices last for a few seconds, fleeting voices.
   2  Voices last for several minutes.
   3  Voices last for at least one hour.
   4  Voices last for hours at a time.
5) When you hear your voices, where do they sound like they are coming from? (e.g. Inside your head and/or outside your head? If voices sound like they are outside your head, where about do they sound like they are coming from?)

*Location:*

0 - No voices present.
1 - Voices sound like they are inside head only.
2 - Voices outside the head, but close to ears or head. Voices inside the head may also be present.
3 - Voices sound like they are inside or close to ears and outside head away from ears.
4 - Voices sound like they are from outside the head only.

6) How loud are your voices?

- Are they louder than your voice, about the same loudness, quieter or just a whisper?

*Loudness:*

0 - Voices not present.
1 - Quieter than own voice, whispers.
2 - About same loudness as own voice.
3 - Louder than own voice
4 - Extremely loud, shouting.

7) What do you think has caused your voice? Are the voices caused by factors related to yourself, or solely due to other people, or other factors?

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If the individual expresses an external origin: How much do you believe that your voices are caused by _____________ (add attribution) on a scale of 0-100 with
100 being that you are totally convinced, have no doubts, and 0 being that it is totally untrue?

**Beliefs origin of voices:**

0 - Voices not present.
1 - Believes voices to be solely internally generated and related to self.
2 - Holds < 50% conviction that voices originate from external causes.
3 - Holds > 50% conviction (but < 100%) that voices originate from external causes.
4 - Believes voices are solely due to external causes (100% conviction)

**8) Voice content**

Do the voices talk to you or about you?

Would you feel able to tell me the kind of things the voices say?

Are you able to give an example(s) of what the voices say?

(If participant struggles to respond: What makes it difficult to talk about?)

Explore whether the voice says the following:

Do the voices ever tell you to do something?

Do the voices ever give you advice or suggestions?
Do the voices ever comment on what you are doing or thinking?
Do the voices say unpleasant things about you or other people?
Do the voices ever threaten to harm you or others?
Do the voices ever say pleasant things, or perhaps give you advice?

(if needed) Just to clarify, How much of the time do the voices say these type of unpleasant or negative things?

Amount of negative content of voices:
0 - No unpleasant content.
1 - Occasional unpleasant content (< 10%).
2 - Minority of voice content is unpleasant or negative (< 50%).
3 - Majority of voice content is unpleasant or negative (>50%).
4 - All of voice content is unpleasant or negative.

Degree of negative content:
0 - Not unpleasant or negative
1 - Some degree of negative content, but not personal comments relating to self or family e.g., swear words or comments not directed to self e.g. “the milkman’s ugly”
2 - Personal verbal abuse, comments on behavior e.g. “shouldn’t do this or say this”
3 – Personal verbal abuse relating to self-concept e.g. “you are lazy, ugly, mad, perverted etc”
4 – Personal threats to self (e.g. threats to harm self or family), extreme instructions or commands to harm self or others.

9) Distress

How do you mostly feel when the voices speak? (scared, tormented, reassured, amused, interested, indifferent, etc.)

Are the voices distressing?
YES/NO

How much of the time?
When voices are distressing, how distressing are they?

Do they cause you minimal, moderate, severe distress?

Are they the most distressing they have ever been?

[Show client rating scales]

On a scale from 0 to 10, how distressing are the voices? □□

Does this fluctuate? Are there times when you do not feel this way? □□

Are the voices pleasant at all? Do you ever experience positive voices?

YES/NO

On a scale from 0 to 10, how pleasant are the voices? □□

Does this fluctuate?

(Notes)
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Amount of distress:

0 - Voices not distressing at all.

1 - Voices occasionally distressing, majority not distressing (< 10%).

2 - Minority of voices distressing (< 50%).

3 - Majority of voices distressing, minority not distressing (> 50%).

4 - Voices always distressing.

Intensity of distress:

0 - Voices not distressing at all.

1 - Voices slightly distressing.

2 - Voices are distressing to a moderate degree.
3 - Voices are very distressing, although subject could feel worse.
4 - Voices are extremely distressing, feel the worst he/she could possibly feel.

10) How much disruption do the voices cause to your life?
- Do the voices stop you from taking part in daytime activities?
- Do they interfere with your relationship with other patients/friends/family?
- Do they prevent you from looking after yourself?

*Disruption to life caused by voices*

0 - No disruption to life, able to maintain social and family relationships (if present).
1 - Voices causes minimal amount of disruption to life e.g., interferes with concentration although able to maintain daytime activity and social and family relationships and be able to maintain independent living without support.
2 - Voices cause moderate amount of disruption to life causing some disturbance to daytime activity and/or family or social activities. The patient is not in hospital although may live in supported accommodation or receive additional help with daily living skills.
3 - Voices cause severe disruption to life so that hospitalisation is usually necessary. The patient is able to maintain some daily activities, self-care and relationships while in hospital. The patient may also be in supported accommodation but experiencing severe disruption of life in terms of activities, daily living skills and/or relationships.
4 - Voices cause complete disruption of daily life requiring hospitalisation. The patient is unable to maintain any daily activities and social relationships. Self-care is also severely disrupted.

11 Do you have any control over the voices?
- Can you call up the voices?
- Can you make the voices stop/go away?

*Controllability of voices*
0 - Subject believes they can have control over the voices and can always bring on or dismiss them at will.

1 - Subject believes they can have some control over the voices on the majority of occasions.

2 - Subject believes they can have some control over their voices approximately half of the time.

3 - Subject believes they can have some control over their voices but only occasionally. The majority of the time the subject experiences voices which are uncontrollable.

4 - Subject has no control over when the voices occur and cannot dismiss or bring them on at all.
On a Scale from 0 to 10, how distressing are the voices?

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On a Scale from 0 to 10, how pleasant are the voices?

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**How often does it fluctuate?**

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Appendix F: Goal interference and goal facilitation ratings

Note: This section includes both the goal interference/facilitation rating used in the study to assess the extent to which the voices described by participants influenced their ability to achieve goals, and a small set of open questions to explore the degree to which voices facilitate and/or interfere with their ability to achieve their goals. These qualitative information was included as a “contingency plan”, and were not analysed as part of the present theses.
VOICES AND GOALS

“Could I ask you a bit more about the impact of this voice on your general life goals?”

How do you experience the voices? What are the most relevant or important aspects of the voices for you?
(Notes)

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Are there any aspects of the voices that you find helpful in terms of you achieving your goals?
(Notes)

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(if relevant) How do the voices help you to progress towards your goals? What is it about the voices that help you to achieve your goals?
(Notes)

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(if relevant) Can you give me a recent example?
Are there any aspects of the voice that sometimes prevent you or get in the way of you achieving your goals?

(if relevant) How do the voices get in the way of you achieving your goals? What is it about the voices that make it less likely you will achieve your goals?

(if relevant) Can you give me a recent example?
“Of all the aspects we discussed so far, which one is most influential on your ability to achieve your goals?”

(Notes)

GOAL INTERFERENCE/FACILITATION RATINGS

“I would like to look in more detail at the impact of these aspects of the voice on your ability to achieve some of the goals you listed earlier”

COPY ALL THE THREE HIGHER ORDER GOALS ON THE VOICES GOALS RECORD SHEET

SHOW PARTICIPANT THE FACILITATING /INTERFERING SCALES. AND ASK TO RATE THE IMPACT OF THE VOICES ON GOALS, AND RECORD RESPONSES ON THE RESPONSE SHEET:

“Do the voices help you achieving [first higher order goal]?” Please use this scale to rate how much the voices help with achieving this goal?” [record FACILITATING RATING]

“Does this aspect of the voices prevents you get or gets in the way of you [first higher order goal]?” Please use this scale to rate how much the voices interfere with achieving this goal” [record INTERFERENCE RATING]

REPEAT FOR SECOND AND THIRD HIGHER ORDER GOAL
**VOICES GOALS RESPONSE SHEET**

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<tr>
<th></th>
<th>First goal:</th>
<th>Second goal:</th>
<th>Third goal:</th>
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<td>Helps</td>
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<td>Helps</td>
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<tr>
<td>Interferes</td>
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<td>Interferes</td>
<td>Interferes</td>
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**On a Scale from 0 to 10, how much the voices help with achieving this goal?**

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Not at all                      Very much so

**On a Scale from 0 to 10, how much the voices interfere with achieving this goal?**

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Not at all                      Very much so
Appendix G: The short Depression Anxiety Stress Scales
Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

**The rating scale is as follows:**

0  Did not apply to me at all  
1  Applied to me to some degree, or some of the time  
2  Applied to me to a considerable degree, or a good part of time  
3  Applied to me very much, or most of the time

<table>
<thead>
<tr>
<th>Number</th>
<th>Statement</th>
<th>Rating</th>
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<tbody>
<tr>
<td>1</td>
<td>I found it hard to wind down</td>
<td>0 1 2 3</td>
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<tr>
<td>2</td>
<td>I was aware of dryness of my mouth</td>
<td>0 1 2 3</td>
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<td>3</td>
<td>I couldn't seem to experience any positive feeling at all</td>
<td>0 1 2 3</td>
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<td>4</td>
<td>I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)</td>
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<td>I found it difficult to work up the initiative to do things</td>
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<td>6</td>
<td>I tended to over-react to situations</td>
<td>0 1 2 3</td>
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<td>7</td>
<td>I experienced trembling (eg, in the hands)</td>
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<td>8</td>
<td>I felt that I was using a lot of nervous energy</td>
<td>0 1 2 3</td>
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<td>I was worried about situations in which I might panic and make a fool of myself</td>
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<td>10</td>
<td>I felt that I had nothing to look forward to</td>
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<td>11</td>
<td>I found myself getting agitated</td>
<td>0 1 2 3</td>
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<td>12</td>
<td>I found it difficult to relax</td>
<td>0 1 2 3</td>
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<td>13</td>
<td>I felt down-hearted and blue</td>
<td>0 1 2 3</td>
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<td>14</td>
<td>I was intolerant of anything that kept me from getting on with what I was doing</td>
<td>0 1 2 3</td>
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<td>15</td>
<td>I felt I was close to panic</td>
<td>0 1 2 3</td>
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<td>16</td>
<td>I was unable to become enthusiastic about anything</td>
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<td>17</td>
<td>I felt I wasn't worth much as a person</td>
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<td>18</td>
<td>I felt that I was rather touchy</td>
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<td>19</td>
<td>I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)</td>
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<td>20</td>
<td>I felt scared without any good reason</td>
<td>0 1 2 3</td>
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<td>21</td>
<td>I felt that life was meaningless</td>
<td>0 1 2 3</td>
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Appendix H: Additional research measures not included in the analyses reported in Paper 2
Conflict - Ambivalence ratings and Striving Instrumentality Matrix

Instructions for the researcher

COPY GOALS FROM GOAL TASK AND THE THREE HIGHER ORDER GOALS ON THE RATINGS SHEETS –

“Thank you. Now, I would like to look at your goals in more detail. In this form I would like you to tell me how you feel you are currently achieving your goals. Once again, remember that this is not a test – there are no right or wrong answers”

RECORD PARTICIPANT RESPONSES ON THE GOAL ATTAINEMENT RATING SHEET

“Thank you. Sometimes, achieving our goals has a cost. In this form I would like you to tell me how unhappy you feel if you succeed at your striving/goals. Once again, remember that this is not a test – there are no right or wrong answers”

RECORD PARTICIPANT RESPONSES ON THE AMBIVALENCE RATINGS SHEET

COPY THE PARTICIPANT’S GOALS ON THE FIRST MATRIX OF THE SIM

“Now, we would like to find out more about how the goals you listed earlier influence each other. Using this table, you will be asked to indicate whether being successful in any of your striving/goals has a helpful effect, a harmful effect, or no effect at all on the other strivings/goals?”
SHOW THE PARTICIPANT THE FIRST MATRIX OF THE SIM

- ASSISTED EXAMPLE: “For example, your first goal was [goal1]. Does being successful in this goal have a helpful or harmful effect on [goal2]. Please rate the effect of [goal1] on [goal2] on a scale from -2 (very harmful) to 2 (very helpful).”

LET THE PARTICIPANTS WORK ON THE FIRST MATRIX OF THE SIM

OFFER A BREAK

COPY THE REMAINING GOALS ON THE SECOND MATRIX OF THE SIM, AND ASK THE PARTICIPANT TO COMPLETE THE MEASURE
For each goal, please rate on a scale from 0 (not at all) to 10 (completely) the extent to which you feel you are currently attaining or achieving your goals

**YOUR GOALS**

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Please rate on a scale from 0 (not unhappy at all) to 10 (very unhappy) how unhappy you would feel if you succeeded at your strivings/goals

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For each of the goals you listed earlier, please rate the extent to which succeeding at that particular goal/striving is helpful or harmful to your ability to accomplish your other goals/strivings. Please use the following scale:

(-2)--------- (-1) --------- (0) --------- (1) --------- (2)
Very harmful no effect Very helpful

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<tr>
<td>Very harmful</td>
<td>no effect</td>
<td>Very helpful</td>
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Appendix I: Participant Information Sheet and Consent Form
Research Project: Voices, Conflict and Personal Goals  
NRES reference number: 13/NW/0290

Information for Participants

We would like to invite you to take part in a research study. Before you decide whether or not you would like to take part, please take time to read the following information. If there is anything that isn’t clear or that you would like to know more about, feel free to ask – my contact details are at the end of this leaflet.

What is the purpose of the study?

We would like to find out more about the experience of hearing voices. Until recently hearing voices was regarded as sign of mental illness. However, recent research has suggested that hearing voices is part of normal human experience. In fact, many people who hear voices do not have any mental health problems and regard their voices as a positive part of their lives. Some people who hear voices, however, find the experience difficult and frightening. We would like to understand more why hearing voices is difficult and distressing for some people, while it can be comforting or inspiring for others.

We would like to ask people who hear voices about their experiences to try to understand better the factors that lead to distress, and the things that make it a positive and constructive experience. Specifically, we are trying to understand the links between hearing voices and the life goals that people generally try to achieve.

Who can take part in the study?

We would like to speak to people who hear voices and have heard voices for at least 6 months. We are interested in speaking to people who have all different kinds of experiences of hearing voices, be that negative, positive or neutral. We hope to speak to about 45 people in total.

What will happen if I decide to take part?

If you decide to take part in this study, you will be invited to meet with the researcher, Filippo Varese, who is a Trainee Clinical Psychologist. You can meet at a location that suits you. Wherever you meet the researcher, you will be able to talk in private. The study overall will take approximately one hour and a half. You can
complete the study within one single meeting or, if you prefer, over two or more shorter meetings. During this time, you will be asked to complete some interviews and questionnaires.

At the beginning of the meeting, you will be asked to give us some general information about you. The researcher will ask you to confirm your name and contact details and to provide details about your current occupation, educational level and any prescribed medication that you might be taking. Following this, we will interview you to establish whether you have experienced voices recently, and whether you have ever been given any mental health diagnoses or used mental health services. We will also ask you to fill in two short questionnaires which will ask you about how you have been feeling in the past week, and how frequently you experience “unusual experiences”, including voices that other people can’t hear.

Following this, the researcher will ask you to describe some of your most important goals (meaning, experiences that you generally try to achieve, like spending more time with your family, or perhaps avoid, like being rude to people), and will interview you to understand the reasons why these goals are important to you. You will also be asked to tell us how happy or unhappy you would feel if you managed to achieve your goals, and how the goals you described influence each other.

Finally, the researcher will interview you to understand better the voices you sometimes hear. This interview will be audio-recorded. During this interview, you will be asked some questions about the kind of things the voices say, and whether you find the voices positive or distressing. In addition, you will be asked to tell us about the effect that the voices have on you achieving some of the important goals you described to the researcher.

Altogether it will take about an hour and a half to complete the study. There are no right or wrong answers and the researcher will not judge you. You do not have to answer any questions that you don’t want to answer, and you can choose to stop altogether at any point without giving a reason. At the end of the meeting you will receive £7 as a thank-you for your time.

**Will what I tell you be kept private?**

Yes. The information collected as part of the study will be handled in strict confidence. The data will be stored in a secure place and only researchers will have access to it. There is one exception to this: if you tell us anything that makes us think that you or anyone else is at risk of serious harm, we will have to share this information (for example, with your GP or with your keyworker in case you have one). However, we would always discuss this with you before we spoke to anyone else.

Part of the interviews you will be asked to complete will be audio-recorded. Once the study is finished, the researcher will write up the content of these interviews and destroy the original recordings to protect your privacy and confidentiality. The researcher will not write up any information that could directly identify you.

The results of the study will be written up to be published in a journal. This will not include any information that could identify you.
Do I have to take part?

No. It is entirely up to you whether you decide to take part or not. If you decide not to take part, this will not affect any care that you are receiving at all. If you do decide to take part, you will be asked to sign a consent form. You are free to change your mind and withdraw from the study at any time, and you don’t need to give a reason.

What about paying for travel?

If you are travelling to the appointments with the researcher by standard-fare public transport (bus or Metrolink), we can reimburse your travel expenses – make sure you keep tickets/receipts to give to the researcher as we will not be able to give you the money without this.

Are there any disadvantages to taking part?

Some of the questions are sensitive. If you find anything particularly upsetting, the researcher will be there if you would like to talk about it. He will be able to give you information about how you can get extra support.

Who is organising the research?

The main researcher is called Dr Filippo Varese. He is a Trainee Clinical Psychologist at the University of Manchester. This research will form part of his training. Filippo is supervised by Dr Sara Tai and Dr Warren Mansell, who are qualified Clinical Psychologists.

Please get in touch if you would like to ask any questions or if you would like to take part.

Contact Details:

Filippo Varese
Tel: 07583608167
Email: voicesresearch@gmail.com

Complaints:

If you have a concern about any aspect of this study, you should ask to speak to the researchers who will do their best to answer your questions. If they are unable to resolve your concern or you wish to make a complaint regarding the study, please contact a University Research Practice and Governance Coordinator on 0161 2757583 or 0161 2758093 or by email to research.complaints@manchester.ac.uk.

Thank you very much for showing an interest in this study and for taking the time to read this information.
CONSENT FORM

Title of Project: Voices, conflict and personal goals
Name of Researcher: Dr Filippo Varese

1. I confirm that I have read and understood the information sheet for the above study.

2. I have had the opportunity to think about the information, and ask questions and have had these answered satisfactorily.

3. I understand that my participation is voluntary and that I can change my mind about taking part at any time without giving a reason.

4. I understand that the information that I give will only be seen by the researcher and his supervisors, but that confidentiality will be broken in the event that I or anyone else is at risk of serious harm.

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

6. I agree to take part in the above named study

7. I agree for my interview to be audio-recorded

8. I agree for direct quotations from the interview to be used in publications and scientific/educational presentations. I understand that though direct quotes may be used, my name and other identifying information will not be included.

Participant ___________________________ Date ___________ Signature ___________________________

Researcher ___________________________ Date ___________ Signature ___________________________

Consent form (version 2), 17th May 2013
Appendix J: Example of study advertisement material

This appendix includes examples of the material used to advertise the current study, including (i) a copy of the poster advert, (ii) information leaflet, (iii) the script of the press release produced in collaboration with the University of Manchester Press Office and (iv) the script of the invitation email used to recruit participants from the University of Manchester student population.
Appendix J1: Poster advert

Do you hear voices that other people can't hear?

Voices are NOT always a sign of mental health problems. Some people find their voices very difficult to cope with while others consider them a positive part of their lives. We would like to know more about why this is.

We are looking for people who would like to take part in a research study, sponsored by the University of Manchester, to try and increase our understanding of the experience of hearing voices.

If you are interested in finding out more contact Filippo Varese at 07583 608 167 or write to voicesresearch@gmail.com

www.manchester.ac.uk/psych-sol/hearing-voices
www.facebook.com/voicesresearch
Appendix J2: Study information leaflet

Research project on hearing voices

Information about the study

The study: Hearing voices is not in itself a sign of mental health difficulties. Hearing voices is more common than what people think. For many people hearing voices can be a positive and helpful experience, whereas others might find it difficult and frightening. The study is trying to understand why hearing voices is distressing and problematic for some people, whereas others experience it as a positive part of their lives.

What does the study involve? The study will take approximately one hour and a half, at a location that suits you. It involves the completion of some questionnaires and interviews focusing on people's personal experience of hearing voices, and the important goals they generally try to achieve.

Payment: Participants will receive £7 for their time. We will also reimburse travel expenses to the meetings with the researcher.

If you live in the Greater Manchester area and you are interested in getting involved in this project, or would like further information, please contact Filippo Varese

Tel 0758 360 8167

Email: voicesresearch@gmail.com
**Appendix J3: Press release script:**

**Can hearing voices help you achieve life goals? People urged to come forward**

*25 Sep 2013*

Researchers at The University of Manchester are beginning a study to investigate whether hearing voices can help people to achieve important life goals. The study, led by Drs Filippo Varese and Sara Tai from the School of Psychological Sciences, follows earlier research, which suggests that even though in psychiatric patients hearing voices is often a sign of distress, many individuals in the general populations lead ordinary lives despite hearing voices. Some may even regard voice hearing as a positive experience.

The researchers need to talk to volunteers from the Greater Manchester area about their experiences of hearing voices – regardless of whether these are negative, positive or neutral ones.

Previous studies have shown that between 2-3% of the general population report hearing voices, which means there may be thousands of people in Greater Manchester who also hear voices.

Dr Varese said: “Historically, we know there have been some very successful people who were reported to hear voices – a separate voice outside their head – including scientists, artists and spiritual leaders. In Western society, hearing voices have often been labelled as symptoms of something abnormal, but they are considered a valuable experience in other cultures - such as a sign of contact with the spiritual world.

“People are more likely to hear voices after a trauma or particularly stressful period of their life, such as being abused or experiencing bereavement. But, even after such traumas, the voices that people hear are not always distressing. Recent
research tells us that even in Western societies many people consider their voices to be a positive part of their lives.

“We want to evaluate the positive and, at times, helpful experiences people have in relation to their voices by speaking to people in the Greater Manchester area who have had this experience.”

The study will also involve speaking to people who find their voices distressing and problematic, and might have required support from mental health services.

Dr Sara Tai said: “Our earlier research makes us think that the distress people experience as a result of voices, might be due to the extent they interfere with important life goals. Some people might gain a sense of moving towards what they want, while others may see it as a sign they are losing control. We hope that by understanding the links between voices and life goals we can develop new ways of supporting individuals with negative, distressing voices.”

The team would like to hear from people 16 years and over who have been hearing voices for six months or longer.

A one-off meeting and interview will be carried out at the University in complete privacy. Participants will also be asked to complete questionnaires about their experiences. In all, participation in the study will take about an hour-and-a-half. Travel expenses will be reimbursed.

People interested in participating can call 07583 608 167 or email: voicesresearch@gmail.com.

For more information about the study visit. Hearing Voices
Notes for editors

The University of Manchester’s academics have carried out numerous studies on hearing voices. The University has recently hosted a research conference on the subject on the 10/09/2013, as well as a workshop for voice hearers and their family members lead by Debra Lampshire (a voice-hearer and world-renowned expert on recovery from distressing voices) on the 16/09/2013.

For further information or to request an interview with Dr Varese or Dr Tai, please contact Alison Barbuti | Media Relations Officer | Faculty of Medical and Human Sciences | The University of Manchester | Manchester Academic Health Sciences Centre (MAHSC) Tel. +44 (0)161 275 8383 |
Email: alison.barbuti@manchester.ac.uk

http://www.manchester.ac.uk/discover/news/article/?id=10723
Appendix J4: Invitation Email for University Students

Title: Participants needed for a study on hearing voices

Hearing voices is **NOT** always a sign of mental health problems. Studies suggest that approximately 2-3% of the population hear voices that others can’t hear. Some find their voices very difficult to cope with while others consider them a positive part of their lives.

We are looking for people who would like to take part in a research study, sponsored by the University of Manchester, to try and increase our understanding of the experience of hearing voices.

If you are a voice-hearer and interested in finding out more contact Filippo Varese at 07583 608 167 or write to Filippo.Varese@postgrad.manchester.ac.uk
Appendix K: Thematic correspondence between voices and goals analysis

This appendix includes: (i) Examples of criteria and associated qualitative examples from the data collected as part of this investigation; (ii) An example of a coding matrix developed for this study is presented, and (iii) A more comprehensive list of examples of thematic matches for the participants considered in this investigation.
**Appendix K1**: Example of guiding criteria used to code for the presence/absence of a thematic association between goals and content of voices. For illustrative purposes, examples drawn from the data collected as part of the study are also displayed.

<table>
<thead>
<tr>
<th>Goal</th>
<th>Associated voice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The voice provides a comment, instruction, advice or command consonant with the goal</strong></td>
<td></td>
</tr>
<tr>
<td>Avoid my mother</td>
<td>“You don’t feel as though your mother is good for you”</td>
</tr>
<tr>
<td>(participant 33)</td>
<td></td>
</tr>
<tr>
<td>Succeed academically</td>
<td>“You should be revising this topic better”, like in the exam situation. “You should have revised this better. You should do more of this in future.”</td>
</tr>
<tr>
<td>(participant 35)</td>
<td></td>
</tr>
<tr>
<td><strong>The voice provides a comment, instruction, advice or command dissonant with the goal</strong></td>
<td></td>
</tr>
<tr>
<td>Being more socially comfortable</td>
<td>“People are laughing at you, they think you are stupid”</td>
</tr>
<tr>
<td>(participant 2)</td>
<td></td>
</tr>
<tr>
<td>Stay off alcohol</td>
<td>“He is a bad man - He’s done this, he’s done that. He’s a lazy. He’s drinking, he’s drunk!”</td>
</tr>
<tr>
<td>(participant 36)</td>
<td></td>
</tr>
</tbody>
</table>
**Appendix K2**: Example of a completed coding matrix. The first column details the participant ID. The second column provides a complete list of the goals generated by the participant as part of the study. The third column provides a general description of the voices described by the participant during the Hearing Voices Interview, and specific quotes extracted from the interview where participants provided a description of the content of voices. The final column was used to mark whether the description of the content of the voice could be matched to at least one goal. Sections displayed in bold indicate goals and descriptions of voice content for which it was possible to identify thematic links.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Goals</th>
<th>Content of voices</th>
<th>At least one match with goals? (Yes/No) and details of the thematic match</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td><strong>Goal Task (part 1)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. travel/see the beauty of the world</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. experiment with drugs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. do more writing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. work in formula 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. spend time with my sister</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>6. have an healthier life-style</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. make my own dresses</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>8. do humanitarian work</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Context - The participants described three voices, which she regards as &quot;part of my unconscious&quot;. She believes the three voices represent an “optimistic side”, a “darker side” and a “moral side” of her mind. Two of these voices (moral and dark sides) are experienced as distressing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DAT goal 1 – experimenting/trying new things</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<<[the “optimistic side” says] Try new things generally. And say I want to apply for an internship, and I’m thinking “I’m not clever enough, my grades are really crap” the optimistic voice will say “Just give it a go, you will be fine.” It even comes to things at home, like when I am arguing with parents or something. The optimistic side will say “One day, it will all be OK.” It’s kind of my friend I think. My friend who comforts me and lets me know it’s going to be OK. It also means I end up doing things that I wouldn’t normally do. Because sometimes I just think you need the backing to be able to do things. >>

YES
| DAT | 1. experimenting/trying new things | << [talking about her desire to travel and take a gap year after Uni] But the darker side always thinks about the complications that would arise. “You can’t do that!” >>. | Link with GT1 – travel/see the beauty of the world |
| DAT | 2. being successful and independent | << Sometimes if I need to ring someone up on the phone, I am a bit shy or I don’t feel confident enough to talk to... You know how sometimes you want to do something, but you are in doubt? The optimistic side can be like “Go for it. Don’t think about it.” >> | DAT goal 1 – experimenting/trying new things |
| DAT | 3. being caring/protective/nice/friendly | <<[the moral side] It can be as something as simple as – I go to town and want to buy something, and I might buy something that I don’t need. So I’ve gone to town to buy a bag, but then I see another bag that I don’t need, but I like it because it’s pretty. The moral side will say “Don’t bother looking at it” and tell me to go out. It’s quite strict and mean to me. >> | Link absent [but possible link with making own dresses/having an healthier lifestyle?] |
| | | << [Moral side] If I meet friends, the moral side will be like | Link with DAT 3 – being nice, |
“You should ask them about this thing.” For example, my friend was upset because he recently broke up with his girlfriend. And everytime we meet up he wants to talk about it. And it’s the same story for the last month. Everyday, it’s two hours of listening to the same crap really. The moral side will always be like **You should listen. You should ask him about how he is doing. Let him tell the story again. Maybe you can nod along to it, even though you don’t want to do it, because you’re a good friend.**

<< The dark side is not very nice. The dark side doesn’t really see the point of anything, and just **thinks I’m going to be a total failure.** “Don’t bother doing this, because one day you will be dead. So what is the purpose?” or “Just be wild and don’t give a crap about anything.” The dark side is quite selfish too. Doesn’t really care much about people around me, which is not very nice >>

<< the dark side always thinks I am a total failure, and that I should be working a lot harder. I am not doing enough basically. It is always finding weaknesses in myself as well. Questioning who I am going out with, or stuff like “You don’t really have any friends”, “You have just wasted so much time! You will fail this exam!”>>>>

<< For example, talking to my sister. That is something that all the voices agree on. The dark side will say “You are not a very nice person.” So that fuels me to think I am not a nice person, I should try to be a nice person. Then the optimistic side is like “Then you should do this, even if it means it’s caring/protective/nice/friendly

 DAT 3 - being caring/protective/nice/friendly

 Link with DAT 2 being successful/independent

 GT 5 – link with spending time with sister

 DAT 3 - being nice, caring/protective/nice/friendly
10PM and you SKYPE her for an hour.” And maybe I should have spent that time doing work, but it has more value >>
Appendix K3: List of examples of thematic matches between goals and voices. A brief description of the voices described by the participant during the Hearing Voices Interview is included, to provide a “context” to the examples illustrated.

<table>
<thead>
<tr>
<th>Gender (M/F), age and participant group</th>
<th>Context</th>
<th>Goals</th>
<th>Examples of associated voices</th>
</tr>
</thead>
<tbody>
<tr>
<td>F, 47 (Clinical)</td>
<td>The participant experiences six voices coming from different parts of her body, which she regards as “aspects of myself and my personality”. The voices are mostly experienced as pleasant, even when they provide critical comments</td>
<td>Being patient with myself and maintain good mental health</td>
<td>I find my voices have learned all the positive affirmations that I read in a therapy book. For example “I allow every aspect of my personality to have it’s due” and “the right answer is to be found within me.” Just nice things.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>I could be thinking “Oh my gosh, I’ll go back to the days it was dead people talking to me.” And it was like my voice would just pipe in and say “But the Bible says the dead people are conscious of nothing.” So it’s keeping me grounded.</td>
</tr>
<tr>
<td></td>
<td>Avoid my mother</td>
<td></td>
<td>One of my voices in my gut says “You love your mother.” And then the voices around my head are saying “But, she is a bitch. You feel like crap when you have had anything to do with her. She doesn’t let up.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“You don’t feel as though your mother is good for you”</td>
</tr>
<tr>
<td></td>
<td>Avoid excessive criticism; Being accepted</td>
<td></td>
<td>“What if you waffle through the interview”. Also, my voices can be saying things like “You are not doing very well at this. He is thinking you are right crap.” The stuff where I don’t feel as though I am being</td>
</tr>
<tr>
<td>Gender (M/F), age and participant group</td>
<td>Context</td>
<td>Goals</td>
<td>Examples of associated voices</td>
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<td>----------------------------------------</td>
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<tr>
<td>F, 40 (Clinical)</td>
<td>The participant described a history of self-harm and body-image/self-esteem difficulties. The participant described a single distressing and aggressive male voice, with general derogatory or sexualised content</td>
<td>Like myself more</td>
<td>Say I’m eating a meal. Sometimes he comes and he says “You shouldn’t be eating that, you’re too fat. You don’t need it. You’re fat enough already.” It’s quite distressing. And sometimes I can’t finish my meal because the voice has distressed me so much.</td>
</tr>
</tbody>
</table>
| F, 48 (Non-clinical)                   | The participant is a Spiritualist medium and healer, and primarily described experiences of voice-hearing related to her readings and services. | Being a generous and helpful person | They are words of advice, encouragement, for whoever I am speaking to […] it might be as simple as “she was crying last night. She was really upset last night.” So I’ll say “He’s telling me you were crying last night.”  
You know, you might hear somebody say “She’s really poorly. She’s not going to make it. Send that light.” And I will just say “You have been asked to send lots of light, lots of love. Put your good thoughts there.” |
<p>| M, 58 (Non-clinical)                  | The participant is a Spiritualist medium. He described two types of voices: an internal voice | Being of service/helpful to others; Being empathetic | It’s usually something to do with comfort, for the person to who I am speaking to. They are trying to convey to whoever you are speaking to, either comfort that they are still around. […] They know what that |</p>
<table>
<thead>
<tr>
<th>Gender (M/F), age and participant group</th>
<th>Context</th>
<th>Goals</th>
<th>Examples of associated voices</th>
</tr>
</thead>
<tbody>
<tr>
<td>M, 44 (Non-clinical)</td>
<td>The participant hears an internal voice, sounding as the participant’s own voice but separate from his own thought process and described as “having a dialogue in my head with somebody else”, which becomes more intense in moments of solitude, intense intellectual work or “self-reflection”</td>
<td>Develop my academic and non-academic writing</td>
<td>I’m certainly looking at things, and hearing my voice in the words, and trying to debate with it and get a better bit of writing. It’s giving me suggestions. It’s rehearsing. It gives me a chance to hear how things sound</td>
</tr>
</tbody>
</table>
| M, 31 (Clinical)                       | The participant described 2 voices, one derogatory towards himself and another encouraging attacking others in situations where he feels vulnerable. Both are protecting myself and my family; avoiding hurting anybody; control my anger/avoid getting too angry. | Protecting myself and my family; Avoiding hurting anybody; Control my anger/avoid getting too angry | “[…]there are two voices. One gives bad compliments about me, and the other one is telling me to do things because other people might harm me” “You are going to have to watch yourself mate, because he is going to attack you. So why don’t you retaliate by grabbing hold of his neck and pushing him
<table>
<thead>
<tr>
<th>Gender (M/F), age and participant group</th>
<th>Context</th>
<th>Goals</th>
<th>Examples of associated voices</th>
</tr>
</thead>
</table>
| M, 33 (Non-clinical) | The participant described experiencing a large number of voices, most often the voices of individuals he tries to impress or emulate. The voices used to be distressing in the past, but are now mostly pleasant and entertaining | Become a professional musician; Have more romantic and social relationships | I am trying to solve a problem with a piece of work I am creating, and I don’t know what to do with it, or how to solve a problem within it. Then I can experience it as a conversation with someone from the genre – a writer or a musician you are trying to emulate, that can explain to you what you are trying to do and help you solve that problem. But even something as simple like choosing what to wear for a date, because you are trying to impress somebody. You might hear them say “That looks great, that looks perfect!”.
Keep enjoying my carefree lifestyle while I can | Because sometimes I will get quite childish impulses. I wouldn’t hear the voice of someone else telling me to do things, or anything like that, but you might have a notion to do something quite ridiculous. Like if you are talking to a boring person, and you have to be polite to them because it’s work or whatever. But then you have a voice in your head going “Hit him. Do it. Hit him, hit him. Run out of the room. Go on. Knock his hat off his head.” When I am working on a piece of work and I get a bit... |
<table>
<thead>
<tr>
<th>Gender (M/F), age and participant group</th>
<th>Context</th>
<th>Goals</th>
<th>Examples of associated voices</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>F, 58 (Non-Clinical)</strong></td>
<td>The participant described mainly experiences of voices in the context of her work as spiritualist medium, and motivational speaker. The voices are mostly experienced as pleasant and helpful.</td>
<td>Promoting and developing self-awareness; being helpful to the needy</td>
<td>I thought something that was presumptuous, or it was like my thoughts were misguided in any way. I then hear a corrected voice. It’s what I have always described as a dry, drull voice. But patient, and with a sense of humour also. It’s not quite sarcasm, but it is merely pointing out that maybe I should think of something like “this”. And then I would realise that my way of perceiving something had been incomplete. Let’s say I had not taken everything into consideration. But all voices are teachers. They’re messengers. They are always bringing illumination to issues, ways of being, thinking, perceiving that need correcting. For myself, they instruct and bring greater awareness. For others, they bring information and give information that is helpful for another also</td>
</tr>
<tr>
<td><strong>M, 18 (Non-clinical)</strong></td>
<td>The participants primarily describes one distressing voice, his “own voice talked back to me from another person” which appears in situations of “social nervousness” or during university exams</td>
<td>Succeed academically; Work in theoretical physics; Go and study abroad</td>
<td>The voice often says I am not intelligent enough to do something, like an exam. “You’re not smart enough to do this exam. You need to do more work for it, more work for it.” Or, “You are not qualified enough to do this. To go for this interview. You have not got good enough social skills to have this interview for this job, or this volunteering post.”</td>
</tr>
<tr>
<td>Gender (M/F), age and participant group</td>
<td>Context</td>
<td>Goals</td>
<td>Examples of associated voices</td>
</tr>
<tr>
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</tr>
<tr>
<td>F, 21 (Non-clinical)</td>
<td>The participants described three voices, which she regards as “part of my unconscious”. She believes the three voices represent an “optimistic side”, a “darker side” and a “moral side” of her mind. Two of these voices are experienced as distressing.</td>
<td>Being more caring, nice and friendly; My friend was upset because he recently broke up with his girlfriend. And it’s the same story for the last month. Every day, it’s two hours of listening to the same crap really. The moral side will always be like “You should listen. You should ask him about how he is doing. Let him tell the story again. Maybe you can nod along to it, even though you don’t want to do it, because you’re a good friend.”</td>
<td>At times it says “You should be revising this topic better”, like in the exam situation. “You should have revised this better. You should do more of this in future.” But it never really feels like an advice Avoid being alone; Have a sense of “belonging”; Meet more people (e.g. attend societies more) and make new friends “You are not funny enough to make that joke. Don’t make that joke, because it’s just going to be ignored. People will think less of you because of it. You are not good enough to do that.” It’s a common theme For example, spending time with my sister. That is something that all the voices agree on. The dark side will say “You are not a very nice person.” So that fuels me to think I am not a nice person, I should try to be a nice person. Then the optimistic side is like “Then you should do this, even if it means it’s 10PM and you SKYPE her for an hour.”</td>
</tr>
<tr>
<td>Gender (M/F), age and participant group</td>
<td>Context</td>
<td>Goals</td>
<td>Examples of associated voices</td>
</tr>
<tr>
<td>----------------------------------------</td>
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</tr>
<tr>
<td><strong>F, 21 (Clinical)</strong></td>
<td>The participants started experiencing voices following a recent episode of psychosis/mania the previous year. At the height of his “illness”, the voices were grandiose in content and considered as emanating from God, but they are now seen as a symptom. The voices have never been distressing.</td>
<td>experimenting/trying new things; being successful and independent</td>
<td>[the “optimistic side” says to] Try new things generally. I want to apply for an internship, and I’m thinking “I’m not clever enough, my grades are really crap” the optimistic voice will say “Just give it a go, you will be fine.” It even comes to things at home, like when I am arguing with parents or something. The optimistic side will say “One day, it will all be OK.” It also means I end up doing things that I wouldn’t normally do. Because sometimes I just think you need the backing to be able to do things.</td>
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<td><strong>M, 30 (Clinical)</strong></td>
<td>The participant described a single “though echo” voice, repeating anything he thought or said. On keep myself out of trouble (e.g. keep out of fights)</td>
<td>being organised, responsible and tidy (following psychotic breakdown I was very disorganised)</td>
<td>For example, I remember being “Oh, I’m going to have a drink now.” Now I’d go out and be like “I really fancy a drink” and it would tell me not to do certain things. Not in a nasty way. Just letting me know that I shouldn’t be doing this or that. “I just thought I was a bit hyperactive, and he [the voice] would be like “Don’t smoke marijuana. It will let the demon in if you smoke marijuana.”</td>
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<td>same rare occasions, the voice will utter sentences the participant has not already said or thought.</td>
<td>because I was attacked on the bus ages ago and ever since I've been obviously really scared</td>
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<td>It does sometimes [the voice gives advice]. If I meet someone that doesn't look trustworthy I hear a voice in my head saying “Don't trust them!” It is a bit like warning sign innit the voices like telling me not to trust someone.</td>
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<td>M, 46 (Clinical)</td>
<td>The participant described three main voices, including an ongoing commentary and external derogatory voices. The voices are ongoing and they do not seemed to be triggered by any specific situations but “they are more active when I people ask things from me”.</td>
<td>Avoid excessive stress; avoid expectations and impositions (finding a job/ occupation)</td>
<td>The voices talk about achievement things. And consequently, when they come up and they are not met, it makes you feel like a failure. Like “You should do that, find a job” and so on. Things like tasks. Things like achievements. Sometimes involving other people like “Speak to this person”. They make me look a bit confused. Disorientated, and disorganised</td>
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<td>Increase my social capital; have more friends; Stability in relationships</td>
<td>It can be self-deprecating as well. It can be directly derogatory. Saying “your this, that, and the other” as well as “failure to achieve things.” Self-deprecating – like “Oh, you’re a load of rubbish. You’re crap. Failure to people. People are going to think you’re a piece of shit. You will always be alone”</td>
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<tr>
<td>F, 21 (Clinical)</td>
<td>The participant described</td>
<td>Have a strong</td>
<td>He [young man’s voice] will hear the other voices and</td>
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<td>hearing 4 voices, including a pleasant and supportive voice (that of a young man she fell in love with) and several negative voices (a former female friend, and several family members)</td>
<td>relationship/bond with another person/Knowing that someone is there for me; marry and have children</td>
<td>then say things to calm me down, if it gets bad</td>
<td>We often talk about our babies. I would like to be in a relationship with him at the moment. We often talk about that. We often talk about the future together. So that is why it is nice</td>
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<td>Lose weight</td>
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<td>The only negative thing that he does say is “You need to lose weight.” That is the reason I am running. To lose the weight. He says he wants me to be a size 10.</td>
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<td>[Former friend’s] voice is the most difficult one, and hearing all the things that she comes out with. I’ve been called “fat” and that for that reason my life is not worth living.</td>
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<td>F, 19 (Non-clinical)</td>
<td>The participant described 4 or 5 regular voices, which are regarded as a manifestation of “sad thoughts and low mood”. Most voices are critical and “disapproving”. The voices are more active during situations the participant worries about (e.g. exams, when the rent is due)</td>
<td>be more responsible; be more mature</td>
<td>It was kind of fun to drive really quickly down the road. It was the second or third time when I drove faster than I should have, the voices were screaming at me “What are you doing? You ought to slow down. The police are going to come and see you. You are going to kill everyone in the car.” But they weren’t being polite about it, shall we say. “Stop. What the hell are you doing? You are going to kill somebody!”</td>
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<td>I struggled to pay the rent last week, and they were like “Would you stop being so reckless please!”</td>
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<td>M, 59 (Clinical)</td>
<td>The participant described a “gang of 20 male voices” which led him to a “very lonely existence”. The voices are derogatory and insulting and extremely distressing. The voices are almost constantly present, but their loudness varies depending on whether the participant is alone, or in the company of people</td>
<td>Know that others believe in me</td>
<td>They tell me to teach the bastards (the clinical team) a lesson and kill myself, and leave a letter saying such a body didn’t believe me now the bastards will believe me. “Tell us one thing that was positive that they said did they say they believe you? Did they give a fuck? Did they say they trust you? Did they seem interested?”</td>
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<td>Be independent</td>
<td>Especially since I stopped living with my family. They were saying things like “You are going to be so lost out there. You are useless. You are not going to be able to do anything. You are completely alone. You have no one to rely on.” Sometimes he [a voice] argues with the other voices about being too harsh. Like “let her make her own mistakes.”</td>
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<td>Not being lonely/rejected</td>
<td>If I had a conversation with someone recently, and I am playing it back in my head (as you do), they will quite often say things like “He or she doesn’t like you. They are just talking to you because it’s polite. They don’t actually want to speak to you.”</td>
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<td>the participant perceives as supportive</td>
<td>Having people I can trust; continue to get support and reassurance; avoid losing services</td>
<td>“Where are your fucking nurses now to support you, and your mental health team? They don’t give a fuck about you!” They say “Why don’t you teach the bastards a lesson and kill yourself, blow the flat up, set yourself on fire go and walk under a bus. Give them a lesson!”</td>
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<td>I found out my care-coordinator is leaving. They have told me before that it is all a conspiracy to get me out of the team and that they don’t want to look after me anymore. What that team wants is for me to get very angry and smash up their office, so when I do that they can say “right we have got him - get out, look after yourself”</td>
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<td>M, 57 (Non-clinical)</td>
<td>The participant is a Spiritualist, reporting both “spontaneous” un-cued voices, and voices occurring in the context of readings/Spiritualist services. All experiences as regarded as helpful and largely pleasant, and originating from the spirit world.</td>
<td>&quot;love&quot; and help people - encourage people to help each other; be a helpful person; changing &quot;bad&quot; people into &quot;good&quot; people - giving people a chance</td>
<td>The messages the spirits give is a message of healing. The “friends” [spirits] will give that little bit extra to turn your life around, make amends for past mistakes, and put you on the right track. You might have lost your way, but they are there to guide you. They give hope, forgiveness and love, no matter what. They’re there to help, that’s what they do. They might tell me what I need to know to support [the person who asked for a reading] and be of service.</td>
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<td>M, 68 (Non-clinical)</td>
<td>The participant is a</td>
<td>keep working on my</td>
<td>It’s usually when they most happen, when I am doing</td>
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<td><strong>painter and visual artist, as well as a member of a Spiritualist congregation. He primarily described two types of voices: “gibberish voices” similar to the sound of an un-tuned radio, and more coherent voices providing inspiration and advice regarding his artistic work</strong></td>
<td><strong>art/the progression of my art; be successful with my art; being inspired and creative</strong></td>
<td>a lot of artwork. I am thinking one of my paintings I started painting, and then it was like “put blue there, or green there.” So you have got the colours. And sometimes I hear “put that colour there!” I say “no”. One was pink, and I said I’m not going to do it. And it was saying “pink, put pink”. In the end I put it there, and it was perfect.</td>
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<td><strong>M, 44 (Clinical)</strong></td>
<td><strong>The participant described to types of voices: a generally indistinct “background chattering” and an “authoritative male voice” he considers to be the voice of his abusive father. Both voices are regarded as distressing</strong></td>
<td><strong>Be a good parent/keep my children safe</strong></td>
<td><strong>When I want to take the kids out somewhere. And it’s telling me not to go out the door, in case my kids get killed. “Watch out for this. Oh yeah, he’ll have ya. He will drag your kids, and you will be responsible for them. So stay in.”</strong></td>
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<td><strong>Overcome my fear of crowds</strong></td>
<td><strong>It tells me all the time “Don’t go out. Don’t get on the bus. Don’t do this. Don’t go near that crowd.”</strong></td>
<td><strong>knowing I can do well and achieve things/I am not an idiot</strong></td>
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<td><strong>Yesterday he was shouting I was a lowlife. It was really intrusive and upsetting. Swearing a lot. And I don’t really swearing…</strong></td>
<td><strong>It’s more like about how low I am, and how I am a bad person. “You’re scum. You have no right to be on this</strong></td>
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<td>F, 20 (Clinical)</td>
<td>The participant reported 3 voices, all sounding like her own voice but as “different, more negative versions of me”. These voices are generally more active in situations where the participant feels “I am not the person I want to be”, especially social situations where she might “let people down”. All voices are experienced as distressing.</td>
<td>Finish my degree</td>
<td>The other day I had like an assessment due in for the next day and I stayed up all night but I just ended up being on Twitter and stuff […] it was just like “Oh you know, you're so awful. You can't do any work. What you doing - you're just wasting your time and now you're smoking. You shouldn’t be smoking you cos it’s bad for you!” Also, in situations like my work - with my Uni work. So if I'm I could like sit down and start trying to do work with this in my head like “Why are you bothering. It’s gonna be crap anyway” and “Just do something else”. It makes it quite difficult for me to like focus it is quite distracting in that manner</td>
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<td>Be around people more; being a bubbly and sociable person; keep in contact with friends more</td>
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<td>Last night we went to watch a rugby match, and then we went back to their house. There was loads of us there, and I was upset in the corner not really talking. Then the voices said “why are you being so quiet and just sitting there” and “no one wants to talk to you”. And “You may as well go home and what's the point in being here” and things like that. I suppose it is advice but it is not helpful advice. Not nice advice. It would be like “Oh, stop speaking to that person cos they don't care about you. You are wasting...</td>
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<td>M, 37 (Clinical)</td>
<td>The participant hears a frequent female voice, and occasionally other voices. The voices are generally friendly and supportive, but can become occasionally aggressive and derogatory. Despite this, they are not seen as a cause of distress.</td>
<td>volunteer work; learn skills/become care-worker; Being a caring person; be content/comfortable with myself</td>
<td>your time” that kind of advice which isn’t really advice</td>
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<td>Most times they praise me […] “Keep up your volunteer work” and “Keep doing the things that you’re doing”, things like that. “Keep up the good work you’re doing, you are getting better”. They treat me as a friend. So they praise me. Sometimes they can take the mickey out of me as well. She just swears at me at times, and just calls me nasty words at times. […] Sometimes she can swear at me for helping me. Maybe she doesn’t want me to. But, again I use that as motivation to help people. Just say for instance, they have called me for doing my volunteer work. I would probably go into my room and say “You’re unfair, for calling me on doing that. I’m helping people. I’m looking after other people.”</td>
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<td>F, 47 (Non-clinical)</td>
<td>The participant is a “freelance” medium and clairvoyant, not associated with any specific Spiritualist church. The voices described are primarily experienced in the context of her consultations. They are described as “broken”</td>
<td>“Real Giving” – give love, knowledge, and support</td>
<td>So I am kind of talking to her on the phone [a client], and by the end of that call, that woman was relieved. She wasn’t frightened. She had the knowledge after I explained, because it was the grandma. So I explained. She loves her grandchild. She is coming and visiting the grandchild. And you go and demonstrate your gift, and you might help somebody. Which comes back to the giving. And then you come away and think “Ok.” Because</td>
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<td>dialogues with people who passed”, and are often interspersed with other unusual experiences in different sensory modalities. These experiences are mostly pleasant</td>
<td>it’s a heavy responsibility, because you could say something to somebody and that could alter their life – for the better I hope!.</td>
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<td>Reduce fear of death; Find evidence for afterlife/Spiritual work</td>
<td>They will talk about themselves with me. They will say “This is how I died. This might be where I lived.” They will validate who they are, first. Then they will go on to validate happenings that have happened after they have passed away. So say it’s your Grandma, and she passed away 10 years ago. She’d say “Filippo cried when he received his PhD. results. And he was on his own, but we saw him.” So they will validate things that happened […] They validate they exist and survived. So, the voices tend to just introduce themselves, validate who they are, validate something that has happened since they passed, and then we get down to the nitty gritty.</td>
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<td>F, 51 (Clinical)</td>
<td>The participant reported two main voices, a male and a female voice, which can occur very frequently and without any apparent</td>
<td>Make more friends; Being a bubbly and friendly person; Trust men more/have a relationship</td>
<td>Someone can say “Hiya” and it will say “Ooh, why are they saying hiya to you? You are not a nice person. Why are they saying hiya? They know things about you.” And he [the voice] is like “Yeah, you can’t see him again.”</td>
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| F, 46 (Non-clinical)                   | The participant is a member of a Spiritualist congregation. She described two types of voices: helpful “spiritual voices”, and more negative and aggressive voices she regarded as “representing my fear and anger – part of my subconscious”. Negative voices are very infrequent, whereas the spiritual voices can occur daily | Help others | If a friend came round, and they had some kind of problem and they knew that I can pick up people from spirit…if they are telling me a story of woe, I can suddenly get information which can be comforting to them, I have experienced.  

I was going up to the bathroom, this voice […] said “He’s going to die. He’s going to die.” So I said to myself “Don’t think things like that. Why are thinking things like that?.” And then whilst I was in the bathroom, it came again saying “He's going to die - You need to think positive for him, and send him healing thoughts and prayers.” |
<p>| M, 37 (Clinical)                      | The participants reported | Earn my respect and | They will start going “You’ve done this.” Calling me |</p>
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<td>F, 57 (Clinical)</td>
<td>The participant described 4 main voices, both pleasant and derogatory/insulting ones.</td>
<td>Avoid social situations/excessive contact with people; Be more socially</td>
<td>For example recently they said “You need to get out of here! You need to get out of here!”. There were lots and lots of people around, we were in Manchester town, and I am not used to many people – where I am</td>
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|                                        | both pleasant/supportive voices and derogatory/distressing ones. Pleasant voices are recognised as supportive individuals the participants has met “for real” (e.g. nurses), but the identity of negative voices is unclear. A kaleidoscopic range of beliefs about the origins of voices, ranging from psychological (“it’s stress”) to paranormal ones was described | “pay back” for the suffering caused; stay off alcohol | a grass, saying I tell tales on people […] They just call me a low life. They call me a “soft cunt.”
And then another one comes on and says “He is a bad man - He’s done this, he’s done that [note. The participant has a history of alcohol abuse and violent behaviour]. He’s lazy. He’s drinking, he’s drunk.”
They [the negative voices] tell me “Time for a pint now!”. The others [the positive voices] might say “No, you have been OK for 6 months. You know what happens then”.
|                                        | Start running/cycle/gym; lose weight | | A lot of them are people I know. friends I know. They are saying they are trying to get me fit. Some say we are going to get help. I believe God getting people to get me motivated. To get me running and go to the gym
They [the negative voices] tell me off for eating too much food. |
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<td>Both type of voices are described as more active in situations where the participant feels more “vulnerable” or slightly anxious.</td>
<td>comfortable; Socialise more</td>
<td>from there are not as many crowds.</td>
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<td>Be a confident and competent person</td>
<td>If I was about to give talk, for example, and I know I get a certain level of enjoyment from that. They would say things to me that would make it difficult for me to go through with that. They would say things to undermine me: “People think you are stupid” “You don’t even know what you are talking about”. That would give me quite serious doubts about myself. “You are useless you are hopeless, you will never be good at anything”</td>
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<td>F, 40 (Non-clinical)</td>
<td>The participant is a Spiritualist medium. She</td>
<td>Keep growing/personal development</td>
<td>So basically our loved ones are saying “We will support you. We will love you and carry you through.”</td>
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"People are laughing at you, they think you are stupid, they are planning to beat you up, they are planning to stab you, that's what they are doing there in the corner" That sort of thing. It generally happens when people are around – My voices tend to alert me to people. My voices are very keen to isolate me. They like me isolated, they don’t really like me mixing with people.

My motherly voice, she would say things “You did that very well” “You are so clever” “That’s really lovely”. She is quite the cheerleader! She does all the praising “I am soooooo proud of you” “Look at what you have done – look at your achievements”. "
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<td>F, 31 (Clinical)</td>
<td>The client reported 6 voices. All voices are perceived as negative, and their content mostly derogatory. The</td>
<td>Lose weight</td>
<td>They say all sorts of bad things. “You are fat, You are ugly”</td>
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<td>At tea time they’re like “Leave that, don’t eat that”. And then they say “You are disgusting. Go on, go to</td>
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regularly experiences voices, which are regarded as spirits communicating with the “earth plane”. These experiences occur both during church services as well as during the flow of her daily life. The voices are generally experienced as positive experiences. But it’s also to aid growth in the person who is receiving the communication. It is all about growth and learning, and learning to love yourself. And learning how to grow and become. The message the voices give me is guidance. It’s guidance for my own growth – that I may keep learning and searching and teaching and serving. So, through a medium, they will give the support needed to that person. So they will guide you through and give clear and pure evidence that that person can understand. The person receiving on the earth plane can understand, to know that their loved ones are walking beside them. They might be going through something very traumatic, so that their loved ones can say “We are here, and we will give you this as evidence” that I (the medium) won’t know. And the person then will know it is true – our loved ones are here. make others understand why spirits are coming around us.
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<td>participant mostly thinks these voices are evil spirits, but also unresolved self-esteem issues stemming from her past.</td>
<td>To be a supportive person, To stop self-harming</td>
<td>“You are evil. You are selfish”. They say that a lot. The voices keep arguing whether I am evil or not […] some voices don’t think I am but others do.</td>
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<td>F, 29 (Clinical)</td>
<td>The client hears three distinct female voices, both internal and external. The voices are more active in social situations. The external voices tend to warn about danger, whereas the internal voices are more comment related to herself. The participants used to consider the voices as messengers of God, but now believes they are mostly “negativity I picked up throughout my life”.</td>
<td>Avoid bad things from happening to me and people</td>
<td>When I am walking home in the evening they are more negative. “You’ll get raped”, “They will mug you”. The rape bit is quite common.</td>
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<td>They tell me to be careful whenever I talk to someone… Even if it is someone I want to talk to they just go on and on.</td>
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<td>M, 23 (Non-clinical)</td>
<td>The participant hears a number of male voices. Most voice utterances are negative/disapproving comments about his sexual orientation. The voices reminded him of his former schoolmates. The participant believes his voices are a part of his psyche that has yet to</td>
<td>Accepting myself as I am, Be accepted by friends and my family</td>
<td>“If your mother knew she’d be heartbroken. You will give her a heart attack”</td>
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<td>This cheesy pop song came up on the radio and I thought “How nice”, and all of a sudden [the voices said] “You are such a sissy, such a poof”. Or again, I was watching a movie and my eyes… I cried a little bit. And they started really going at me “You look like a silly little girl!”</td>
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<tr>
<td>F, 35 (Clinical)</td>
<td>The participant hears a multitude of voices, mostly at work. She sometimes believes these voices are her work colleague making negative comment about her job and ability.</td>
<td>Get a permanent university job, develop a sense of accomplishment</td>
<td>I was working in my office, and I could hear them through the walls. “She is not good enough” “Her work is not up to standard”. They can be meaner than that, like “How did she even get her job?” […] They say I am not good at what I do. They are so critical and belittling. At times I hear them laughing, and I think they laugh because they know I will get fired.</td>
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<td>Avoid people that are controlling or suffocating</td>
<td>She [an acquaintance the participant perceives as controlling] will make a comment and they will come back with a nasty comment, like get lost and leave me alone, but I won’t always say it because I don’t think it’s appropriate to say so I’ll stay quiet. “You are a nice person”. They say that whenever I do something nice for someone. They just said it now, because I am helping you with the research.</td>
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<td>Help others</td>
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<td>Gender (M/F), age and participant group</td>
<td>Context</td>
<td>Goals</td>
<td>Examples of associated voices</td>
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<td>F (37) Non-clinical</td>
<td>The participant described two female voices, a “crying, sobbing voice” and an “assertive voice”. Both voices tend to be triggered in situations where the participant feels belittled or ignored by others</td>
<td>Become more assertive</td>
<td>[describing a “tiff”/ quarrel with her boyfriend] I will get all submissive then, and then she [the voice] starts “He can’t get away with it”, “He is such a bastard”, “Man up and kick him out”. She is very angry. But at times she is OK, like “Just tell him how you feel, if he doesn’t get it, he doesn’t get it but it’s out in the open”</td>
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