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**Hearing voices in young people:  
distress factors, social relating and clinician attitudes.**

**By**

**Aikaterini Rammou**

**Thesis submitted for  
the degree of Doctor of Philosophy  
School of Psychology University of Sussex**

**December 2020**

## **Statement**

I hereby declare that this thesis has not been and will not be, submitted in whole or in part to another University for the award of any other degree.

Signature:

Aikaterini Rammou

22<sup>nd</sup> December 2020

## **Acknowledgements**

To my supervisors, Dr Mark Hayward, Professor David Fowler and Dr Clio Berry, I owe an enormous thank you. I feel very lucky and honoured to have been supervised by you. Your insightful feedback, your knowledge about the subject matter of this thesis and your vast experience in clinical research has steered me throughout this project.

Mark, thank you for having faith in me and inspiring me to reflect on clinical research in a down-to-earth manner that, first and foremost, aims to improve the care for people with mental health difficulties. Thank you for your consistent support and guidance throughout my PhD journey, for your patience, your positive and calming attitude, your reassurance and understanding. I am very grateful for the moments you encouraged me to think of my ups and downs as opportunities for personal and professional development and for continually reminding me that they are an integral part of this learning journey. I have never left a supervision meeting feeling frustrated or misunderstood and I always felt reassured that I could talk to you about any circumstances I found challenging during research as you would offer a safe, supportive space to discuss them. Thank you for sharing your knowledge and enthusiasm on voice-hearing and mental health research.

David, thank you for sharing your expertise throughout this thesis. I am especially grateful for your advice to reflect on the bigger picture of research in clinical practice, your honest guidance and for providing me with opportunities to connect with other researchers to expand my professional and social network, making this journey less lonely. Thank you for looking out for me to ensure I make it to the finish line. Thank you for encouraging me to embrace the idea that a “good enough” thesis is plenty, that a PhD is only one stop in someone’s research journey.

Clio, thank you for your continual support with my research and daily struggles. Throughout this PhD you have always been there to answer my (sometimes very silly and long list of) questions. I am so grateful for your patience and willingness to give me detailed feedback that has helped me develop as a researcher. Thank you for teaching me the intricate ways that clinical research works and especially for your practical

support on navigating day-to-day tasks. I am very grateful for your guidance and for your unique “scaffolding” approach to my questions or issues. After talking with you, I always left feeling confident in my own abilities and with a strong sense of hope. Thank you for being generous with sharing your statistics and methodology knowhow, for the many hours you spent with me discussing individual cases to help me score my Vista packs and for finding the time in your busy schedule to come with me to my first assessment sessions. It meant so much to me. Thank you for all the training opportunities you offered me and for your advice on my career. Most of all, thank you for being approachable at all times, for your empathy and for acknowledging the difficulties in my journey and reflecting them back to me giving them the right dimensions (but never dismissing them). Thank you for believing in me and never stopping encouraging me to look after myself, both mentally and physically (even when I was not really listening). Thank you for your great sense of humour as it has made me laugh even when I was exhausted and low. I feel incredibly lucky to have had you by my side these past few years.

I would like to extend my gratitude to Sussex Partnership NHS Foundation Trust and the Economic and Social Research Council (ESRC) for funding this PhD and to the University of Sussex for sponsoring my research. A further big thank you to the SPFT R&D team for all the considerate guidance and support.

To Professor Paul Sparks, thank you for sharing your expertise in the Theory of Planned Behaviour and your genuine interest in helping me conceptualise how to construct the main questionnaire for the last empirical study of this thesis. To my assessor, Dr Daniel Michelson, thank you for providing valuable feedback on pieces of my written work and for offering me practical advice on my career development.

Thank you, Lucie Crowther and Helen Anderson, for sharing your knowledge and experience as research assistants. Thank you for being kind and welcoming and for making me feel less lonely in this PhD journey, especially at the beginning when everything was new and overwhelming. You have been a great source of support.

Thank you to all the wonderful research assistants at the R&D who supported recruitment of my young people studies in their clinical teams, while having to juggle so

many other things during their day. Special thanks to Emogen, Ross, Evelin, Aparajita, Abigail and Conor.

To my more senior colleagues, Cassie Hazell, Leanne Bogen-Johnston and Sara Fielding-Smith, thank you for teaching me a great deal, perhaps without realising it. You have been a source of inspiration to finish this journey by being living examples of a hopeful and exciting post-PhD future. Thank you for your advice at various points of my PhD, and mostly for sharing your lived experience and practical tips on how to survive a PhD in clinical research.

A big thank you to Dr Sam Fraser who helped with the initial set up of the clinician study used in this thesis by providing advice and sacrificing her time to help with the initial development of the survey. I would also like to express my gratitude to Anna-Marie Jones for her advice on my analysis and her thoughts on early career opportunities. Thank you to the psychology graduates at the R&D, Hazel, Izzy and Ish who helped with advertising my youth study in CAMHS and Jo who, while doing her MSc, volunteered to help me with double entering part of my assessment pack for data validation purposes.

I would also like to express my sincere gratitude to the staff in CAMHS and EIP services for offering me the time and space to conduct my research, for recognising the value of this work by referring young people to the project and for taking part themselves in the clinicians' survey. Special thanks to Jane Taylor in Hampshire CAMHS, Dr Victoria Bonnett and Dr India Whitehouse in Hastings CAMHS and Dr Akira Naito in Hailsham CAMHS. Thank you to the CAMHS interns Tasha and Sara who helped with spreading the word about the Vista project. Thank you to the PPI consultant of this project, Emma, for offering her advice on the design of the young people's study.

Most importantly, a massive heartfelt thank you to all young people who took part in my research. Thank you so ever much for sharing your experiences with me, for opening your hearts and sometimes your homes to help others by participating in this research. I could not have done this without you.

Last but not least, my family and friends, thank you. Without your emotional and practical support, I would not have made it through. To my wonderful friends – thank you for staying by my side till the end, for putting up with my moaning and with my continuous absence. I am sorry I have neglected to nurture our relationships; I am planning to make up for the lost time. To my two childhood friends, Ioanna and Alexandra, I am truly blessed to have you in my life. Even when you are physically miles away, I know I can always count on you.

To my brother, thank you for being an inspiring figure all my life, for always being there to listen to my thoughts, PhD-related or otherwise, logical, or non-sense, for being ready to offer your help whenever I needed it and for making me feel held and understood. Thank you for cheering me on, mostly with your weird, dark sense of humour. I am eternally grateful to you and Foteini for helping me proofread this thesis. To my mum, my best friend in the whole world, whose unconditional support and love has made me the person I am today. Thank you for always making me feel whole, for setting the foundations in my life to be able to stand on my own two feet, even when the ground is shaking. To my dad who works tirelessly, thank you for inspiring me to be hardworking and honest in my line of work and for all that you have provided throughout my life so that I am able now to write this PhD thesis. To both my parents, a big thank you for believing in my abilities, for supporting me in every possible way, and for gently pushing me out of the nest to open my wings and fly, even when it was hard for you. To my brilliant cousin, Georgia, thank you for spending your precious time to help me create the logos for my studies, for your empathic stance during our – very long- chats and for your humorous comebacks when things were hard.

To my sister by fate Anastasia Kaisidi, the most caring person I know, thank you for listening to my fears and hopes with your undivided attention, for our countless conversations that were a source of great strength and support and for helping me put my thoughts in order when they were a scrambled mess. Most importantly thank you for helping me navigate my very many dark moments during the past years and for staying in these moments with me, as long as I needed, always holding a very bright flashlight pointing to the exit. Thank you for being there for me when it mattered the most, for

reminding me to enjoy the little things that make this life beautiful and to aim no lower than the stars.

This thesis is dedicated to my mum, my superhero.

*Per aspera ad astra.*



**UNIVERSITY OF SUSSEX****Aikaterini Rammou****Thesis submitted for the degree of Doctor of Philosophy****Hearing voices in young people: distress factors, social relating and clinician attitudes.****Summary**

Psychological models in adults have indicated several factors that might play a role in maintaining the distress associated with hearing voices, including negative inter-relating between the hearer and the voices and persecutory beliefs about the voices. Additionally, negative relating with voices can be mirrored in the difficult relationships that hearers have with social others. By contrast, little is known about distressing voice-hearing in young people and its possible links with social relating. This thesis focuses on young people's experiences of voice-hearing and on clinicians' attitudes working with young people distressed by voice-hearing. It aims to provide preliminary evidence on the factors that contribute to voice-related distress and the association between voice-hearing and young people's social relating. Clinicians' attitudes and responses to voice-hearing in youth are also explored.

This thesis begins with an introduction to the research area (Chapter 1), followed by a cross-sectional survey study of adolescents (N=34) which tested hypotheses deriving from cognitive-behavioural models of voice-related distress developed with adults (Chapter 2). Next, a case-control study investigated how social relating may differ for young voice-hearers (N= 34) in comparison to non-voice-hearers (N= 34), all receiving care from secondary mental health services (Chapter 3). Last, an online survey using a national UK sample of mental health and primary care clinicians (N =1751) examined the correlates of clinicians' intention to assess voice-hearing experiences in young compared to adult patient populations, clinicians' attitudes toward working with voice-hearers and their confidence in performing voice-related practices (Chapter 4).

The young people studies revealed a potential role for styles of relating to voices and beliefs about voices in maintaining distress. Although relating to voices did not mirror the way young voice-hearers related to social others, their overall relating style was more negative compared to non-voice-hearing peers. Considering current clinical practice, findings highlight the importance of clinicians' perceptions of their colleagues' attitudes and actions on their intention to assess voices and the potentially helpful role of a structured tool to guide in-depth conversations with young voice-hearers. Implications for the provision of community mental health services and psychological therapies for young people experiencing distressing voices are discussed (Chapter 5).

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## Abbreviations

**AH** = Auditory Hallucinations  
**AMHS** = Adult Mental Health Services  
**APS** = Attenuated Psychotic Symptoms  
**AQ-9** = Attribution Questionnaire-9  
**ARMS** = At Risk Mental State  
**AVH** = Auditory Verbal Hallucinations  
**BAI** = Beck Anxiety Inventory  
**BAVQ-R** = Beliefs about Voices Questionnaire-Revised  
**BCSS** = Brief Core Schema Scales  
**BDI-II** = Beck's Depression Inventory – II  
**BPD** = Borderline Personality Disorder  
**CAARMS** = Comprehensive Assessment of At-Risk Mental States  
**CAMHS** = Child and Adolescent Mental health Services  
**CBT** = Cognitive Behavioural Therapy  
**COWAT** = Controlled Word Association Test.  
**CT** = Childhood Trauma  
**CTQ / CQT-SF** = short-form Childhood Trauma Questionnaire  
**EIP** = Early Intervention in Psychosis services  
**FEP** = First Episode Psychosis  
**GP** = General Practitioners  
**IAPT** = Improving Access to Psychological Therapies services  
**LC** = Lower Close  
**LD** = Lower Distant  
**LM-I** = Wechsler Memory Scale – third edition logical memory I subtest  
**LN** = Lower Neutral  
**m-AAPPQ** = modified Alcohol and Alcohol Problems Perception Questionnaire  
**MDE** = Major Depressive Episode  
**MINI** = Mini International Neuropsychiatric Interview  
**mSCS** = Social Connectedness Scale  
**NC** = Neutral Close  
**PA** = Perceptual Abnormalities  
**PAM** = Psychosis Attachment Measure  
**PAS** = Premorbid Adjustment Scale  
**PCP** = Primary Care Practitioners  
**PE** = Psychotic Experiences  
**PROQ-3** = shortened Person's Relating to Others Questionnaire  
**PSYRATS** = Psychotic Symptom Rating Scales  
**SCID** = Structured Clinical Interview for Axis-I DSM-IV Disorders  
**SCS** = Social Comparison Scale  
**TPB** = Theory of Planned Behaviour  
**TUS** = Time-Use Survey  
**UC** = Upper Close  
**UD** = Upper Distant  
**UHR** = Ultra High-Risk for psychosis  
**UN** = Upper Neutral  
**VAY** = The Voice and You

## **1. General Introduction**

## 1.1 Auditory verbal hallucinations (AVH)

### 1.1.1 *Definition and Phenomenological experience of AVH*

AVH or voice-hearing commonly refers to auditory perceptual experiences of hearing a voice or voices in the absence of an appropriate external stimulus. AVH are considered as taking place in full consciousness and not being voluntarily invoked (Slade & Bentall, 1988). Sometimes hearers have also described voices as being “silent” or inaudible, thought-like or even mixed auditory-thought-like experiences (Woods et al., 2015). As the terms “auditory verbal hallucinations” and voice-hearing commonly refer to the same experience in the literature, they are used interchangeably throughout this thesis.

AVH form a wide and heterogeneous group of phenomena marked by multiplicity of manifestations. The perceptual experience of hearing voice(s) seems to have common acoustic qualities with the human voice, such as pitch, volume, location, and direction (Stephane et al., 2003). AVH can differ in a broad range of characteristics such as number of voices present (e.g., one voice or crowds) (McCarthy-Jones et al., 2014b), location (e.g., inside/outside hearer’s head, distant, near to the head, or both), loudness (e.g., whispering, shouting), clarity (e.g., murmurs, clear voices), voice content (e.g., positive, negative, neutral), voice frequency and voice duration (Daalman et al., 2011; McCarthy-et al., 2014b; Nayani & David, 1996; Woods et al., 2015). In terms of their content, it is not uncommon for voices to have ‘stock’ words or phrases that they tend to repeat (Hoffman et al., 2008) and can differ in their form of address (e.g., running commentary, arguing voices, commands). The voices can possess person-like features, such as age, gender, intentions, temperament (Nayani & David, 1996; Wallis et al., 2020; Woods et al., 2015) and can sound like people who are familiar to the hearer (Larøi, 2012; Woods et al., 2015).

Traditionally, a distinction has been made between AVH that occur within psychotic spectrum disorders compared to those in the context of other mental health problems, with the latter being referred to as “pseudo-hallucinations” (Jaspers, 1963). This term has been used to mainly describe AVH experienced as coming from inside

the hearer's own head, in the inner subjective space, lacking sensory clarity and being perceived by the hearer as a product of their own mind (Gelder et al., 1985). By contrast, "true hallucinations" are experienced as coming from outside the hearer's head, appearing in the external objective space, coming from an external agent and being experienced as concretely real (Copolov et al., 2004; Henriksen et al., 2015). Schneider (1959) made a further distinction of AVH into those that are diagnostic to schizophrenia, based on the form of address and specifically referring to running commentary and voices conversing. Historically, "pseudo-hallucinations" have been assumed to be less pathological in nature (Yee et al., 2005) and have not been taken as seriously as "true hallucinations" by clinicians (Denning & Berros, 1996); partly on the basis that internal AVH are conceptually closer to thinking than externally-located AVH. Practically, this distinction was employed to aid the differential diagnosis of psychotic from other disorders (van Der Zwaard & Polak, 2001). Recent research on "non-psychotic" AVH has suggested that, regardless the location of AVH, individuals still report them as having the perceptual quality of "hearing voices" (Wallis et al., 2020; Woods et al., 2015). This has challenged Jasper's suggestion that inner AVH may lack the objectivity of a "true hallucination" and suggests the boundaries between perception and image or hallucination and "pseudo-hallucination" are not that clear (Jaspers, 1963; Wallis et al., 2020).

Moreover, the concept of "pseudo-hallucinations" has been proven of little predictive or clinical value. Evidence shows that neither "pseudo-hallucinations", nor "Schneiderian" AVH, are predictive of diagnosis or clinical characteristics (Copolov et al., 2004; Daalman, Boks, Diederens, De Weijer, et al., 2011). In addition, irrespective of localisation of AVH, AVH present very similar features, e.g., perception of reality, clarity, loudness, distress, and impact on everyday life (Copolov et al., 2004; Docherty et al., 2015). A systematic review on phenomenological evidence has concluded that there is little difference between AVH in schizophrenia and other psychiatric disorders, with 95% of characteristics being shared (Merrett et al., 2016). As evidence from AVH phenomenological studies in cross-diagnostic samples with and without need for care voices is accumulating (Wallis et al., 2020; Woods et al., 2015), there has also been a movement away from the Schneiderian view of AVH as symptoms of psychotic

disorders, towards a view that AVH are experiences that occur in the a broad range of mental health disorders but also in populations without a need for care (Kelleher, 2016).

### ***1.1.2 Phenomenology of AVH in youth***

Although voice-hearing in youth is relatively common (Maijer, Begemann, Palmen, Leucht, & Sommer, 2018), very little is known about the phenomenology of their AVH experiences. In a sample of young people seeking help for their voices, Maijer, Palmen and Sommer (2016) found that the majority of AVH were making comments or giving dangerous commands, and were mostly not familiar voices. Most commonly the voices had a normal speaking volume, they were experienced inside the young person's head followed by a mixed experience of AVH both inside and outside their head, in most cases taking place at random moments during their day and the majority experiencing only negative voices. In a recent qualitative study with 211 non-help-seeking adolescents, Coughlan et al. (2020) demonstrated that the richness and diversity of the phenomenology of AVH in young people is similar to adult samples (McCarthy-Jones et al., 2014b; Woods et al., 2015), with AVH ranging from once-off experience of low-level benign mumbling to repeated experience of clear voices, speaking in full sentences or conversing. However, compared to clinical adult samples, the rate of experiencing constant, commanding, or commenting voices was significantly lower (McCarthy et al., 2014). The phenomenological diversity of young people's AVH experiences has been further corroborated by a recent web-based survey with 68 adolescents (Parry & Varese, 2020) in which there was a distinction between pleasant and distressing voices. Pleasant voices seem to be discussed as having human qualities such as motivations, emotions and gender, whereas negative and distressing voices seemed to be described as "ghosts" or "whispers" with commanding, threatening or critical content (Parry & Varese, 2020).

General population research has showed that AVH occur in youth without a need for care (Escher, Romme, Buiks, Delespaul, & Van Os, 2002; Kompus, Løberg, Posserud, & Lundervold, 2015; Løberg, Gjestad, Posserud, Kompus, & Lundervold, 2019). Young people with AVH and a need for care, compared to those without a need for care, report that AVH have a greater perceived influence on their behaviour and

feelings and disclose more negative affective appraisals in relation to the voices (Escher et al., 2002).

Despite AVH being considered a common (de Leede-Smith & Barkus, 2013; Kelleher et al., 2014; Kelleher et al., 2012) and transient experience in most young people (Linscott & van Os, 2013), they cannot be regarded merely as a benign variation of typical development (Bartels Velthuis, Wigman, Jenner, Bruggeman, & van Os, 2016; Linscott & van Os, 2013; Rubio, Sanjuan, Florez-Salamanca, & Cuesta, 2012; van Os, Linscott, Myin-Germeys, Delespaul, & Krabbendam, 2009). Similar to adults, AVH are the most frequent symptom in psychotic disorders with onset before 18 years of age, found in 82% of patients (Stentebjerg-Olesen et al., 2016). AVH are also one of the most frequently reported psychotic or psychotic-like experiences in adolescent clinical samples at risk for psychosis (Tor et al., 2018; Welsh & Tiffin, 2014). Furthermore, AVH in youth have been linked to a range of mental health disorders including depression, anxiety (Bartels-Velthuis, Wigman, Jenner, Bruggeman, & van Os, 2016; De Loore et al., 2011; Jeppesen et al., 2015; Kelleher et al., 2012; Ulloa et al., 2000), bipolar affective disorder (Tillman et al., 2008), borderline personality disorder (Cavelti et al., 2019a) attention deficit hyperactivity disorder, pervasive developmental disorders and obsessive compulsive disorder (Kelleher et al., 2014; Kelleher et al., 2012; Majjer, Palmen, & Sommer, 2016; Sikich, 2013).

In terms of the phenomenological differences of AVH between different disorders, a recent study found that AVH in youth with borderline-personality disorder seem to be similar with regard to physical (frequency, duration, location, loudness), cognitive (beliefs regarding origin of voices, disruption to life, controllability), and emotional (negative content, distress) characteristics to those in youth with schizophrenia spectrum disorders (Cavelti et al., 2019a), supporting further that the use of terms such as “pseudo-hallucinations” to differentiate AVH in people with non-psychotic disorders from AVH in people with psychosis is not justified (e.g., Kingdon et al., 2010; Slotema et al., 2012). The fact that AVH are experienced by both young people with and without a need for care further strengthens the argument of conceptualising AVH to occur on a continuum; from healthy individuals at one end with little voice-related distress and no need for care to those with a broad variety of

psychopathology and a need-for-care at the other end (Baumeister et al., 2017; Upthegrove et al., 2016).

### ***1.1.3 AVH prevalence***

Although it has been suggested that AVH are somewhat commonplace, determining an exact rate of the phenomenon appears challenging. A review of 17 studies on AVH among adults in the general population estimated prevalence rates between 0.6% and 84%, with a median of 13.2% and dropping to 2-4% when strict AVH definitions were applied (e.g., voices in the complete absence of external stimulus, in full consciousness) (Beavan et al., 2011). Nevertheless, this could be considered a rather conservative estimate taking into account the high possibility of under-reporting due to the stigma associated with the phenomenon (Beavan & Read, 2010; McCarthy-Jones, 2012). A more recent review and meta-analysis of 25 general population studies on AVH found a mean lifetime prevalence rate of 9.6%. Disaggregation of estimates by age indicated that AVH were more prevalent in young people, with mean lifetime prevalence being 12.7% in children (5-12 years) and 12.4% in adolescents (13-17 years) compared to 5.8% in adults (Majjer et al., 2018).

Discrepancies in the prevalence rates of AVH found between studies have been attributed to several factors such as different inclusion criteria (e.g., including all types of auditory hallucinations, such as noises, or only verbal ones; voices associated with illness, intoxication, and sleep) and measurement tools used for AVH, the cultural context (Al-Issa, 1995) and sample characteristics (de Leede-Smith & Barkus, 2013). The definition of AVH cannot account for the differences in the reported rates, as for example, one youth study using a broad definition including noises as part of the AVH experience reported one of the lower prevalence rates of 2% (Knobel & Lima, 2012). Conversely, studies with a more narrow definition yielded a lot greater estimates (37.5%) (Barragan et al., 2011). Despite a variation in estimates, these studies suggest that AVH is a relatively common experience in the clinical and general population.

#### ***1.1.4 AVH in youth literature review strategy***

For the purposes of this Chapter, a narrative literature review on the clinical and social relating correlates of AVH in youth was carried out. Studies identified in the last two comprehensive reviews on this topic (Jardri et al., 2014; Majjer et al., 2019) and additional studies found in an updated literature search were considered for the synthesis of the literature review.

The updated literature search was conducted in PubMed using key terms for the population (young people) and the experience of interest (AVH), limited for publications from 13th of July 2017, which was the date of the last published systematic search (Majjer et al., 2019), to 1st of September 2020. The search strategy used and the screening process flowchart for the search results can be found in Appendix A.

The literature review for this thesis includes some key population- based studies linking AVH and PE in youth with clinical and social relating outcomes due to the strength of these studies regarding representativeness of their findings to the population and being adequately powered to detect weaker associations. Due to the paucity of research with clinical youth samples, all relevant clinical studies were considered, irrespective of their design. Synthesis of results from this search is presented in section 1.1.5, 1.1.6 below and in section 1.2.3. A summary table for the included studies can be found in Appendix A, Table 1.

#### ***1.1.5 Clinical and functioning correlates of AVH in youth***

General population and community sample longitudinal studies have shown that presence of Psychotic Experiences (PE) including AVH in young people, are associated with adverse outcomes later in life including poor educational, socio-occupational functioning (Davies et al., 2018) and persistent poor global functioning throughout adolescence and into early adulthood (Healy et al., 2018). Specifically, auditory PE in adolescence have been related to increased likelihood of major depression, psychological distress, low self-esteem, mental health service use and insufficient sleep (< 8 hours per night) (Hielscher et al., 2018). Experiencing PE in early adolescence is linked with greater likelihood of experiencing a range of problems, such as self-reported



feelings of loneliness and lower quality of life (Trotta et al., 2019) and more internalising and conduct problems in later adolescence, even after adjusting for baseline levels of emotional and behavioural problems (Isaksson et al., 2020). A 3-year follow-up large multi-site school-based cohort in Brazil with 2,244 participants suggested that there are bidirectional associations between PE and common mental health disorders such as depression and attention-deficit hyperactivity disorder, highlighting the nonspecific effect of PE as a risk marker for a broad psychiatric morbidity (Pan et al., 2018).

Previous studies seem to complement this finding showing that, specifically for AVH, the more diagnosable disorders young people have, the higher the AVH prevalence seems to be (28% for one disorder, 48% for two, 68% for three or more) (Kelleher et al., 2014). Additionally, incidence of PE in adolescence has been linked with deterioration of depression and anxiety symptoms which do not seem to improve when PE remit (Yamasaki et al., 2018). In a longitudinal UK population-based study, presence of PE in early adolescence was linked to an increased risk of incidence and severity of disordered eating behaviours at age 18 years, even when adjusting for theoretical confounders such baseline body mass index and depressive symptoms (Solmi et al., 2018). A recent meta-analysis of 14 studies of community non-help-seeking samples concluded that childhood and adolescent PE were linked with a three-fold increased risk of any mental disorder, including affective, anxiety, behavioural and substance-use disorders, and a four-fold increase risk of psychotic disorder (Healy et al., 2019).

Regarding risk of suicidal and self-injurious behaviours, a prospective cohort study by Kelleher et al. (2013) found that within one year of the baseline assessment, more adolescents with psychopathology and PE (mainly AVH) reported having attempted suicide (34%) compared to adolescents with psychopathology but without PE (13%). Results from the Child and Adolescent Twin Study in Sweden ( $N = 9242$ ) cohort study have also supported the link between adolescent PE and later suicide attempts as well as substance use disorder, with adolescent AVH having the strongest relationship with both outcomes (Cederlöf et al., 2016). Further emphasising the importance of auditory PE as indicators of risk of self-injurious behaviour, a study using an Australian

nationally representative sample of adolescents indicated that reports of auditory PE in the past year were strongly and independently associated with self-harm behaviours and suicide attempts (Hielscher et al., 2019). A more recent longitudinal cohort of adolescents with baseline suicidal ideation ( $N=216$ ) suggested a strong positive correlation between auditory PE and risk of acting on suicidal thoughts at follow-up which increased when auditory PE were accompanied by distress (Hielscher et al., 2020). The above findings suggest that, even from young age, presence of AVH seems to be regarded as a signal for a potential need for care for a broad range of psychological difficulties and thus, they warrant further attention, especially in those with pre-existing suicidal ideation.

#### ***1.1.6 AVH persistence in youth: clinical correlates and outcomes***

Longitudinal studies have shown that AVH in youth have a mostly transient course (Bartels Velthuis et al., 2016; Majjer, Palmen, & Sommer, 2014; Rubio et al., 2012). However, persistence rates vary from 40% in a 3-year follow-up study including young people with and without need for care (Escher et al., 2002), to 27% in a 2-year follow-up (from age 13-14 to age 15-16) (De Loore et al., 2011), 24% for a 5-year follow-up (age 7-8 to 12-13 years) (Bartels-Velthuis, van de Willige, Jenner, van Os, & Wiersma, 2011), 18.9% for a 6-years follow-up (age 12-13 to age 18-19) and 6.2% for an 11-year follow-up (age 7-8 to age 18-19) (Bartels-Velthuis et al., 2016) in general population samples.

Most studies examine PE or AVH in terms of their presence versus absence, however, there is growing evidence that it is persistence of AVH in youth that is associated with more distress, higher levels of concurrent psychopathology (Dhossche et al., 2002; Havers et al., 2019), depressed mood and anxiety at 2-year follow-up (De Loore et al., 2011; MacKie et al., 2011), and non-psychotic disorders later in life (Dhossche et al., 2002).

Recent longitudinal studies have supported that persistence of AVH relates with higher risk of suicidality. Specifically, presence of AVH at age 14 and age 21 years has been linked with increased risk of suicidal behaviour and psychopathology at 30 years (Connell et al., 2016), while persistence of AVH in adolescence has been related to high

risk of suicide attempts compared to the risk associated with one-off AVH (Hielscher et al., 2020). In adolescence, longitudinal studies have suggested that persistence of AVH is related to emergence of delusions (De Loore et al., 2011), while cohort findings have shown that persistent PE, including AVH, were related to emotional and peer relationship difficulties, conduct problems and hyperactivity–inattention at a 2-year follow-up (Downs et al., 2013). Among other factors, the presence of complex AVH (e.g., frequent, conversing, commanding voices) (Rubio et al., 2012), comorbid psychiatric conditions or symptoms, such as anxiety, depressive or other psychotic symptoms (Escher et al., 2002), poor global functioning at the point of contact with mental health services (Simon et al., 2009) and lack of specific triggers for the experience (Escher et al., 2002) could be indicative of AVH persistence. However, in a recent scoping review on PE, Kalman, Bresnahan, Schulze and Susser (2019) did not find any persistence predictors to be replicated across studies.

## **1.2 Overview of psychological approaches to voice-related distress in adults**

Psychological research on adults has indicated that distress in relation to voices seems to be explained by a combination of different factors, such as cognitive appraisals about voices (Chadwick & Birchwood, 1994), beliefs about the self and others (Fannon et al., 2009), specific types of relating to voices (Hayward, 2003) as well as voice content (Larøi et al., 2019). This section will briefly present the key psychological models of voice-related distress. A more detailed description of these models is included in Chapter 2.

### ***1.2.1 Cognitive behavioural model of voice-related distress***

Taking into account that AVH does not necessary lead to distress, cognitive behavioural models mainly address the role of cognitive appraisals, behaviour and affect in the emergence and maintenance of voice-related distress, whilst also integrating cognitive schemas to explain why certain appraisals develop.

#### **1.2.1.1 Beliefs about the voices.**

According to Beck's cognitive model of distress (Beck, Rush, Shaw, & Emery, 1979), it is not an event itself but the individual's interpretation of the event that drives

psychological distress and maladaptive behavioural responses. Building upon this premise, Chadwick and Birchwood (1994) proposed the ABC framework (Ellis, 1962) to conceptualise a cognitive model of AVH and voice-related stress. In this context, the ABC framework can be broken down into “A” that stands for the activating event, in this case the occurrence of AVH, “B”, beliefs, that include the beliefs that hearers hold about the voices and “C”, consequences, that encompasses the emotional and behavioural responses of the hearer. This model focuses on the sets of beliefs that hearers have constructed and employ to make sense of their AVH experience. In particular, it suggests that beliefs about voice intent (i.e., malevolent), voice power (i.e., omnipotent), voice identity and perceived control over the voice will mediate the relationship between the experience of AVH or the voice content and the individual’s emotional (e.g., anxiety, depression) and behavioural responses (e.g., engagement and resistance) (Birchwood & Chadwick, 1997; Chadwick & Birchwood, 1994, 1995).

In a series of studies, Chadwick and Birchwood (1994) showed that voices perceived as malevolent were linked to anxiety and were resisted, while voices that were perceived as benevolent were associated with positive affect and were engaged. Further research has provided support that beliefs about voice intent seem to be a key predictor of the hearers’ behavioural responses (Close & Garety, 1998; Sayer, Ritter, & Gournay, 2000; So et al., 2019; van Der Gaag, Hageman, & Birchwood, 2003). In terms of emotional responses to AVH, a comprehensive review on cognitive appraisals about voices by Mawson, Cohen and Berry (2010) concluded that voices appraised to be malevolent and powerful (in terms of control, social power or rank) were associated with higher distress. Research has further demonstrated that beliefs about voice omnipotence and malevolence are significantly linked to depression and anxiety (Peters et al., 2012) and voice-related distress (Cole et al., 2017; Peters et al., 2012).

#### **1.2.1.2 Beliefs about self and others.**

Beliefs about the voices constructed by the hearers in an attempt to make sense of the voices seem to go beyond what is manifested in voice content alone (Birchwood & Chadwick, 1997; Birchwood, Meaden, Trower, Gilbert, & Plaistow, 2000; Chadwick & Birchwood, 1994; Close & Garety, 1998). This is supported by studies that found beliefs to be incongruent with voice content (Chadwick & Birchwood, 1994; Shawyer et

al., 2008; van der Gaag et al., 2003). Driven by the observed individual differences in the adaptation and interpretation of voices between hearers, researchers focused on finding factors that could explain the covariance between beliefs about voices and distress. Adding to the understanding on how these beliefs are formed, it was argued that generalised cognitive representations of the self (e.g., 'I am unloved') and others (e.g., 'others are untrustworthy'), commonly referred to as schemas and which are shaped based on prior life experience, would influence appraisals about the personal and social meaning of voices (e.g., whether the voices pose a personal or social threat) (Chadwick et al., 1996; Paulik, 2012). Cognitive models of AVH have also suggested that early adversity may create an enduring cognitive vulnerability, characterised by negative schemas which contribute to the development and maintenance of AVH (Garety et al., 2007; Garety et al., 2001). In agreement with this notion, several later studies have shown that voice-hearers conceptualise their voices in interpersonal terms with person-like characteristics (Benjamin, 1989; Chin et al., 2009; Hayward et al., 2008, 2011; Vaughan & Fowler, 2004) supporting the relevance of cognitive representations of others as contributors to the beliefs about voices. More specifically, one line of research has found evidence that voice-hearers' feelings of low perceived social rank and inferiority in social relationships corresponded to perceived relative power and superiority of voices in relation to oneself, depression and voice-related distress (Birchwood et al., 2000, 2004). Nevertheless, findings on the link between negative-other schemas and specific voice beliefs have been mixed, with some studies showing that negative-other schemas are associated only with beliefs of voice malevolence (Thomas et al., 2015) while others have found this association only to be true for beliefs about voice omnipotence (Davenport et al., 2020).

Another line of research explored relationships hearers have with voices beyond the dimension of power and social rank to include intimacy/proximity, stemming from Birtchnell's Relating Theory (1996, 2002). This theory proposed that individuals relate to others along two dimensions: proximity and power. Proximity is represented by the distance and degree of intimacy between the hearer and their voice, whilst power is represented by the amount of influence one has over another. Studies that explored the 'interrelating' between the hearer and their main voice (a combination of the hearer relating to and being related to by their voice) found that perceiving the voices as

dominant and relating to them from a position of dependence was mirrored in other social relationships (Hayward, 2003), while distancing, i.e., reacting with suspicion and lack of communication, was unique to the voices, especially those with no identity and negative content. Focusing on hearers' distress, Vaughan and Fowler (2004) further supported that perceiving the voice to relate in a dominating manner and the tendency of hearers to distance themselves from the voices were associated with distress. Later work has replicated these findings (Hayward et al., 2008; Sorrell et al., 2010).

Regarding the influence of negative self-schemas on beliefs about voices and their link to distress, indirect support has been provided by studies observing that negative self-beliefs can be expressed in the voice content (Close & Garety, 1998; Scott et al., 2020) and by literature proposing that self-schemas are an underlying factor in the development and influence of negative voice content (Beck & Rector, 2005; Paulik, 2012) by mediating the link between traumatic life events and voice content (Beck & Rector, 2003; Larøi et al., 2019; Scott et al., 2020). Additionally, extreme negative self-evaluations are common in people with psychosis (Fowler et al., 2006; Gracie et al., 2007; Noone et al., 2015; Smith et al., 2006; Thomas et al., 2015) and negative self-beliefs have been associated with hearing voices in clinical (Barrowclough et al., 2003; Close & Garety, 1998; Scott et al., 2020) and non-clinical populations (Bortolon et al., 2017). In psychosis studies, individuals with more severe depression and lower self-esteem reported more distressing AVH and AVH of more intensely negative content, and greater severity (Smith et al., 2006). Direct support has been provided by a more recent study by Thomas et al. (2015) who found that negative self-schemas were associated with negative beliefs about voice power and intent in participants with diagnoses of schizophrenia or schizoaffective disorder. More recently, in a transdiagnostic clinical sample of voice-hearers, Davenport et al. (2020) found that negative-self schemas were associated with having more negatively orientated beliefs about voices, in terms of both malevolence and omnipotence. This evidence supports the key tenet of cognitive theory that core interpersonal schemas could provide a lens through which voice hearers would appraise their AVH experiences. This could influence whether or not, and the degree to which, voices are perceived as negative (powerful or malevolent). Nevertheless, it has been noted that it is possible that voice

activity/content may influence schematic representations, or indeed that the relationship between these two constructs is bi-directional (Berry & Bucci, 2015).

### **1.2.1.3 Voice content.**

Studies have found that positive voice content is associated with beliefs about the voices being benevolent, whereas negative voice content with the voices being malevolent (Close & Garety, 1998; van der Gaag et al., 2003). In a model that incorporates negative content as a key contributor to voice-related distress, Larøi et al. (2019) have argued that adverse life experiences may underpin part of the negative content and that variables such as negative schemas, altered emotion regulation strategies, hypervigilance, shame and self-blame, presence of physical/social threat mediate this relationship. Other variables such as past experiences, culture and current environment at least partly shape the exact verbalisations of the content while maladaptive responses such as having a negative relationship with AVH could be reinforcing negative content and thus distress and impairment. It is important to note that Larøi et al. (2019) state that their theoretical model is not empirically validated, however it offers a framework for future research.

### **1.2.2 Summary of psychological approaches to voice-related distress**

In summary, early research suggested that voice hearers' behavioural and emotional responses arose from the experience of AVH (e.g., Benjamin, 1989). However, later research on the cognitive models of AVH postulated that the hearers' beliefs about AVH, especially in terms of intent, power and social rank (e.g., Birchwood et al., 2000; Birchwood & Chadwick, 1997) as well as the way people relate to their voices (e.g., Hayward, 2003) were the key contributors to voice-related distress, irrespective of the phenomenological voice characteristics (e.g., frequency, loudness) or voice content (Birchwood & Chadwick, 1997; Chadwick & Birchwood, 1994, 1995). These key contributors seem to be driven by past experiences that shape an individual's interpersonal schemas, providing a lens through which hearers appraise voices and relate with them (e.g., Garety et al., 2001; Thomas et al., 2015). More recent research has also highlighted the role of negative voice content in the experienced voice-related

distress, emphasising a potential causal pathway mainly from adverse life experiences to voice-related outcomes (Larøi et al., 2019).

### ***1.2.3 Current evidence on explanatory frameworks of AVH severity and distress in youth***

Despite evidence that AVH in young people can be distressing (e.g., Majjer et al., 2017), there have been only a few clinical studies that have looked at factors that could influence voice-related distress. In search of a psychological framework that explains the occurrence and severity of PE in youth, a series of papers with children aged 8-14 years referred to CAMHS explored the role of factors that have been suggested to increase vulnerability in the development of psychosis (Garety et al., 2001). Using a sample of  $N = 40$  children, Ames et al. (2014) indicated that emotional disturbance, cognitive biases, and socio-environmental vulnerability indexed by negative life events were associated with psychotic or psychotic-like experiences (PE) severity, suggesting that psychological models of psychosis in adults can be adapted to understand PE severity in children. However, this study did not consider individual PE. Ruffell et al. (2016) investigated the influence of the psychosis vulnerability factors (emotional disturbance, cognitive biases, and negative life events) on distinct types of PE and found an association between the presence of perceptual PE, negative life events and emotional problems.

Complementing these findings, Noone et al. (2015) found that negative other schemas were associated with the presence and severity of PE overall, whilst, specifically for AVH, they found a significant link between increased AVH severity and lower positive self-schemas (Noone et al., 2015). Anilmis et al. (2015) also found an association between negative schematic beliefs about the self and others both bullying and PE, with schematic beliefs having a mediating role in the relationship of the other two variables. These findings were consistent with the cognitive model of psychosis in adults, supporting that adverse life experiences can lead to the formation of negative schemas which, in turn, shape how PE are appraised and potentially lead to the development and the maintenance of psychosis (Garety et al., 2001). However, similar to Ames et al. (2014), this study did not look at AVH or perceptual PE in isolation.



Although the studies mentioned above set a preliminary basis for understanding the psychosocial processes implicated in the development and maintenance of PE in youth, they did not focus specifically on AVH. To date, the only two clinical studies testing hypotheses from the cognitive model of AVH (Birchwood & Chadwick, 1997)) in young people have been conducted (Cavelti et al., 2019b; Cavelti et al., 2020). In a study with 43 young people with AVH, 15-25 years of age, with either a borderline personality disorder (BPD) or with a schizophrenia spectrum disorder diagnosis, Cavelti et al. (2019b) first demonstrated the applicability of the cognitive model in understanding AVH in youth, regardless of diagnosis. Similar to adult findings, beliefs about voice benevolence were associated with engagement, whereas beliefs about voice omnipotence and malevolence with resistance toward the voices. Although they did not look at voice-related distress, the authors also found that beliefs about voice malevolence, omnipotence, and high social rank, as well as negative voice content, were associated with general distress (depression and anxiety) and that negative beliefs about voices explained variance in depression over and above negative voice content.

Using the same sample, Cavelti et al. (2020) found that both negative beliefs about voices and negative schematic beliefs were important determinants of depression in youth with AVH. Interestingly, they also demonstrated an indirect effect of negative voice beliefs on depression via negative self-beliefs but not the other way around. This suggested that specifically in youth, AVH experience might have a more profound impact on the developing sense of self, compared to individuals experiencing AVH later in life, when the sense of self is more stable. In contrast to adult literature where negative interpersonal schemas are hypothesised to lead to negative beliefs about voices, which then elicit distress (Birchwood et al., 2004; Cole et al., 2017; Thomas et al., 2015), these results indicate that the relationship between these two types of beliefs might be bi-directional (Berry & Bucci, 2015).

Lastly, a recent online survey study with 68 young people 13-18 years of age (Parry & Varese, 2020) provided support for adopting a relational framework in understanding distress in youth with AVH. By using a nuanced first-person perspective analysis of qualitative data, they reported that distressing voices were usually described as holding greater power over the young people's cognitions and emotions, having a

“haunting” nature, and fostering negative self-evaluations compared to positive, pleasant voices. In terms of relating, distressing voices were mostly described with a sense of relational distance which is consistent with adult literature (Hayward, 2003). Regarding similarities between social relating and relating to the voices, it was suggested that distressing voices also mirrored sociocultural or personal oppressions. Further findings from the same data complemented this, indicating that voice-hearing often reflected how young people felt in current close relationships, showing a vital role for others’ appraisals on the young people’s AVH experience (Parry et al., 2020). Collectively, the limited research in youth with AVH suggests that negative beliefs about voices, voice content, and their potential interplay as well as negative self-schemas might constitute potential determinants of distress in young people with AVH.

### **1.3 AVH in youth and social relating**

The literature outlined in the previous sections indicates that negative relating to voices (e.g., Sorrell et al., 2010) seems to extend to other social relationships (e.g., Birchwood et al., 2000, 2004; Hayward, 2003). During adolescence, young people begin to seek more independence as parental influence begins to decline, susceptibility to peer influence peaks (Dishion & Tipsord, 2011; Gifford-Smith et al., 2005; Steinberg & Monahan, 2007) and they become more sensitive to others’ actual and perceived appraisals of themselves (Hergovich et al., 2002). Considering that adolescence is described as a life period characterised by changes in how young people perceive, understand, and interact with social others (Blakemore, 2008; Pachucki et al., 2015) it is important to investigate the influence AVH might have on young people’s social relationships.

Research on PE shows that young people experiencing these phenomena may face difficulties in their social relationships. Young people have reported concerns about sharing their mental health experiences as they suggest it could risk their social status in peer groups (Gronholm et al., 2016) and could elicit negative reactions (Anglin et al., 2014; Yang et al., 2015). Young people have also described being reluctant to disclose their AVH experience due to stigma concerns, such as receiving unpleasant responses from others, which in turn could lead to social withdrawal (Parry et al., 2020). This could result in a reduction of level of support that young people receive from their

social environment, which has been considered as a protective factor against PE and stress (Crush et al., 2018).

Further issues with young people's social life have been suggested by research with at-risk-states for psychosis samples with PE, including AVH. Studies have shown that these young people present with lower levels of social support, greater social isolation (e.g., Cornblatt et al., 2003; Pruessner, Iyer, Faridi, Joobar, & Malla, 2011), fewer close friends and less diverse social networks, less positive and more negative relationships with family members and friends, and higher levels of loneliness (Robustelli et al., 2017). These findings have been consistent with a recent large general population study (Dodell-Feder et al., 2020). Frequent perceptual PE in adolescence are also linked with low social functioning (Schimmelmann et al., 2015) and distressing AVH with lower family support (Løberg et al., 2019).

Adult research has suggested that voice-hearers could spend substantial time talking to their voices, creating interpersonal relationships with them (Corstens et al., 2012). In addition, qualitative studies with adult voice-hearers have indicated that voices could be fulfilling social needs that are not met in other relationships (Beavan & Read, 2010; Corstens et al., 2012; Mawson et al., 2010, 2011), e.g. being supportive in coping with negative voices (Mawson et al., 2011), potentially leading to spending less time in other social interactions (Favrod et al., 2004). Similar to adults, when voices in young people are perceived as pleasant, they have described them like friends they could talk, possibly meeting social needs missing from other social relationships, such as helping with decision-making, offering company, emotional connection and support, and having a soothing influence upon the effect of negative voices on young people (Parry & Varese, 2020). Parry et al. (2020) also reported that young people commonly attributed their AVH to loneliness and social isolation, highlighting the relational function of voices in youth. Nevertheless, AVH, irrespective of being positive or negative, seemed to make social interactions more difficult as they have negative effect on concentration, leading to more social isolation and in some cases young people became more dependent upon their voices, as a result (Parry & Varese, 2020). Especially to young people already withdrawn and those who did not talk to others about AVH, AVH enhanced feelings of isolation which then exacerbated distress and

AVH severity (Parry et al., 2020). Similar findings have been found in adult literature with AVH being considered socially disruptive, either directly, e.g., interrupting conversations, saying things that undermine the trust in social others (Birchwood, 2003; Woods et al., 2015), or indirectly by eliciting negative emotions, e.g., fear (Woods et al., 2015). Increased feelings of social isolation, social withdrawal and disruption could be detrimental to both objective (e.g., size of social network) and more outward-facing subjective social needs (e.g., engaging with non-voice relationships) that the voices might be fulfilling, interfering with feelings of social connectedness.

Studies investigating the causal pathway between voice-hearing and social relating difficulties have suggested that there might be a bi-directional relationship (Gayer-Anderson & Morgan, 2013). General population studies have found that social functioning difficulties might be present before (Hameed et al., 2018; S. Sullivan et al., 2013) and deteriorate at and after the onset of adolescent PE (Asher et al., 2013; Bouhaddani et al., 2019; Trotta et al., 2019), especially when PE are persistent (Downs et al., 2013).

A suggested explanation for the link between AVH and social relating comes from research on adverse life experiences and trauma with community samples of children (Løberg et al., 2019) and studies focusing on AVH persistence in community youth samples (Bartels-Velthuis et al., 2016). Exposure to greater levels of trauma could predispose young people to form negative interpersonal schemas that could guide interpretation and response to interpersonal interactions (Paulik, 2012; Young et al., 2006) and in turn influence the social relationships of adolescent voice-hearers (Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001; Young, 1994). The link between childhood trauma and negative interpersonal schemas has been consistently found in adult literature (Cukor & McGinn, 2006; Karatzias et al., 2016; Tezel et al., 2015; Scott et al., 2020), although evidence on the mediating role of schemas between trauma and AVH is somewhat mixed (Gibson, Reeves, Cooper, Olino, & Eelman, 2019; Hardy et al., 2016). Nonetheless, negative schemas have been linked with hallucinations in community-based young adult research (Gracie et al., 2007) and with the presence and severity of distressing PE in CAMHS patients (Noone et al., 2015). Thus, negative self-evaluations and negative comparisons of oneself to social others could have an adverse

impact on young people's relationships (Gilbert, 1997, 2005; Gilbert & Irons, 2009) and lead to disconnection from the social domain (Caldwell et al., 2004; McElhaney et al., 2008).

Beyond interpersonal trauma history or negative interpersonal schemas, social difficulties might derive from greater symptomatology (see section 1.1.4 for clinical correlates of AVH in youth) and its associations with functional impairment. Across four adolescent general population samples in Ireland, (Kelleher, Keeley, et al., 2012) found a dose–response relationship between risk for PE and the number of diagnosable psychiatric disorders, indicating that adolescents with PE are at particularly substantial risk of having psychiatric multimorbidity. This finding was later replicated in a help-seeking clinical sample of young people (Kelleher et al., 2014). Therefore, social difficulties in young people with AVH could, at least partially, be attributed to the effect of the more severe and complex general psychopathology and not due to the experience of AVH per se. Thus, greater general symptomatology might be a key contributor in the pathway from youth AVH to impaired social functioning (Asher et al. 2013).

#### **1.4 Clinician practices and perspectives on working with service users who report AVH**

AVH can be present in several mental health disorders, can be distressing and lead to a need for care (Maijer et al., 2017). Although research on voice-hearing with youth clinicians is currently lacking, a study with young voice-hearers and their parents has indicated that they face many difficulties when trying to access support from mental health services with regards to distressing AVH (Kapur et al., 2014). Thus, it is important to consider how clinicians might respond to the disclosure of such AVH experiences and focus on factors that might influence clinical practice of supporting young people distressed by AVH.

##### ***1.4.1 The importance of screening and assessing AVH in youth***

Studies with large general population samples have highlighted the importance of screening and assessing adolescent AVH due to their consistent association with an increased risk of current and future mental health and psychosocial problems (Hielscher

et al., 2018; Isaksson et al., 2020; Maijer, Steenhuis, et al., 2019). Maijer, Steenhuis et al. (2019) suggested that clinicians should be aware that approximately one in four adolescents with AVH in the general population might need clinical care for a wider spectrum of difficulties than AVH alone. Thus, considering that AVH experiences are rarely voluntarily reported (Hazan et al., 2019), it seems that when young people disclose AVH it is an important opportunity for clinicians to assess the severity of the AVH experience, identify a vulnerable group for early intervention and provide appropriate support (Kelleher, 2016). Although which aspects of AVH should be assessed to indicate those truly at risk of poor outcomes remains unclear (Uptegrove et al., 2016), being distressed by the experience would be of central importance. Especially when AVH are accompanied with distress, researchers have emphasised the need for clinicians to assess young people's experiences and mental health due to high risk of incident suicide attempts (Hielscher et al., 2019) and several other psychosocial and clinical factors linked with psychosis, such as experience of trauma, perceived negative self-worth and self-efficacy, distractibility, and self-harm (Løberg et al., 2019).

#### ***1.4.2 Clinicians' perspectives on AVH***

Despite the fact that voice-hearers can benefit from a therapeutic relationship with clinicians (McAndrew et al., 2014), clinicians have reported difficulties in establishing relationships with patients who hear voices (White et al., 2019). More specifically, mental health nurses have expressed their concerns about discussing AVH with patients (White et al., 2019), being afraid this might have negative consequences on patients' well-being (Coffey & Hewitt, 2008; England et al., 2004). This has also been found in clinicians working in specialist psychosis services (Early Intervention in Psychosis practitioners, psychologists and mental health nurses) who reported feeling uncomfortable having these conversations with patients (Bogen-Johnston et al., 2020). Other barriers to discussing AVH have been the lack of professional support clinicians perceive for them to have therapeutic conversations about voices with patients and the heavily task-oriented nature of their work, which prioritises risk assessment and management, at the expense of developing therapeutic relationships with voice-hearers (White et al., 2019). In a study by White et al. (2019), early career mental health nurses described that senior members of their team did not engage in discussion about voices

with patients, indirectly discouraging new team members from doing so (Cleary et al., 2011; Wright et al., 2011). However, avoiding conversations about AVH with distressed patients deprives clinicians from the opportunity to offer voice-hearers support in managing their voices (Harrison et al., 2008; Schnackenberg & Martin, 2014).

In youth, fear of judgement and stigma due to voice-hearing at interpersonal and societal level have been consistently mentioned as barriers that prevent young people from seeking help and support (Parry et al., 2020). Thus, young people might present to health services first asking support for other concerns (Boydell et al., 2013; Falkenberg et al., 2015; Stowkowy et al., 2013) and unless asked directly and sensitively, they would rarely disclose information about their AVH (Kelleher et al., 2014; Mertin & Hartwig, 2004). Moreover, young people are vulnerable to feeling that their own understanding and explanations for their voice-hearing experiences are dismissed due to the power of clinicians' opinions and biomedical explanations (Bampton, 2012). Reactions of others to young people's AVH can also play an important role in the assumptions and conceptualisations young people adopt about their experience, with dismissing or pathologising reactions changing the way AVH were experienced into more negative and distressing (Parry et al., 2020). These findings suggest that health professionals should be vigilant for and prepared to ask about AVH experiences during routine assessments (Stowkowy et al., 2013), in a sensitive and normalising way (Sikich, 2013).

Young people's concerns about clinician's negative reactions to their AVH could have a realistic basis. Clinicians in both primary care and secondary mental health settings have reported stigmatising attitudes toward patients with mental health disorders (Chaplin, 2000; Dabby et al., 2015; Hansson et al., 2013; Lauber et al., 2006; Lawrie et al., 1998; Nordt et al., 2006; Stuber et al., 2014), with primary care practitioners endorsing the most stigmatising attitudes (Stone et al., 2019). Other than stigmatising attitudes, clinicians' interactions with patients who hear voices could be influenced by their professional (Caplan et al., 2016) and personal experience (Sandhu, Arora, Brasch, & Streiner, 2019) and their training that could influence their confidence in discussing voices with patients (Coffey & Hewitt, 2008; Kramarz et al., 2020) or more generally, in the level of support offered to voice-hearers (McCluskey & Vries,

2020). Clinicians' feelings of powerlessness and helplessness in reducing distress in this group of patients (McMullan et al., 2018) might also impact on their attitudes to working with voice-hearers, and in turn this could be reflected in their clinical practice.

In summary, existing research recommends that clinicians should discuss and assess distressing AVH in young people as this could potentially contribute to the timely provision of support for this vulnerable group. Since disclosure of AVH in health services is rarely volunteered, when young people report AVH, they provide the clinician with an opportunity to open a normalising and sensitive conversation about voices. Literature with adult health professionals, however, indicates that clinicians might avoid such discussions due to several reasons (e.g., Coffey & Hewitt, 2008). Literature with youth clinicians in any healthcare tier and their perspectives on how they respond to and support young people with AVH is currently lacking.

## **1.5 Thesis projects**

The following section describes the rationale for creating the research projects of this thesis and the author's process in setting them up and carrying them out.

### ***1.5.1 Background summary and Rationale***

As already described in the previous sections of this chapter, AVH is a relatively common experience in childhood and adolescence and, for the majority of young people, this experience will regress through time. However, for some young people, AVH will persist and could be linked with considerable distress and a need for clinical care. Studies with adults have focused on uncovering the underlying mechanisms of voice-related distress, such as beliefs about the voices (voice power, intent, social rank), relating to voices, voice content and voice-related distress, informing psychosocial interventions that aim to reduce distress. However, very little is known about factors that render AVH distressing for young people.

At the start of this PhD, the amount of evidence on interventions for distressing AVH in people under 18 years of age was insufficient. National Institute of Care and Excellence guidelines were extrapolated from adult research, recommending family intervention with individual Cognitive Behavioural Therapy for psychosis (CBTp)



(NICE, 2013). The problem with this approach is two-fold. In the first place, it cannot be safely assumed that these interventions will be effective when considering the different needs in individual developmental stages and the possibility of different illness presentations between stages (Häfner, 2000; Stafford et al., 2015). Additionally, in adult literature, CBTp had only small effects on clinical outcomes for psychosis more broadly (Jauhar et al., 2014) and most importantly, when investigating its impact on AVH results McCarthy-Jones et al. (2014a) failed to show a significant effect. NICE also recognises that “evidence of efficacy is currently unavailable” for psychological intervention in young people distressed by hearing voices and psychosis in general (NICE, 2013, p.5). Moreover, considering what is mentioned in section 1.3, young people go through a period of significant social and emotional development which is accompanied with changes in social relationships. Although AVH might be fulfilling a relational function, AVH can also compromise young people’s existing social relationships by disrupting conversations, undermining the trust in social other and by eliciting negative emotions. Due to young people’s concerns that they might be treated negatively due to their AVH experiences, they might decide to distance themselves from others. Alternatively, it seems that AVH are a risk marker for complex and more severe psychopathology, which could be the key factor driving poor functioning and therefore social relating problems.

Addressing the gap in the literature with regards to distress factors of voice-hearing in young people could help inform psychological interventions have been almost exclusively explored with adults to date. Considering that distressing voice-hearing can impact on social functioning and relating to others in adolescence, the first project of this PhD, ‘Vista’ (see details below in Chapters 2 and 3), did not only focus on the exploration of psychological factors that might contribute to distress in young people who hear voices but also on how AVH might be associated with difficulties in young people’s social relating. Due to the general psychopathological vulnerability of young people with AVH, research has stressed the importance for clinicians to assess this experience in young people. Similar to peers and parents, it can be difficult for young people to disclose AVH to healthcare professionals and they might first seek help for other co-occurring mental health problems. Whenever young people do disclose AVH, an assessment of this experience is warranted. Nonetheless, clinicians in adult

health services have reported that they do not always feel confident in discussing distressing AVH with patients, for a variety of reasons, with the most common being fear of causing further distress. This could be due to lack of training, work culture and the absence of perceived professional support. Other factors influencing clinician's practices when working with voice-hearers include personal and professional experience with AVH, stigmatising beliefs and job-related attitudes about working with voice-hearers. Thus, in addition to lack of compelling evidence behind the national guidelines about how to best support young people distressed by voice-hearing, it is important to understand how clinical services respond to young people who disclose distressing voices. The second project of this thesis, 'Attitudes to Voices' (A2V) (chapter 4), an online survey focused on clinical staff was developed to address this issue.

### ***1.5.2 Aims of the thesis***

The overall aim of the thesis is to provide preliminary evidence in order to inform and improve care for young people who hear distressing AVH by examining two areas: on the one hand, models of young people's experiences, and on the other, clinicians' attitudes toward working with young people with AVH and key factors that might influence their intention to assess AVH in routine practice.

Driven by the literature discussed in this chapter, this thesis aims:

- 1) to explore whether psychological approaches of auditory verbal hallucinations (AVH) in adults could be successfully used to better understand the experience of AVH in young people, keeping a parallel focus on the social correlates of this experience, and
- 2) to investigate clinicians' perspectives with regard to working with individuals with AVH with a particular emphasis on adolescents.

### ***1.5.3 The Vista project***

The 'Vista' project, taking its name from the combination of letters making up the full title of the project 'Voice-hearing in young people: distress factors and social relating', was developed to address the first aim of this thesis (see section 1.5.2). Findings from

this project are presented in Chapters 2 ('Vista' study 1) and Chapter 3 ('Vista' study 2). The author of this thesis was the principal investigator and main researcher of this project and was responsible for the design, recruitment, data collection and analysis.

All participants for this project were recruited from Children and Adolescent Mental Health Services (CAMHS) and Early Intervention in Psychosis services (EIP) within Sussex Partnership NHS Foundation Trust and they were between 14-18 years of age. For the first Vista study focusing on exploring factors that relate to voice-related distress, participants should have been experiencing voice-hearing that is not attributed to an organic illness, acute intoxication, solely to drug use or solely after waking up/before falling asleep (hypnagogic/ hypnopompic). For the second Vista study, a psychiatric control group was recruited consisting of young people receiving care from the same services, CAMHS and EIP, as the young people experiencing voices. Participants in this group were also 14-18 years of age and not experiencing voice-hearing. There was no restriction in diagnostic criteria for either of the groups. For details on inclusion and exclusion criteria please see Chapters 2 and 3.

#### **1.5.3.1 Recruitment strategy and links with clinical teams**

Recruitment took place via referrals from clinical teams or via parental or self-referrals. Strategies for recruitment included advertising the study to from Children and Adolescent Mental Health Services (CAMHS) and Early Intervention in Psychosis services (EIP) within Sussex Partnership NHS Foundation Trust with emails, posters, leaflets. Promotional materials were also advertised in GP surgeries and community buildings in Sussex and posted on the research team's social media accounts. For clinician referrals, mental health professionals in CAMHS and EIP services (e.g., care coordinators) were asked to inform service users about the study and refer them following the young person's verbal consent. For those under 16 years of age, parental verbal consent was also needed and communication with a person with parental responsibility was necessary, as they needed to provide their informed written consent for the young person to take part.

All referred young people were given a Participant Information Sheet and a Parental Responsibility Information sheet. Following a minimum of 24 hours to process

the information, the principal investigator contacted the participants and/or the person with parental responsibility to answer any questions and arrange the first research meeting, after ensuring eligibility to take part.

Although research assistants from the Research and Development department of Sussex Partnership NHS Foundation Trust were embedded in EIP teams and regularly informed clinicians about current research studies during clinical team meetings to encourage referrals, there was no set network of communication between the Research and Development department and CAMHS at the time of the project. In order to create and maintain links with the local teams, the principal investigator presented to clinical staff meetings and at local events of CAMHS and EIP clinicians (e.g., Children and Young people Services Clinical Academic meetings) to promote the project. Reminder presentations and emails about the study aims and current recruitment figures were sent to clinical teams on a regular basis.

Furthermore, following the participant's consent to take part, the principal investigator was in contact with the participant's responsible clinician to inform them of their research participation progress and receive information on any current or ongoing risk issues. To contribute to the young person's clinical mental health assessment and to strengthen the collaboration between the research and clinical teams, a summary report of the young person's research assessment was shared with their responsible clinician, if the participant agreed to it.

Recruitment efforts were strengthened by the embedment of the principal investigator as a research assistant for one of the local EIP teams and the involvement of CAMHS psychology interns in East Sussex. In agreement with their clinical supervisors, usually the Clinical Psychologist of the CAMHS teams, the principal investigator informed the interns of the study aims and inclusion criteria as they could help identify potential participants in case discussions during CAMHS clinical team meetings. Psychology interns based in CAMHS Sussex teams were attending entry assessments of new referrals and they offered study leaflets to young people who would enter the CAMHS caseload. They also contacted existing service users and their parents via phone or during appointments to inform them about Vista. If a study referral was

made via this route, psychology interns were invited to shadow the research assessments and learn about the psychological tools used in the project.

### **1.5.3.2 Research appointments**

The research assessment took an average of approximately 5 hours and 40 minutes. To ensure young people felt comfortable, the research assessment was spread over two or more sessions depending on participant's preference and needs. Participants were also offered the option to bring a trusted friend or a family member during the research assessment. Breaks were incorporated into the assessment sessions and participants were reminded they can stop or pause whenever they wish. During the session, snacks (e.g., cereal bars, biscuits) and refreshments (e.g., water, fruit juice) were offered to the participants. To remove practical barriers relating to travelling, a few options were offered regarding the assessment location. The researcher could meet the young person at their place of residence, at their college, at their closest NHS service, at their GP surgery or at the University of Sussex. Although most of the research assessments took part during normal working hours (9am - 5pm), when this was not possible due to the young person's schedule, evenings and weekends were offered for research appointments. This needed to be arranged in agreement with clinicians at the NHS research and development department so they who should be on call in case any risk concerns were raised. Verbal feedback from young people and their parents highlighted that these accommodations made research participation possible for them and they felt that their time was valued.

### **1.5.3.3 Project material development and adaptations**

Consultation with regards to the project design was conducted with a young person with lived experience of distressing AVH, who was at the time a young adult. The lived experience consultant used to receive care from CAMHS and was using adult mental health services. They were also a member of a peer support group for unusual perceptual experiences in Brighton, and a facilitator for a CAMHS peer-led service development group.

Three consultation sessions took place in took place between March and August 2017.

Although the list of measures was chosen by the research team based on current literature, the consultant and the principal investigator went through the study measures to ensure that the language used was sensitive and accessible to youth. The consultant also offered their advice on the order of administering the measures of the study which was taken into account in the study design. The consultant also helped the principal investigator create a list of useful resources that participants were given at the end of their assessment. This included links to local support such as crisis lines and peer support groups, as well as online information on voice-hearing in youth.

The materials of the study (e.g., consent forms, information sheets, debriefing form, leaflet with useful support resources) were drafted by the researchers incorporating the information received during the consultation and were sent to the consultant for a second round of feedback that was incorporated in the material.

To ensure that the participant information sheets were easy to understand by young people, the research team sent them to eight young people, 12 to 15 years of age, to review them. One of the young people was at the time using CAMHS and all young people were independent from the research team. Overall, the young people found the material clearly written and easy to understand. They indicated a few confusing sentences, they suggested and the use of illustrations and bullet points for big blocks of text. Relevant changes were applied to the final versions of the project material.

#### ***1.5.4 The A2V project***

The ‘Attitudes to Voices’ project, ‘A2V’ in short, was an online survey developed to address the second aim of this thesis (see section 1.5.2). Findings from this project are presented in Chapters 4. The author of the thesis was responsible for a large part of the design, recruitment and management of the survey as well as the statistical analysis of the survey data.

The survey was addressed to clinical staff and its main aim was to explore the factors that could influence clinicians’ intention to assess distressing voice-hearing within different clinician groups.

#### **1.5.4.1 Theoretical Framework**

In line with the main aim of the A2V project, a theoretical framework was chosen to support the development of the survey items. Theory of Planned Behaviour (TPB) (Ajzen, 1991) was selected as it provides a framework with clearly defined constructs that could predict an individual's behavioural intention to perform context-specific goal-directed actions (Ajzen, 2011). The TPB is an extension of the Theory of Reasoned Action (Fishbein & Ajzen, 1975) which is based on the premise that individuals make reasoned decisions to engage in specific behaviours by evaluating the information available to them. The performance of the behaviour is determined by the intention of an individual to engage in it. Intention, in turn, is influenced by three antecedent factors: a) attitudes, or an individual's positive or negative appraisal of performing the behaviour, b) subjective norms, which refer to the perception of social expectations of important others to engage or not engage in the behaviour, and c) perceived behavioural control, or an individual's perception of how easy or difficult it is to perform a behaviour.

This theoretical framework has been supported for its efficiency to predict engagement in various behaviours (McEachan et al., 2011), including healthcare professional's behaviour (Armitage & Conner, 2001; Côté, et al., 2012; Godin et al., 2008, Perkins et al., 2007), with a few studies specific to mental health (e.g., Lecomte et al., 2018; Levy et al., 2016). As TPB considers the addition of context-specific underlying antecedent factors of behavioural intention, it allowed for the inclusion of other background factors that were identified in previous studies and that specifically related to clinicians' intention to discuss AVH (Ajzen, 2005) (section 1.4.2 and Chapter 4) (e.g., level of professional and personal voice-hearing experience). For details on the development of the measure based on TPB, please see section 4.2.5.

### **1.6 Overview of empirical chapters**

Due to the heterogeneity of AVH experience, ranging from clear voices originating from the external world to inaudible, soundless voices and more "thought-like" experiences, a clear consensus on its definition has yet to be achieved. For the purposes of the empirical chapters in this thesis, AVH will refer to the experience of

hearing a voice or voices that are perceived as veridical in the absence of an appropriate stimulus (Beavan & Read, 2010; David, 2004; Honig et al., 1998), that occur involuntarily (Beavan et al., 2011), irrespective of the voice location (internal or external) and that are experienced in a conscious state and not induced by organic or state-dependent circumstances, e.g., hypnopompic, hypnagogic, drug-related AVH (Bentall, 1990; Longden, Madill, et al., 2012; Slade & Bentall, 1988).

This thesis is comprised of three empirical chapters.

### ***1.6.1 Chapter 2***

The first study tests hypotheses deriving from the adult cognitive model of voice-related distress in a clinical sample of young voice-hearers who received care in Child and Adolescent Mental Health Services (CAMHS) and Early Intervention in Psychosis (EIP) services, irrespective of diagnosis. First, this study investigates the role of beliefs about voice intent and power, relating to voices, negative schematic self and other beliefs, insecure attachment styles and their relationship with voice-related distress, as well as with each other. Second, this study explores the relating styles young voice-hearers adopt with their voices. Additional investigations focus on whether there is a similarity between relating to voices and social others and the association of different relating styles with perceived social connectedness and belongingness. Specifically, relating styles adopted with social others were predicted to characterise young people's relationships with voices. Moreover, hearer dependence from the voices was hypothesised to relate to lower levels of social connectedness and belongingness. Lastly, it was predicted that young people who appraised their voices as dominant, intrusive and persecutory would perceive themselves as having lower social rank.

### ***1.6.2 Chapter 3***

The second study explores associations between the presence of AVH and social relating variables. For this study, the clinical sample of young voice-hearers from Chapter 2 was compared to a clinical control group of young people without AVH who received care from the same mental health services. In this study, social relating was conceptualised in a multi-dimensional sense, including measures of representations of



social strain and support, social comparison and connectedness and broader less-than-competent, negative, interpersonal relating styles.

The case-clinical control design facilitated a focus on social relating outcomes uniquely linked to the presence of AVH. To explore this, key factors that might account for social functioning differences between groups, such as historical (premorbid adjustment, childhood trauma) and current confounders (negative interpersonal schemas, depression, and anxiety) were compared. It was hypothesised that young people with AVH would present with more social relating difficulties compared to clinical controls.

### ***1.6.3 Chapter 4***

The last study of this thesis surveys clinicians' attitudes toward working with young people who hear voices, stigmatising beliefs and self-perceived confidence in voice-related practices, such as discussing distressing voices with young people and providing psychoeducation information.

This study used the Theory of Planned Behaviour to identify potential factors that are related to clinicians' intention to assess distressing AVH following young people's disclosure. The Theory of Planned Behaviour (TPB) suggests that there are three main predictors for engaging in a behaviour; attitudes toward a behaviour, perceived control over the target behaviour, and perceived subjective norms, which reflect whether the behaviour is approved or disapproved by important social referent groups. Additional factors stipulated to influence clinicians' intention to assess distressing AVH were stigmatising beliefs, job attitudes toward working with patient with AVH, professional and personal experience with AVH, past training and perceived self-efficacy. Responses from youth mental health clinicians, with respect both to specialist psychosis and general youth mental health practice, were compared with professionals working in adult mental health and primary care settings. Finally, this study aimed to uncover the beliefs that youth mental health clinicians hold about assessing distressing voices in adolescents and their associations with assessment intention.

Finally, the last chapter of this thesis presents an integrated overview of findings from the previously mentioned empirical chapters. Strengths and limitations of the present research are considered. Implications for future research and potential therapeutic applications are discussed.

## **2. Voice-hearing in young people, distress factors and social relating: Exploring a voice-hearing model (“Vista” Study 1)**

## **2.1 Introduction**

Auditory verbal hallucinations (AVH) or hearing voices refer to sensory experiences that happen in the absence of an appropriate external stimulus. AVH are considered as taking place in full consciousness and not being voluntarily invoked (Beck & Rector, 2003).

### ***2.1.1 Prevalence and clinical correlates of AVH in youth***

AVH are common experiences in young people, in both clinical and non-clinical populations (de Leede-Smith & Barkus, 2013; Kelleher et al., 2014; Kelleher et al., 2012). Studies have shown that for most young people voices will be a transient phenomenon that will spontaneously resolve (Linscott & van Os, 2013). Nevertheless, AVH have also been linked with a wide range of mental health disorders such as depression, anxiety (Bartels-Velthuis, Wigman, Jenner, Bruggeman, & van Os, 2016; De Loore et al., 2011; Jeppesen et al., 2015; Kelleher et al., 2012; Ulloa et al., 2000) and psychotic disorders (Kelleher et al., 2014; Kelleher et al., 2012; Majjer, Palmen, & Sommer, 2016; Sikich, 2013).

### ***2.1.2 Psychological approaches to voice-hearing***

To understand why AVH can be distressing, psychological models have been formulated aiming to identify the processes that elicit and/or maintain distress. Cognitive-behavioural models (Birchwood & Chadwick, 1997; Chadwick & Birchwood, 1994; Morrison, 1998, 2001) have postulated that the beliefs a person holds about their voices - rather than merely voice activity or content – mediate associated levels of voice-related distress (Chadwick & Birchwood, 1994). Voices are viewed as ‘activating events’, with beliefs about voices’ power (e.g., omnipotence) and intent (e.g., benevolent or malevolent), being key mediators between voice occurrence and the person’s emotional and behavioural responses to the voices (Birchwood & Chadwick, 1997; Chadwick & Birchwood, 1994; Chadwick, Birchwood, & Trower, 1996).

Concerning emotional responses to AVH, early studies found no association between distress and voice omnipotence (Birchwood & Chadwick, 1997; Birchwood, Meaden, Trower, Gilbert, & Plaistow, 2000). In larger samples, other studies indicated

greater power differential between the hearer and the voice (Birchwood et al., 2004; Trower et al., 2004) and greater omnipotence (Hacker et al., 2008) was related to greater voice-related distress. Using Experience Sampling Methods, Peters, Williams, Cooke and Kuipers (2012) also found that both control and power appraisals were related to voice-specific distress. In a more recent study by Cole, Strauss, Fife-Schaw and McCarthy-Jones (2017) persecutory beliefs about the voice (combining omnipotence and malevolence) were correlated with voice-related distress. Regarding beliefs about voices' intent and behavioural responses, several studies have shown that voices appraised to be malevolent are largely resisted whereas voices perceived to be benevolent are engaged with (Birchwood & Chadwick, 1997; Close & Garety, 1998; Sayer, Ritter, & Gournay, 2000; van der Gaag, Hageman, & Birchwood, 2003).

In young people, supporting the argument that beliefs about voices might contribute to a need for care, Escher et al. (2002) found that persistence of voices over a 3-year period in a sample of children was predicted by negative voice appraisals. Recently, Cavelti et al. (2019b) tested the cognitive model of AVH in a clinical sample of 15-25-year-old voice-hearers. They replicated the link between more negative appraisals of voices in terms of malevolence, omnipotence, and social rank with general distress (depression and anxiety). Consistent with adult findings, beliefs about malevolent voice intent were correlated with more resistance toward voices, and beliefs about benevolence with more engagement with voices.

To explore what drives the beliefs of voice power and intent, the cognitive model was extended, taking into account the individual's relationship with the voices and social others. Using social rank theory (Gilbert, Price, & Allan, 1995) Birchwood et al. (2000) argued that, due to psychological trauma, attachment difficulties and unique interpersonal experiences, individuals might develop interpersonal schemas that posit social others as powerful and threatening and the self as subordinate and vulnerable. These schemas would extend to the relationship voice-hearers have with their voices and would impact on how individuals appraise, feel, and behave in social relationships as well as in relationships with voices. Consistent with this extension, Birchwood et al. (2000) indicated that power and rank differentials, and specifically of powerlessness and subordination, between voice-hearers and others in social relationships were similar to

the ones between the individual and the voices. Furthermore, Birchwood et al. (2004) found that interpersonal social rank schemas of subordination to others predicted beliefs about voice omnipotence, subordination to voices, voice-related distress and depression.

#### **2.1.2.1 Interpersonal schemas and beliefs about voices.**

Going beyond social rank focused schemas about the self-other relationship, Garety, Kuipers, Fowler, Freeman and Bebbington (2001) suggested that early adverse experiences may create an enduring cognitive vulnerability to positive psychotic symptoms characterised by negative schematic beliefs about the self and the world. These beliefs facilitate external attributions for voices, low self-esteem and influence the content of voices. Smith et al. (2006) demonstrated that severity of voices was strongly associated with both depression and low self-esteem, but not with negative evaluative beliefs about self or others. However, those who were more distressed by their voices, were more depressed, had lower self-esteem, more negative evaluative beliefs about themselves and more negative voice content and voices of higher intensity. Thomas et al. (2015) provided further empirical support for this model, finding that negative self-schemas were associated with negative beliefs about voices and specifically beliefs of omnipotence. Cole et al. (2017) replicated this finding showing that persecutory beliefs about voices are related with negative self and other schemas. Moreover, they also uncovered an indirect path from negative beliefs about others to voice-related distress (via persecutory beliefs about voices) and both direct and indirect paths (via persecutory beliefs about voices) from negative beliefs about the self to voice-related distress. This finding is consistent with Birchwood et al. (2004) who argued that interpersonal schemas have a direct impact on distress.

Linking adult literature with youth findings, a high-school study found that distressing voices were predicted by adverse life experiences such as bullying and trauma, negative self-worth and self-efficacy (Løberg et al., 2019). Another study of young people referred to Child and Adolescent Mental Health Services (CAMHS) found that negative schematic beliefs were associated with PE severity. Specifically, voice severity (a measure combining frequency, functional impairment and distress) was negatively correlated with positive self-beliefs whereas only negative beliefs about

others were associated with the overall presence and severity of distressing PE (Noone et al., 2015).

#### **2.1.2.2 Extending the model: the role of relating.**

Based on Relating Theory (Birtchnell, 1996), emotional response to voices can also be understood by considering the proximity/distance in the hearer-voice relationship. According to this theory, interpersonal relating is being described along two intersecting axes, a horizontal concerning the degree to which one needs to become involved with or separated from others (proximity), and a vertical concerning the degree to which one chooses to exercise power over others or permit others to exercise their power over us (power).

Hayward and others (Hayward, 2003; Hayward, Denney, Vaughan, & Fowler, 2008; Vaughan & Fowler, 2004) explored the factor of proximity/distance in the hearer-voice relationship. Hayward (2003) showed that clinical voice hearers' relationship with their voices had similarities to social relating, specifically with regard to dominant, submissive and closeness relating style, while controlling for beliefs about voices and emotional distress. Therefore, the way an individual relates to the voice may be influenced by pervasive patterns of social relating. Additionally, Hayward (2003) found that relating from a position of distance was unique to relating with the voices, especially in interactions with voices that had no identity for the hearer. Based on Birtchnell's theory, this could reveal the tendency of the voice-hearers to be suspicious of and uncommunicative towards the voice, attempting to keep them at a safe distance. Vaughan and Fowler (2004) found that voice-related distress was associated with the voices perceived as relating from a position of superiority and the hearer relating from a position of distance. They also reported that perceiving the voices as relating from a position of superiority (the tendency to relate in a dominating and insulting way) and themselves as relating from a position of distance was associated with emotional distress. Both relating styles were independent of beliefs about the malevolence or omnipotence of the voices. Hayward et al. (2008) also supported the fact that, in a clinical group, voice-hearers prefer to distance themselves from a voice perceived as dominant and hearer distance was associated with voice-related distress. So, it is

possible that attempts to distract oneself from such complex experiences may be of limited utility.

Sorrell, Hayward and Meddings (2010) supported previous findings as perceived voice dominance, intrusiveness and hearer's distance were related to voice-related distress. Also, distancing from the voices was related to voice dominance. In contrast with Vaughan and Fowler (2004), in this study the relationship between the relating variables and voice-related distress was no longer supported after controlling for beliefs about voice omnipotence and malevolence. This finding gave rise to a tentative interpretation that beliefs about voice power and intent possibly mediate between relating to voices and distress or moderate the strength of this relationship. León-Palacios et al. (2015) replicated the finding that perceiving voices as relating intrusively and dominantly was related to emotional distress and confirmed the mediating role of beliefs about the malevolence and omnipotence of the voices between relating to the voices and distress defined as negative affect (anxiety and depression).

#### **2.1.2.3 Interpersonal schemas, relating to and beliefs about voices: the role of attachment theory.**

To better understand the formation of beliefs about voices, Hayward et al. (2014) have suggested using attachment theory. It has been argued that internal working models underlying attachment and core beliefs share similarities in that they guide attention, generate expectations and influence interpretation of new information (Platts et al., 2002). Thus, research exploring the relationship of attachment styles with interpersonal schemas and voice-hearing has complemented the suggestion that relating to voices can be similar to general relational patterns (Berry et al., 2008).

Research has focused primarily on two insecure attachment styles, avoidant and anxious attachment. Some studies have found that both attachment styles relate to levels of negative beliefs about oneself but not negative beliefs about others (Wearden et al., 2008). Cole et al. (2017) replicated the association between negative beliefs about the self and both attachment anxiety and avoidance, but they also revealed an association between negative beliefs about others and both insecure attachment styles.



In terms of linking attachment with relating to voices and beliefs about voices, Berry, Wearden, Barrowclough, Oakland and Bradley (2012) found that attachment anxiety was associated with voice intrusiveness, hearer dependence being consistent with attachment anxiety being linked with intrusive caregiving, hyper-vigilance to rejection and overwhelming affect (Berry et al., 2012), a finding also supported by Robson and Mason (2015). The latter also reported that attachment avoidance was associated with voice dominance and hearer distance. Their results also indicated that the relation between attachment and voice-related distress was fully mediated by the voice-hearer relationship, beliefs about voices and paranoia. Cole et al. (2017) have also recently supported the mediating role of negative schemas about oneself and others and persecutory beliefs about voices in this relationship. This mediation provides further support to Birchwood et al. (2004) arguing that interpersonal schemas relevant to voice-related beliefs and distress rise through past traumatic experiences and attachment difficulties.

With respect to the relationship between attachment style and distress, research findings have been inconsistent. A study with clinical voice-hearers demonstrated significant associations between attachment anxiety (but not attachment avoidance) and voice-related distress and severity (Berry et al., 2012). Others have found both insecure attachment styles to be related to voice-distress (Cole et al., 2017; Robson & Mason, 2015) and a recent study found no significant association between insecure attachment styles and severity/distress from voices (Dudley et al., 2018).

#### **2.1.2.4 Beyond the focus on beliefs about voices: Voice-content.**

According to the cognitive-interpersonal model of voice-hearing, the impact of beliefs about voices have been considered to be independent from other voice characteristics such as their content, frequency, and loudness (Peters et al., 2012; van der Gaag et al., 2003). However, a recent line of research has focused on the drivers and role of negative voice content in voice-related distress, as it has been demonstrated it could predict patient status in people hearing voices (Daalman, Boks, Diederens, De Weijer, et al., 2011). A recent study with patients diagnosed with psychotic disorders found that negative content was strongly related to voice-related distress and that

negative content fully mediated the relationship between childhood adversity and voice-related distress (Rosen et al., 2018).

In young people, Cavelti et al.(2019b) supported the potentially significant role of negative voice content as a distress contributor, as higher amount and degree of negative voice content was linked with higher general distress. Following these findings, Larøi et al. (2019) have proposed a model that aims to explain how negative content might be integrated in the cognitive-interpersonal model of AVH. They outline some potential factors that could “drive” negative voice-content including adverse life experiences and having a negative relationship with voices.

#### **2.1.2.5 Relating to voices and social others.**

As mentioned above, Birchwood et al. (2000) and Hayward (2003) suggested that clinical voice hearers’ relationship with voices can have similarities to social relating, in terms of social rank, power and proximity. Qualitative research has also revealed several findings about the impact of voice-hearing on social relationships. Although some individuals have expressed the usefulness of social relationships in coping with voice-hearing, voices can be utilised as a replacement for social relationships, as a sounding board when making decisions and as a way to cope with the impact of negative voices (Mawson et al., 2011). Additionally, voices might create distance from others, acting as a boundary for making and maintaining friendships. For some voice-hearers keeping social distance from others functions as a means to avoid uncomfortable or unsupportive responses (Mawson et al., 2011). Other qualitative studies have indicated that voices could have an adaptive relational function, especially for those with depleted social networks and social contact (Beavan & Read, 2010; Mawson et al., 2010, 2011). Benjamin (1989) considered that adverse social circumstances, such as stigma associated with voice-hearing (e.g., Beavan & Read, 2010), might influence a retreat into a voice world and a disconnect from social others. This could potentially lead to dependence on the voice, especially when the voices are perceived as benevolent (Mawson et al., 2011). However, this relationship could be bi-directional as benevolent beliefs about voices could result in social relating difficulties or that these difficulties lead to more positive beliefs about voices as an adaptative function.

Regarding young people who hear distressing voices, social relationships with peers might be at risk. Young people have indicated that they have witnessed peers being treated badly due to their psychological difficulties, which in turn makes sharing their experience with peers highly risky for their social status in peer groups (Gronholm et al., 2017). This could lead to concealing their experiences and potentially distancing themselves from their peers to avoid disclosing their experience and receiving negative reactions.

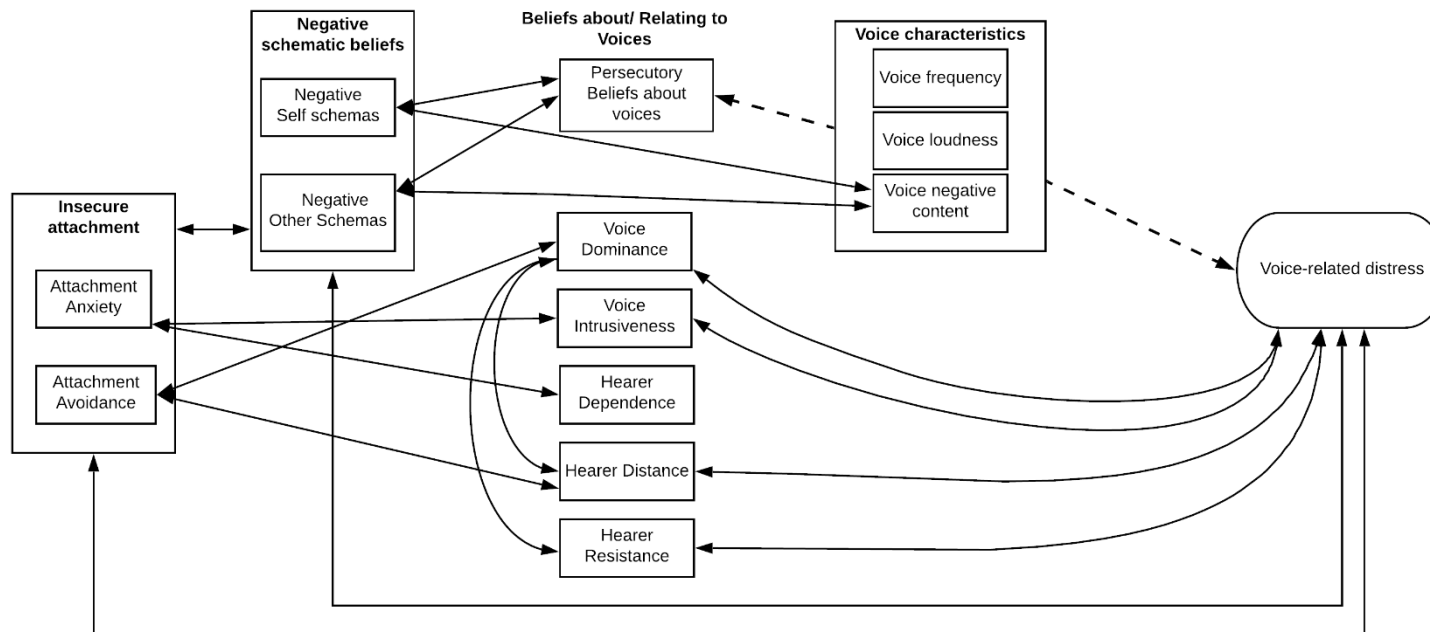
### ***2.1.3 Rationale & Aims***

Previous literature examining the clinical and functioning correlates of voice-hearing in youth has been mostly epidemiological in nature or used community samples. Additionally, the majority of studies have examined different types of Psychotic Experiences (PE) together, despite the fact that different PE seem to be differentially associated with mental health difficulties and functioning (Capra et al., 2015; Dhossche et al., 2002; Dolphin et al., 2015) and research investigating psychosocial factors that correlate with voice-related distress has been conducted in adult samples, with two exceptions to date (Cavelti et al., 2019b; Cavelti et al., 2020). Therefore, this considerable gap in the literature impacts on the development of appropriate psychological support and interventions for this group.

The current study was designed to examine some well-established links in the extended model of AVH found in adults using a clinical sample of young people in CAMHS and Early Intervention in Psychosis (EIP) services. Guided by the literature about the AVH prevalence in a wide range of diagnostic groups in youth (e.g. Majjer et al., 2017), the focus was transdiagnostic, aiming to provide preliminary evidence on factors that relate to voice-related distress in youth, with the scope to contribute to developing psychological interventions for this group.

The primary aim of the study was to investigate the role of relating to voices, beliefs about voices, negative schematic beliefs, insecure attachment styles and their relationship with voice-related distress, as well as with each other. These relationships are represented diagrammatically in the Figure 1 below.

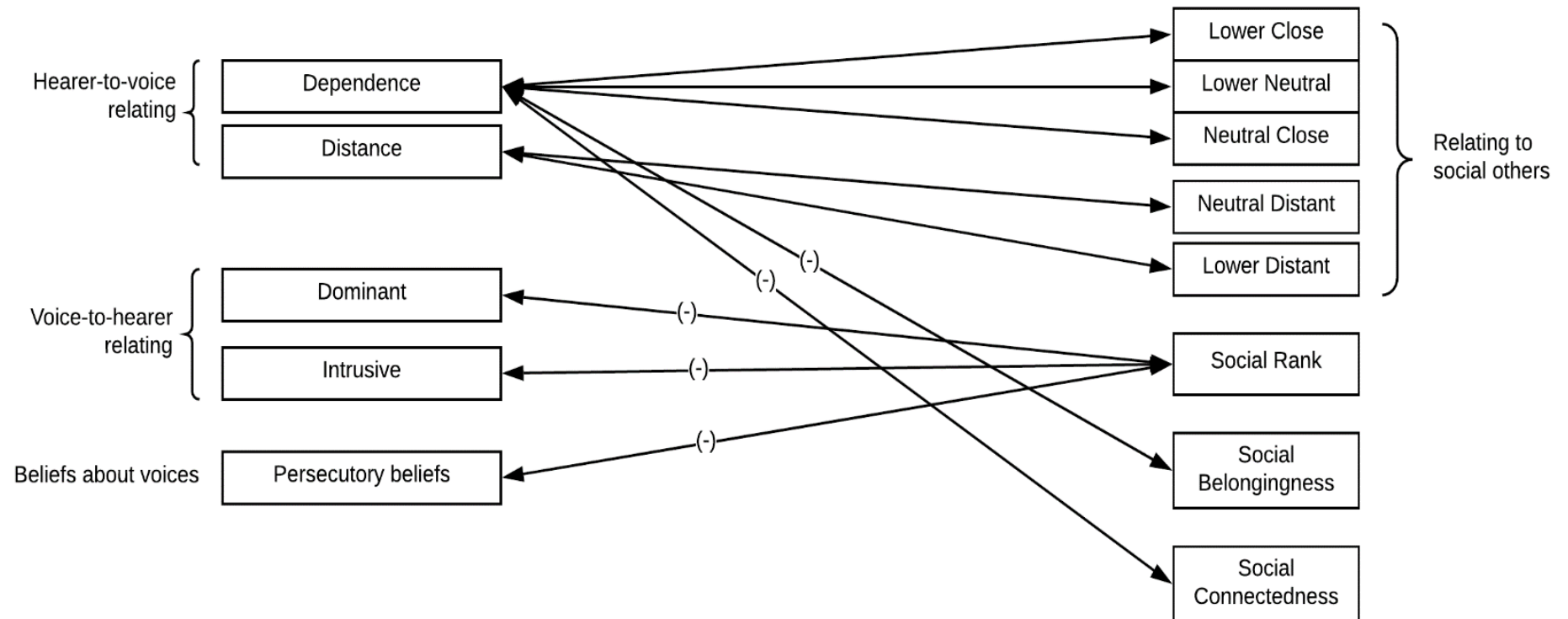
**Figure 1.** *The hypothesised model of AVH in youth. Solid lines represent bidirectional associations between constructs. The dotted line that passes through the voice characteristics box represents the hypothesised relationship between persecutory beliefs about the voices and voice-related distress which, according to the cognitive model of AVH should remain significant independent of voice content, frequency and loudness.*



Secondary aims of this study were to investigate whether young people relate to voices in a way similar to adult voice-hearers. Based on clinical adult studies, it was expected that young people would mostly relate to voices from a position of distance.

Additional investigations focused on whether there was a similarity between relating to voices and social others and the impact of different relating styles on perceived social connectedness and belongingness. Specifically, it was predicted that relating styles adopted with social others would be reflected in young people's relationship with voices and that hearer dependence from the voices was hypothesised to relate to lower social connectedness and belongingness. Lastly, it was expected that young people who appraised their voices as dominant, intrusive and persecutory would be perceiving themselves as having lower social rank. The predicted relationships are represented in Figure 2.

**Figure 2.** The hypothesised links between relating to voices and beliefs about voices with relating to social others, social connectedness and belongingness. Solid lines represent bidirectional associations between constructs. The (-) represents an inverse correlation. The description of relating styles to social others is: lower close = fear of rejection and disapproval; lower neutral = helpless, shunning responsibility, self-denigrating; neutral close = fear of separation and of being alone; neutral distant = suspicious, uncommunicative, self-reliant and lower distant = acquiescent, subservient, withdrawn (Birtchnell, 1996).





## **2.2 Methods**

### **2.2.1 Design**

This present study was part of a larger project called “Vista”. It involved a cross-sectional design with interviews and questionnaires with a clinical population of young people who hear voices (see the recruitment flowchart in Appendix B, Figure 1).

### **2.2.2 Procedure**

Ethical and Health Research Authority approval was obtained through London - Brighton & Sussex Research Ethics Committee (reference number: 17/LO/2078, Appendices B and C). Written informed consent was provided by all participants and people with parental responsibility for young people under 16 years of age, in the first research appointment.

Participants were asked to fill in questions on demographics, self-reported diagnosis, current medication, details on psychological therapy for distressing voices or other mental health difficulties. Participants were also asked to complete self-report questionnaires and research interviews over multiple appointments within the same calendar month. The researcher completed two observer-rated scales based on information gathered in research appointments.

### **2.2.3 Participants**

Thirty-four participants were recruited from Child and Adolescent Mental Health Services (CAMHS) and Early Intervention in Psychosis (EIP) services within Sussex Partnership NHS Foundation Trust. Recruitment took place via referrals from mental health professionals following young people’s verbal consent or via self-referrals.

Inclusion criteria were: 1) presence of voices for at least 3 months, 2) presence of voices within the past week to help ensure that voice-hearing experiences are frequent and recent enough for participants to answer detailed questions about them, 3) being 14-18 years of age at the time of referral to the study to ensure adolescent status,



4) in contact with EIP or CAMHS, 5) capacity to provide written, informed consent. Since the project had a transdiagnostic focus, there was no specific diagnostic inclusion criteria, given the presence of distressing voice-hearing can occur across different diagnostic groups (Larøi et al., 2012).

Exclusion criteria were: 1) voice-hearing that is attributed to an organic illness or acute intoxication, solely to drug use or solely after waking up/before falling asleep (hypnagogic/ hypnopompic experiences), 2) insufficient English language ability for purposes of providing informed consent and completing assessment measures, 3) a diagnosis of moderate or severe learning disability as assessed by their clinical team, 4) immediate risk to self or others or 5) voice-hearing of little clinical significance, e.g. one's name being called, noises.

Data collection was undertaken between March 2018 and June 2019.

#### **2.2.4 Measures**

##### **2.2.4.1 Clinical measures.**

The Comprehensive Assessment of At-Risk Mental States – Short form (CAARMS; Yung et al., 2005) is a semi-structured interview measure and was used to assess psychopathology considered to be indicating an imminent transition to a first episode of psychosis. It included the following sections: unusual thought content, non-bizarre ideas, perceptual abnormalities (PA), and disorganised speech. For each section severity, frequency, duration and distress of symptoms were assessed. CAARMS was used to determine presence of at ultra-high risk (UHR) for psychosis onset status. CAARMS has displayed good to excellent concurrent, discriminant and predictive validity and excellent inter-rater reliability (Yung et al., 2005).

The Structured Clinical Interview for Axis-I DSM-IV Disorders (SCID-I-RV; First, Spitzer, Gibbon, & Williams, 2002) modules B (Psychotic symptoms) and C (Psychotic disorders) were rated for participants reaching psychotic threshold in the CAARMS interview to establish a research diagnosis of psychosis, if applicable. The SCID-I-RV has been found a reliable measure in adolescent populations (Martin et al., 2000).

The Mini International Neuropsychiatric Interview (MINI) for psychotic disorders studies (Version 7.0.2) was used as a diagnostic interview measure. MINI is a structured interview that assesses psychiatric disorders according to DSM-V criteria. It has high reliability and validity and it requires brief administration (Sheehan et al., 1998).

The Beck Depression Inventory-II (BDI-II, Beck, Steer, & Brown, 1996) is a widely used 21-item self-report measure exploring the presence and severity of depressive symptoms “in the past two weeks, including today”, aligning with the depressive symptom criteria of the DSM-IV. Each item is scored on a scale from 0 to 3, with overall scores ranging from 0 to 63. Higher scores represent greater levels of depression. BDI-II has been used in several studies with adolescents and it has demonstrated good validity and reliability (Krefetz et al., 2002, 2003; Steer et al., 1998).

The Beck Anxiety Inventory (BAI, Beck & Steer, 1993) is a 21-item self-report questionnaire, exploring the presence and severity of symptoms of somatic and psychological anxiety in the past week. Each item represents a symptom of anxiety which is scored on a 4-point scale anchored by (0) "Not at all" = 0 and "I could barely stand it" = 3. Possible overall scores range from 0 to 63, with higher scores indicating more severe anxiety. Although it has been suggested for use with older adolescents and adults, it has shown adequate psychometric properties in clinical adolescent populations (Deumic et al., 2016; Jolly et al., 1993; Kumar et al., 1993; Osman et al., 2002; Steer et al., 1995) and used in adolescent studies (Häberling et al., 2019; Jolly et al., 1994).

#### **2.2.4.2 Social relating measures.**

The shortened Person's Relating to Others Questionnaire (PROQ-3; Birtchnell, Hammond, Horn, De Jong, & Kalaitzaki, 2013) is a 48-item self-report measure that explores negative relating to others. It contains eight subscales of negative relating, each containing one positive and five negative items. Each item is scored on a 4-point Likert-type scale ranging from “Nearly always true” = 3 to “Rarely true” = 0. Each scale can be scored from 0 to 15 and possible overall scores range from 0 to 120. PROQ-3 is based on Relating Theory (Birtchnell, 1996). According to this theory, interpersonal relating can be represented by two intersecting axes: a horizontal, proximity one

representing the degree to which we need to become involved with or separated from others (with polarities of ‘closeness’ and ‘distance’), and a vertical, power one concerning the degree to which we choose to exercise power over others or permit others to exercise their power over us (with polarities of ‘upperness’ and ‘lowerness’). Each position represents both a state of relatedness and is described with two words, one referring to the vertical and horizontal axis, respectively. For the four polar positions the word neutral is used where the word for the other axis is missing. This creates the following position names: upper neutral (UN), upper close (UC), neutral close (NC), lower close (LC), lower neutral (LN), lower distant (LD), neutral distant (ND) and upper distant (UD). The PROQ-3 is only measuring negative relating for each relating position. The PROQ-3 has acceptable internal consistency ( $\alpha > .70$  for all scales) and its eight-factor structure is supported by factor analysis (Birtchnell et al., 2013; Kalaitzaki, Birtchnell, Hammond, & De Jong, 2015).

The Social Comparison Scale (SCS; Allan & Gilbert, 1995) is a self-report questionnaire that measures how individuals see themselves compared to social others in terms of social rank, attractiveness and belongingness. It consists of eleven items which are rated on a semantic differential response format (e.g., inferior-superior), using a scale of 1–10. Possible scores range from 11 to 110 with lower scores indicating feelings of low social status and rank. The scale has been used in numerous studies involving both clinical and community samples, demonstrating good validity and reliability ( $\alpha = .88$  to  $\alpha = .96$ ; Aderka, Weisman, Shahar, & Gilboa-Schechtman, 2009; Allan & Gilbert, 1995, 1997; Weisman, Aderka, Marom, Hermesh, & Gilboa-Schechtman, 2011), including studies with young people ( $\alpha = .91$ ) (Murphy et al., 2015).

The Social Connectedness Scale (mSCS; adapted from Lee & Robbins, 1995) is a self-report questionnaire which assesses an individual’s sense of connectedness and belongingness with their social environment. It consists of 8 items rated on 5-point Likert scale, ranging from “Strongly agree” = 1 to “Strongly disagree” = 6. A total score was calculated with scores ranging from 8 to 48, with higher scores reflecting greater sense of social connectedness with social others and society. SCS has been evaluated within a large sample of young adults and has demonstrated adequate internal reliability

( $\alpha > .91$ ; Arslan, 2018; Lee & Robbins, 1995, 2000), test-retest reliability ( $r = .96$ ; Lee & Robbins, 1995, 2000) and has support for convergent and divergent validity (Lee et al., 2001; Lee & Robbins, 1998, 2000).

The Psychosis Attachment Measure (PAM; Berry, Wearden, Barrowclough, & Liversidge, 2006) is a 16-item self-report questionnaire that measures avoidant and anxious attachment. It consists of two attachment style subscales, with eight items each. Participants rate how much they identify with statements about feelings, behaviours and thoughts concerning key relationships with others on a 4-point Likert-type scale, ranging from “Not at all” = 0 to “Very much” = 3. Scores for each subscale are calculated by averaging item scores. Higher scores reflect greater levels of insecure attachment. The two subscales have been found to be internally consistent, with Cronbach's alpha coefficients ranging from .70 to .82 and from .60 to .91 respectively (Gumley et al., 2014) and have demonstrated concurrent validity with other self-report measures of attachment in non-clinical samples (Berry et al., 2006). PAM has also been used with non-clinical and clinical samples, including young people (Berry et al., 2006, 2007, 2008; Korver-Nieberg et al., 2013).

The Brief Core Schema Scales (BCSS; Fowler et al., 2006) was used to measure the level of negative and positive schematic beliefs about self and others. BCSS is a 24-item self-report and consists of four subscales of six items, namely “Positive Self”, “Positive Others”, “Negative Self” and “Negative Others”. Each item is a belief (e.g., “Others are devious”) that the participant first rates as “YES”/“NO” to indicate if they hold the belief. If they do, then they rate the strength of the belief on a 4-point Likert scale from “Not at all” = 0 to “Believe it totally” = 4. Each subscale total score ranges from 0 to 24. BCSS has been used in both clinical and non-clinical populations (Addington & Tran, 2009; Fowler et al., 2006), in a CAMHS sample (Bird et al., 2017) and it has displayed good psychometric properties in young people ( $\alpha = .84$ ) (Noone et al., 2015).

#### **2.2.4.3 Voice-hearing measures.**

The Psychotic Symptom Rating Scales–Auditory Hallucinations Scale (PSYRATS-AH; Haddock et al., 1999) was used to assess the severity, distress and

characteristics of the voice-hearing experience. PSYRATS-AH is semi-structured interview consisting of eleven items relating to voice-hearing over the past week. All items are scored on a 5-point scale, from 0 (absent) to 4 (severe) and inquire about frequency, duration, location, loudness, beliefs about origin, negative content (amount/degree), distress (amount/intensity), disruption to individual's life and perceived controllability of the experience. According to recent structural equation modelling, there are four sub-scales: distress (amount and degree of negative content, amount and intensity of distress, controllability), frequency (frequency, duration and disruption), attribution (location and beliefs about origin of voices) and loudness (Woodward et al., 2014). The PSYRATS has previously demonstrated good reliability and validity with adult patients with schizophrenia spectrum disorders (Haddock et al., 1999; Steel et al., 2007) and first episode of psychosis (FEP) (Drake et al., 2007).

In this study, PSYRATS-AH was modified to include additional questions taken from the Auditory Vocal Hallucination Scale (AVHRS; Jenner & van de Willige, 2002) about the age of voice-hearing onset, number of voices, voices talking separately or simultaneously, hypnagogic and/or hypnopompic voices, form of address (first, second and/or third person). AVHRS has demonstrated good internal consistency in both clinical adult populations and non-clinical samples of young people (Bartels-Velthuis, van de Willige, Jenner, & Wiersma, 2012; Bartels-Velthuis, van de Willige, Jenner, Wiersma, et al., 2012; Bartels-Velthuis et al., 2011; Steenhuis et al., 2016).

The Beliefs about Voices Questionnaire-Revised (BAVQ-R; Chadwick, Lees, & Birchwood, 2000) is a 35-item self-report questionnaire used to assess beliefs about voices as well as emotional and behavioural responses to voices. Based on a factor analysis by Strauss et al. (2018), two subscales for beliefs about voices were used, persecutory beliefs (including malevolence and omnipotence) and benevolence beliefs, as they have shown excellent internal consistency ( $\alpha = .88$  and  $.87$  respectively). Response to voices was measured with two subscales, resistance and engagement, that were calculated to include both behavioural and emotional modes of response together, as they have demonstrated excellent internal consistency ( $\alpha = .87$  and  $.88$  respectively; Strauss et al., 2018). Items are rated on a 4-point Likert scale, from "Disagree" = 0 to "Strongly agree" = 3. Subscale scores were calculated as the mean scores of their items,

ranging from 0 to 3. Only the persecutory beliefs and resistance subscales were used for the purposes of this study. A recent study with young people who hear voices has found the BAVQ-R to be appropriate for use in this population, with adequate internal consistency estimates ( $\alpha > .71$ ; Cavelti et al., 2019b).

The Voice and You (VAY) (Hayward et al., 2008) is a 28-item self-report measure that was administered to record the interrelating between the participants and their predominant voice. If there was no predominant voice, participants were asked to respond considering their voice-hearing experience all together. The VAY is divided into four subscales. Two concern the voice's relating toward the hearer, voice dominance and voice intrusiveness with seven and five items respectively. The other two concern the way the hearer relates toward the main voice, namely hearer distance with seven items and hearer dependence with nine items. Items are scored on a 4-point Likert scale, ranging from "Nearly always true" = 0 and "Rarely true" = 3 and scoring for each subscale is calculated as the item total. The VAY has good internal consistency ( $\alpha > .75$ ) and test-retest reliability for all scales ( $r > .70$ ; Hayward et al., 2008).

### **2.2.5 Analysis Plan**

All analyses were carried out using SPSS (Version 25, IBM Corp., 2017).

#### **2.2.5.1 Data and assumption checking.**

##### ***Missing data.***

Missing data were evaluated using missing values analysis in order to identify any patterns in the missingness of data.

Independent sample t-tests, Mann-Whitney U tests and Fisher's exact tests were carried out to investigate whether missingness was related to any demographic or clinical presentation variables comparing those who did and did not complete the study measures. Where possible, bias-corrected and accelerated bootstrap intervals (BCa95%CI) using 2000 samples were calculated to ensure the robustness of the results due to the small size of the compared groups. A Bonferroni-corrected p-value (in this

case, p-value divided by the total number of comparisons,  $N = 50$ ) accounted for multiple comparisons. The adjusted p-value was  $p = .001$ .

#### ***Normality and assumption checking.***

To visually inspect the data distribution for normality and outlier cases, histograms and boxplots were created. To numerically spot issues with normality, the Shapiro-Wilk test was also used. This test was chosen as it is considered to be more powerful in detecting differences from normality compared to that of Kolmogorov-Smirnov and seemed more appropriate considering the size of the present sample (Thode, 2002).

##### ***2.2.5.1.1 Outliers.***

When outlier cases were identified, the researcher went back to the data collection materials and ensured that there were no data entry or instrument errors. Any outliers with absolute z-values between 3.29 and 1.96 were considered potential outliers. However, due to the small sample size it was considered that these rare cases might represent data coming from the population under investigation. Non-parametric tests or parametric tests with bootstrapping ( $N = 2000$ ) and bias corrected and accelerated confidence intervals were used where possible (Field, 2017).

##### ***2.2.5.1.2 Distribution shape.***

Data were screened for skewness and kurtosis through visual inspection of histograms and by z-scoring the skewness and kurtosis scores for each study variable. Any absolute z-score value greater than 1.96 indicated there is a significant skewness or kurtosis with level of significance of at least  $p < .05$ . Analysis with non-normally distributed variables were computed using robust statistical methods such as bootstrapping or non-parametric tests.

##### ***2.2.5.1.3 Power sample size.***

Considering the exploratory nature of the study and that most relationships between the variables of interest in the adult literature are of medium or large effect

sizes (Chadwick et al., 2000; Cole et al., 2017; Hayward, 2003; Hayward et al., 2008; Peters et al., 2012; Vaughan & Fowler, 2004), a sample of 34 voice-hearers was deemed adequate to identify such effects (Hulley et al., 2013).

#### ***2.2.5.1.4 Exploratory hypotheses testing plan.***

Hypothesis testing involved bivariate correlations and partial correlations to control for covariates where appropriate (see section 2.2.6).

Correlations were conducted between relating and responding to voices (VAY and BAVQ responding subscales) and voice-related distress (Hypothesis 1.1 and 1.2). Regarding hypotheses 2.1 to 2.6 correlation matrices were produced to investigate the relationships between persecutory beliefs about voices, relating to voices, voice characteristics (negative content, frequency and loudness), negative schematic beliefs about one's self or others, attachment avoidance and anxiety and voice-related distress. Exploratory hypothesis 3 was tested by comparing descriptive statistics for the types of relating to voices in young people with adult summary statistics. Hypotheses 4.1, 4.2 and 4.3 explored the association between relating to voices and persecutory beliefs about voices with relating to social others (relating positions, perceived social rank, social connectedness).

#### ***2.2.6 Covariates***

Due to the purpose of the study, age was tested as potentially significant demographic covariate of all tested relationships.

In the hypothesis 1.1, depression (BDI-II) and anxiety (BAI) were considered as covariates to explore the unique contribution of voice-hearing distress factors on distress that is mostly attributed to voices in the first hypothesis. BAVQ-R Persecutory beliefs were also controlled for to investigate the unique relationship between relating to voices and voice-related distress. For hypothesis 2.1, a partial correlation between persecutory beliefs about the voices and voice-related distress was conducted controlling for voice characteristics such as their content, frequency, and loudness.



## 2.3 Results

### 2.3.1 Sample characteristics

The tables below present the demographic and clinical characteristics of the sample (Table 1, Table 2, Table 3). In total,  $N = 28$  young people were recruited from CAMHS and  $N = 6$  from EIP services.

**Table 1.** *Sample characteristics and descriptive statistics ( $N = 34$ ).*

Sample characteristic	$N$ (%)	$M$ (Min- Max; $SD$ )
Age		16.28 (14-18.95; 1.09)
Gender		
Male	7 (20.59)	
Female	25 (73.53)	
Other	2 (5.88)	
Identified as transgender	3 (8.82)	
Sexual Orientation		
Heterosexual	15 (44.12)	
Lesbian	2 (5.88)	
Bisexual	10 (29.41)	
Other term	6 (17.65)	
Prefer not to say	1 (2.94)	
Ethnicity		
White British	29 (85.29)	
White Other	2 (5.88)	
Other	3 (8.82)	
Marital status		
Single	23 (67.65)	
In a long-term relationship/Cohabiting	10 (29.41)	
Prefer not to say	1 (2.94)	
Country of birth		
UK or Northern Ireland	31 (91.18)	
Other	3 (8.82)	
Accommodation type <sup>b</sup>		
Owner occupied	15 (45.45)	

Sample characteristic	<i>N</i> (%)	<i>M</i> (Min- Max; <i>SD</i> )
Rented (Privately)	8 (24.24)	
Rented (Local authority )	9 (27.27)	
Educational level		
None	22 (64.71)	
GCSEs or equivalent	9 (26.47)	
A level or equivalent	3 (8.82)	
Limited day-to-day activities due to disability		
Yes	6 (17.65)	
No	28 (82.35)	
Employment status <sup>a</sup>		
Student	31 (91.18)	
Employed part-time (paid)	9 (26.47)	
Religion		
Agnostic	8 (23.53)	
Atheist	17 (50.0)	
Christian	7 (20.59)	
Other	1 (2.94)	
Not wished to disclose	1 (2.94)	
Any self-reported MH diagnosis	24 (70.59)	
Self-reported diagnosis of Psychosis	5 (14.71)	
Taking any MH medication	24 (70.59)	
Having received any psychological therapy	31 (91.18)	
Having received any psychological therapy for voices <sup>c</sup>	8 (25)	
Type of MH service		
CAMHS	28 (82.35)	
EIP	6 (17.65)	

*Note.* <sup>a</sup>multiple responses were allowed, with *N* = 7 reporting two employment statuses; <sup>b</sup>Missing *N* = 1; <sup>c</sup>Missing *N* = 2; *N* = Number of participants; *M* = Mean; *SD* = Standard Deviation; MH = Mental health; CAMHS = Child and Adolescent Mental health services; EIP = Early Intervention in Psychosis. Categories with count of *N* = 1 were suppressed to protect participant anonymity.

**Table 2.** *Descriptive statistics of clinical measures in the sample (N = 34).*

Sample characteristic	N (Valid %)	M (Min- Max; SD)
<b>CAARMS<sup>a</sup></b>		
CAARMS severity		64.57 (31-110; 21.48)
CAARMS distress		56.80 (8.25- 100; 21.20)
CAARMS Aggression severity		8.83 (0-16; 5.35)
CAARMS Suicidality severity		8.80 (0 -24; 6.59)
<b>UHR status</b>		
Not at risk	1 (2.94)	
Attenuated Psychotic Symptoms	2 (5.88)	
Over psychotic threshold	31 (91.18)	
<b>SCID Psychotic disorders</b>		
Not meeting criteria/Not applicable	4 (11.76)	
Schizophrenia	8 (23.53)	
Schizoaffective	2 (5.88)	
Psychotic Disorder Not Otherwise Specified	20 (58.82)	
<b>MINI diagnostic categories<sup>b</sup></b>		
MDE	9 (28.13)	
Past MDE	28 (87.50)	
Manic Episode	0	
Past Manic Episode	9 (28.13)	
Hypomanic Episode	0	
Past Hypomanic Episode	1 (3.13)	
Hypomanic Symptoms	1 (3.13)	
Past Hypomanic Symptoms	0	
Panic Disorder	12 (38.71)	
Past Panic disorder	19 (61.29)	
Agoraphobia	9 (29.03)	
Social Anxiety	19 (61.29)	
Obsessive compulsive disorder	6 (19.35)	
Post-traumatic stress disorder	7 (22.58)	
Alcohol Use disorder 12 months	7 (22.58)	
Substance Use Disorder 12months	7 (22.58)	
Anorexia Nevrosa (Restricting)	1(3.23)	
Bulimia Nevrosa	4 (12.90)	
Binge Eating	0	
Generalised Anxiety disorder	2 (6.45)	

*Note.* <sup>a</sup>Missing N = 4 <sup>b</sup> Missing to N = 2 from MINI MDE to Past Hypomanic Symptoms and

$N = 3$  missing for the rest of MINI categories;  $N$  = Number of participants;  $M$  = Mean;  $SD$  = Standard Deviation; CAARMS = Comprehensive Assessment of At-Risk Mental States; UHR = ultra high-risk for psychosis; SCID = Structured Clinical Interview for Axis-I DSM-IV Disorders; MINI = Mini International Neuropsychiatric Interview; MDE = Major Depressive Episode

**Table 3.** *Descriptive statistics of voice-hearing characteristics in the sample ( $N = 34$ ).*

Sample characteristic	$N$ (valid %)	$M$ (Min- Max; $SD$ )
Years since voice onset		4.79 (0.58-15; 3.88)
Number of voices <sup>a</sup>		36.06 (1-1000; 171.21)
Have a main voice <sup>b</sup>	25 (75.76)	
Voice synchronicity <sup>b</sup>		
Always one voice	10 (30.30)	
Speaking separately	4 (12.12)	
Speaking at the same time	19 (57.58)	
Voice duration		
Few seconds	4 (11.76)	
Several minutes	9 (26.47)	
At least an hour	3 (8.82)	
Hours at a time	18 (52.94)	
Voice frequency		
At least once a week	7 (20.59)	
At least once a day	8 (23.53)	
At least once an hour	4 (11.76)	
Continuously or almost continuously	15 (44.12)	
Voice location		
Inside head only	8 (23.53)	
Outside head, close to ears (+inside the head could be present)	17 (50)	
Outside head way from ears (+inside the head or close to ears could be present)	7 (20.59)	
Outside only	2 (5.88)	
Loudness		
Lower than own voice	4 (11.76)	
Same as own voice	12 (35.29)	
Louder than own voice	5 (14.71)	
Shouting	13 (38.24)	
Beliefs about voice origin		
Internally generated only	14 (41.18)	
<50% from external causes	16 (47.06)	

Sample characteristic	<i>N</i> (valid %)	<i>M</i> (Min- Max; <i>SD</i> )
>50% (less than 100%) from external causes	2 (5.88)	
Externally generated only	2 (5.88)	
Amount of negative content		
None	2 (5.88)	
Minority (>10 %<50%)	5 (14.7)	
Majority (>50%)	13 (38.2)	
All	14 (41.2)	
Degree of negative content		
No negative content	2 (5.88)	
Personal verbal abuse, comments on behaviour	1 (2.94)	
Personal verbal abuse, relating to self-concept	7 (20.59)	
Personal threats to self/others or extreme instructions to harm self/others	24 (70.59)	
Amount of distress		
Not at all	1 (2.94)	
<10% distressing	2 (5.88)	
<50% distressing	8 (23.53)	
>50% distressing	12 (35.29)	
Always distressing	11 (32.35)	
Intensity of distress		
Not at all	2 (5.88)	
Slightly	6 (17.65)	
Moderate degree	6 (17.65)	
Very distressing	18 (52.94)	
Extremely distressing	2 (5.88)	
Disruption to life due to voices		
No disruption	3 (8.82)	
Minimal	15 (44.12)	
Moderate	16 (47.12)	
Controllability of voices		
Over majority of occasions	3 (8.82)	
Over half of occasions	2 (5.88)	
Over minority of occasions	6 (17.65)	
No control	23 (67.65)	
Timing		

Sample characteristic	<i>N</i> (valid %)	<i>M</i> (Min- Max; <i>SD</i> )
Hypnopompic/ Hypnagogic only	0	
At all times	34 (100)	
Form of address <sup>c</sup>		
1 <sup>st</sup> person	10 (29.41)	
2 <sup>nd</sup> person	34 (100)	
3 <sup>rd</sup> person	14 (41.18)	
Usual time of the day voices start		
As soon as waking up	2 (5.88)	
Afternoon	2 (5.88)	
Evening	4 (11.76)	
Just before bed	2 (5.88)	
Any time	24 (70.59)	
Usual situation voices start		
When alone	5 (14.71)	
Around a lot of people	2 (5.88)	
Always the same	27 (79.41)	
Familiarity of voice identity <sup>c</sup>		
Familiar	9 (26.47)	
Strange	19 (55.88)	
Sometimes/not sure	9 (26.47)	
Familiar, but not how they sound in person	2 (5.88)	

*Note.* <sup>a</sup> Median = 2; <sup>b</sup> missing *N* = 1; <sup>c</sup> Multiple responses allowed, + = “and”; *N* = Number of participants; *M* = Mean; *SD* = Standard Deviation.

### 2.3.2 Data and assumption checking

#### 2.3.2.1 Missing data.

Missing Values analysis indicated that the highest rate of missing cases was 11.8%.

Mann-Whitney U tests, independent samples t- tests and Fisher’s exact tests did not find any differences between the completers and non-completers of any variables, *ps* > .001 (Bonferroni corrected critical p-value).

Analysis was carried out with the original data using available-case analysis.

Descriptive statistics and the missing cases for all the main study variables are illustrated in the Table 4.

**Table 4.** *Descriptive statistics and missingness rates for main study variables for voice-hearers (N =34).*

Sample characteristic	<i>M</i> (Min- Max; <i>SD</i> )	Overall		Not	
		Missing		administered	
		<i>N</i>	%	<i>N</i>	%
<b>BCSS</b>					
Negative Self beliefs	12.97 (0 -24; 6.45)	2	5.9	1	2.9
Negative Other beliefs	12.58 (0-23; 5.46)	3	8.8	1	2.9
BDI-II total	38.13 (7- 58; 11.58)	4	11.8	0	0
BAI total	33.59 (6-58; 14.31)	0	0	0	0
<b>PROQ-3</b>					
PROQ-3 – UN	6.09 (1-15; 4.23)	1	2.9	1	2.9
PROQ-3 – UC	7.27 (0-15; 4.83)	1	2.9	1	2.9
PROQ-3 – NC	9.06 (2-15; 4.55)	1	2.9	1	2.9
PROQ-3 – LC	11.97 (0-15; 3.96)	1	2.9	1	2.9
PROQ-3 – LN	6.64 (0-15; 4.34)	1	2.9	1	2.9
PROQ-3 – LD	7.52 (0-15; 3.78)	1	2.9	1	2.9
PROQ-3 – ND	10.18 (0-15; 4.26)	1	2.9	1	2.9
PROQ-3 – UD	7.09 (0-15; 6.43)	1	2.9	1	2.9
PROQ-3 Overall Negative relating	65.82 (28 -117; 17)	1	2.9	1	2.9
mSCS Belongingness	10.81 (3-22;5.40)	2	5.9	2	5.9
mSCS Total	39.03 (12-90; 18.51)	2	5.9	2	5.9
SCS Total	21.90 (8 -46; 10.56)	4	11.8	2	5.9
PSYRATS Frequency	7.21 (2-10; 2.40)	0	0	0	0
PSYRATS Distress	15.26 (5-19; 3.67)	0	0	0	0
PSYRATS Attribution	3.85 (2-7; 1.26)	0	0	0	0
PSYRATS Loudness	2.79 (1-4; 1.09)	0	0	0	0
PSYRATS Overall	29.12 (11-38; 6.45)	0	0	0	0
BAVQ-R Persecutory Beliefs	1.96 (0.25- 3; .66)	3	8.8	0	0
BAVQ-R Resistance	1.74 (.11-2.89; .68)	1	2.9	0	0
VAY Voice dominance	15.74 (2-21; 5.40)	0	0	0	0
VAY Voice intrusiveness	8.65 (0-15; 4.78)	0	0	0	0
VAY Hearer distance	13.24 (1-21; 5.97)	0	0	0	0
VAY Hearer dependence	7.34 (0-26; 6.72)	2	5.9	0	0
PAM Attachment Anxiety	1.99 (.5 -3; .74)	0	0	0	0
PAM Attachment Avoidance	2.11 (.63 -3; .63)	1	2.9	0	0

---

*Note.*  $N$  = Number of participants;  $M$  = Mean;  $SD$  = Standard Deviation; BCSS = Brief Core Schema Scales; BDI-II = Beck's Depression Inventory - II; BAI = Beck Anxiety Inventory; PROQ-3 = shortened Person's Relating to Others Questionnaire; SCS = Social Comparison Scale; mSCS = Social Connectedness Scale; PSYRATS = Psychotic Symptom Rating Scales; BAVQ-R = Beliefs about Voices Questionnaire-Revised; VAY = The Voice and You; PAM = Psychosis Attachment Measure.

### **2.3.2.2 Normality and assumption testing.**

#### **2.3.2.2.1 Outliers.**

Outliers were z-scored and any absolute z-values higher than 1.96 were considered potential outliers. The main analyses were carried out with and without outlier cases. Results were compared to identify the impact of potential outlier cases on the analysis.

#### **2.3.2.2.2 Distribution issues.**

Variables with skewness or /and kurtosis issues were PROQ-3 UN, NC, LC, ND subscales and overall PROQ-3 negative relating, PSYRATS distress, PSYRATS Negative content (severity and amount), VAY Voice dominance and Hearer dependence.

Any hypothesis testing including these variables were run using Spearman's rho correlations to minimise bias (Hypotheses 1.1, 1.2, 2.1, 2.3, 2.4, 2.6, 4.1, 4.2 and 4.3).

Although BAVQ-R Persecutory beliefs, BCSS Negative Self and BCSS Negative Other variables did not show significant issues with normality, the assumption of homoscedasticity between BAVQ-R Persecutory beliefs and BCSS Negative Other beliefs was violated and thus Spearman's rho correlations were conducted to test the hypothesis 2.2.

Parametric correlation assumptions were met for testing hypothesis 2.5 so Pearson's correlations (Bootstrapped  $N = 2000$ , BCa95%CI) were conducted.

#### **2.3.2.2.3 Covariates.**



Age did not associate significantly with any study variables ( $ps > .05$ ).

Spearman's rho correlational analysis indicated that BDI-II was significantly correlated BAVQ-R Persecutory beliefs ( $r = .70, p < .001$ ), VAY Voice intrusiveness ( $r = .58, p = .001$ ), BAVQ-R Resistance ( $r = .45, p = .014$ ), VAY Voice dominance ( $r_s = .57, p = .001$ ), PROQ-3 ND ( $r_s = .50, p = .006$ ), PROQ-3 UD ( $r_s = .37, p = .046$ ), PROQ-3 overall negative relating ( $r_s = .48, p = .009$ ) and with mSCS ( $r_s = -.53, p = .005$ ).

BAI was significantly related to BAVQ-R Persecutory beliefs ( $r = .51, p = .003$ ), BAVQ-R Resistance ( $r = .60, p < .001$ ), VAY Voice intrusiveness ( $r = .46, p = .006$ ), VAY Hearer distance ( $r = .41, p = .017$ ), PAM Attachment Anxiety ( $r = .38, p = .025$ ), PROQ-3 LN ( $r = .51, p = .003$ ), VAY Voice dominance ( $r_s = .40, p = .020$ ), PROQ-3 LC ( $r_s = .41, p = .018$ ), PROQ-3 – ND ( $r_s = .41, p = .018$ ) and PROQ-3 Overall Negative relating ( $r_s = .48, p = .005$ ).

Therefore, BDI-II and BAI were tested as covariates in Hypothesis 1.1.

### 2.3.3 Exploratory hypotheses testing

#### 2.3.3.1 Relating to voices and voice-related distress.

***Hypothesis 1.1 Voice dominance and intrusiveness, hearer's distance and resistance mode of responding will be related to voice-related distress.***

Voice dominance, voice intrusiveness and a resistance mode of responding were significantly correlated with voice-related distress ( $r_s = .47, p = .005$ ,  $r_s = .42, p = .014$ ,  $r_s = .40, p = .021$  respectively). However, hearer's distance was not related to voice-related distress ( $r_s = .25, p = .157$ ). After controlling for BDI-II and BAI individually to isolate the effect of relating variables on distress coming specifically from the voice-hearing, only voice dominance was significantly related to voice-related distress with  $r_s = .42, p = .024$  and  $r_s = .39, p = .024$ , respectively.

To test for the unique contribution of relating to voices to voice-related distress, BAVQ-R Persecutory beliefs were taken into account with or without BAI and BDI-II.

Results showed that none of the hypothesised relationships were any longer significant ( $p > .05$ ) (see Figure 3).

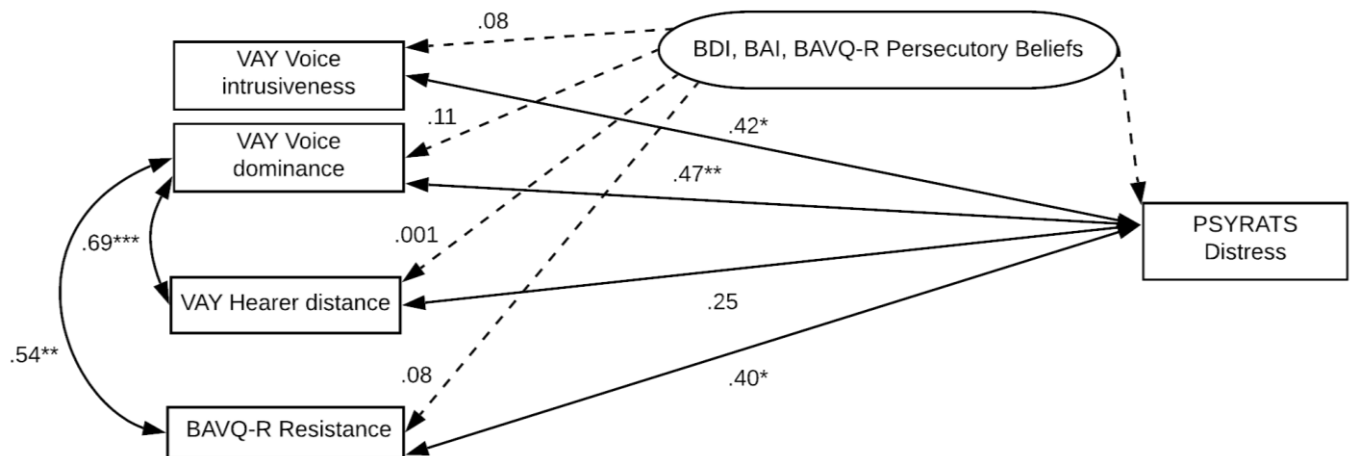
After controlling for the effect of age, voice dominance, voice intrusiveness and resistance to voices were still significantly associated with voice-related distress. Excluding potential outliers ( $N = 3$ ) from the analysis changed all correlations to non-significant ( $p > .05$ ).

***Hypothesis 1.2 Hearer's distancing from the voices and using a resistance mode of responding will be related to voice dominance.***

Hearer's distance ( $r_s = .69$ ,  $p < .001$ ) and resistance ( $r_s = .54$   $p = .001$ ) was significantly correlated with voice dominance (see Figure 1). Removing potential outlier cases ( $N = 2$ ) from the analysis and controlling for age did not have any significant impact on the results.

Figure 3 provides an overview of the tested relationships in Hypothesis 1.1 and 1.2.

**Figure 3** *Representation of the relationships between voice dominance and intrusiveness, hearer distance, resistance and voice-related distress,  $N=34$ . Dotted lines represent partial Spearman's rank correlations, controlling for anxiety, depression and persecutory beliefs (\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ). Partial correlations included  $N=23$  due to pairwise deletion. Any paired associations between BAVQ-R Resistance and other variables included  $N=33$ .*



### Other cognitive and behavioural factors of voice-related distress.

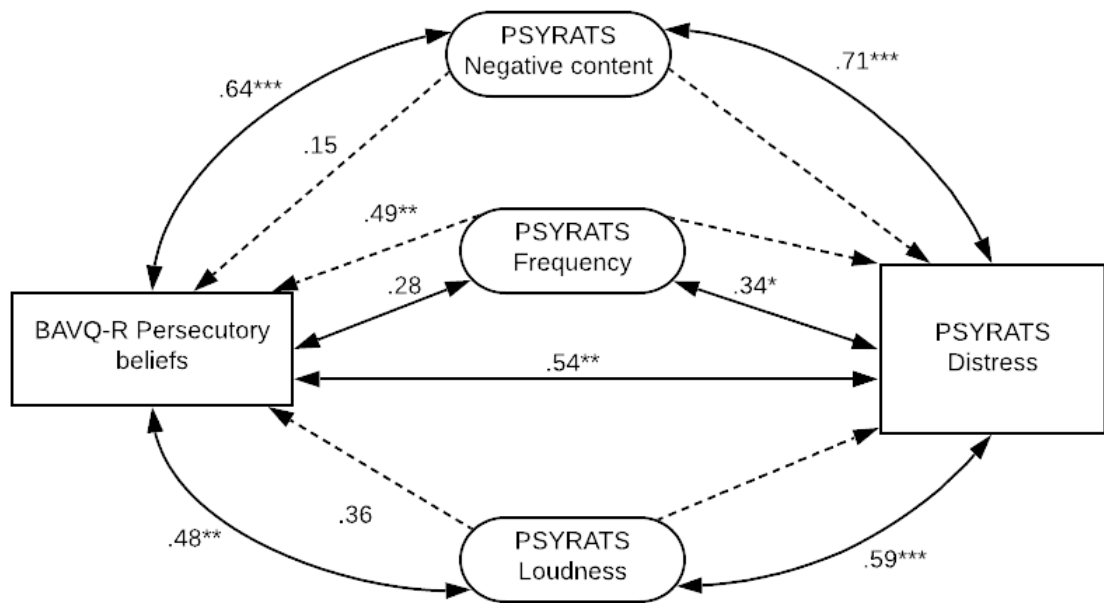
***Hypothesis 2.1 Persecutory beliefs about the voices will be related to voice-related distress, independent from other voice characteristics such as their content, frequency and loudness.***

Persecutory beliefs were significantly related with voice-related distress,  $r_s = .54$ ,  $p = .002$ ,  $N = 31$ . When controlling for voice frequency, persecutory beliefs were still significantly related with voice-related distress, with  $r_s = .49$ ,  $p = .006$ . In contrast, when loudness or negative voice content were factored in, the relationship between persecutory beliefs and voice-related distress was no longer significant ( $r_s = .36$ ,  $p = .052$  and  $r_s = .15$ ,  $p = .418$  respectively). Adjusting for all three voice characteristics at the same time resulted in a non-significant relationship between persecutory beliefs and voice-related distress ( $r_s = -.04$ ,  $p = .827$ ,  $N = 26$ ) (Figure 4).

Removing potential outlier cases ( $N = 2$ ) and adjusting for the effect of age did not impact on the significance of the reported relationships.

**Figure 4.** Representation of the relationships between persecutory beliefs, voice characteristics and voice-related distress. Dotted lines represent partial Spearman's rank correlations, controlling for negative content, frequency and loudness individually (\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ). Partial correlations included  $N=28$  due to pairwise deletion.

**Hypothesis 2.3. Negative schematic beliefs about the self and the world will**



*correlate with voice-related distress and negative voice content.*

In contrast to the hypotheses 2.2 and 2.3, negative self and other schematic beliefs were not significantly correlated with persecutory beliefs about voices, negative voice content or voice-related distress ( $ps > .05$ ). However, negative schematic self-beliefs showed a weak to moderate relationship with persecutory beliefs about voices that approached statistical significance ( $r_s = .33, p = .077$ ).

**Hypothesis 2.4 Attachment anxiety and avoidance will be related to voice-related distress.**

Additionally, hypothesis 2.4 was not supported. Attachment avoidance and anxiety were not significantly related with voice-related distress ( $ps > .05$ ).

***Hypothesis 2.5 Negative beliefs about the self and others will be associated with attachment anxiety and avoidance.***

Pearson's correlations (Bootstrapped  $N = 2000$ , BCa95%CI) indicated that negative self and other schematic beliefs were not related to attachment anxiety ( $ps > .05$ ). However, they were both significantly related to attachment avoidance, with  $r = .50$ ,  $p = .007$ , BCa95%CI[.20, .71] and  $r = .72$ ,  $p < .001$ , BCa95%CI[.46, .86] respectively.

Table 5 summarises the tested relationships in Hypothesis 2.2-2.5 whereas Figure 5 depicts the hypothesised voice-hearing model of distress resulting from the synthesis of these hypotheses. The presented model shows that avoidant attachment relates to negative schematic beliefs about others and oneself. However, anxious attachment, avoidant attachment and negative schematic beliefs were not directly related to persecutory beliefs about the voices nor to voice-related distress. Additionally, negative schematic beliefs did not seem to significantly influence the amount and intensity of negative voice content, as hypothesised.

Removing potential outlier cases ( $N = 2$ ) or taking into account the effect of age did not influence significantly any of the reported relationships.

**Table 5.** *Correlation Matrix for Schematic Beliefs, Attachment, Persecutory beliefs, Voice content and distress presenting Spearman's rho correlation coefficients ( $N = 34$ ).*

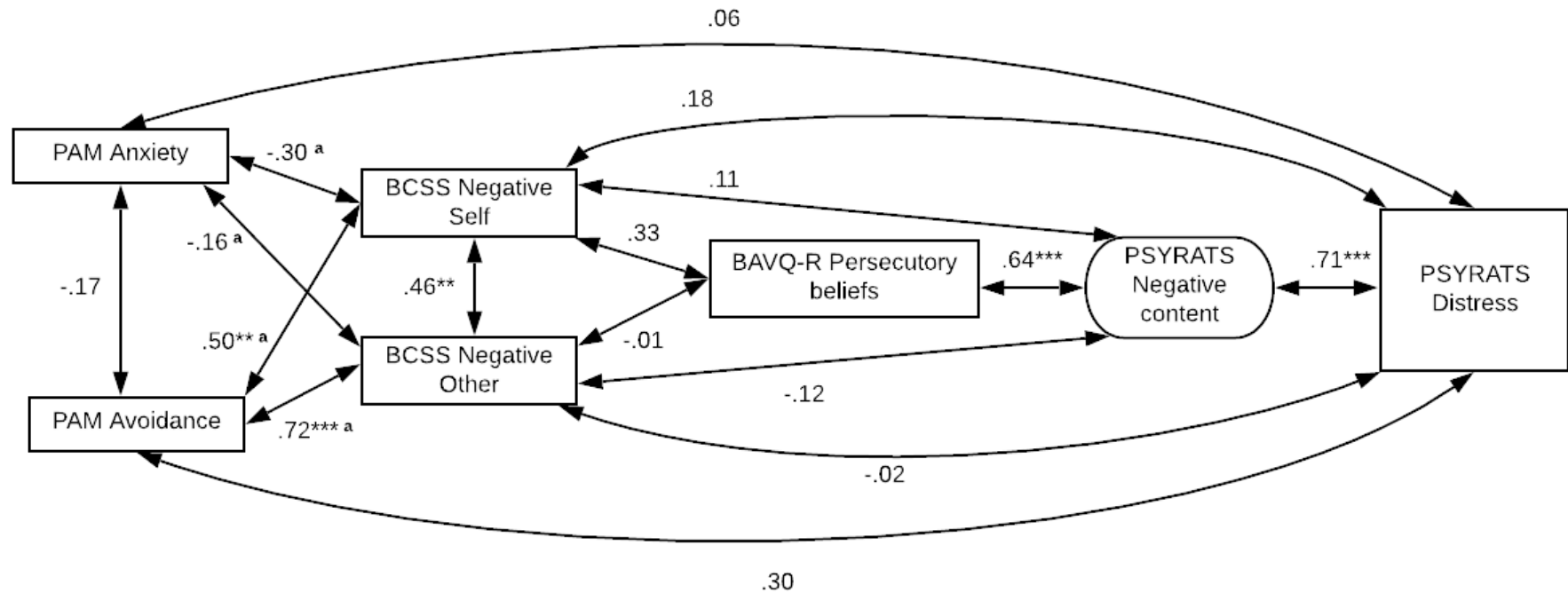
Variables	1	2	3	4	5	6	7
1 BAVQ-R Persecutory Beliefs	——						
2 PSYRATS Negative Content	.64*** <i>N</i> = 31	——					
3 PSYRATS Distress	.54** <i>N</i> = 31	.71*** <i>N</i> = 34	——				
4 BCSS Negative Other	-.01 <i>N</i> = 29	-.12 <i>N</i> = 31	-.02 <i>N</i> = 31	——			
5 BCSS Negative Self	.33 <i>N</i> = 30	.11 <i>N</i> = 32	.18 <i>N</i> = 32	.46** <i>N</i> = 31	——		
6 PAM Anxiety	.24 <i>N</i> = 31	.16 <i>N</i> = 34	.06 <i>N</i> = 34	-.16 <sup>a</sup> <i>N</i> = 28	.30 <sup>a</sup> <i>N</i> = 28	——	
7 PAM Avoidance	.13 <i>N</i> = 30	.15 <i>N</i> = 33	.3 <i>N</i> = 33	.72*** <sup>a</sup> <i>N</i> = 28	.50*** <sup>a</sup> <i>N</i> = 28	-.17 <i>N</i> = 33	——

*Note.* BAVQ-R = Beliefs about Voices Questionnaire-Revised; PSYRATS = Psychotic Symptom Rating Scales; BCSS = Brief Core Schema Scales; PAM = Psychosis Attachment Measure

<sup>a</sup> Pearson's *r* correlation coefficient (Bootstrapped *N* = 2000, BCa95%CI) reported instead.

\* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001.

**Figure 5.** Representation of the relationships between persecutory beliefs, schematic beliefs, negative voice content, attachment styles and voice-related distress. Correlation coefficients are taken from Spearman's rho correlations.<sup>a</sup> Pearson's *r* correlation coefficient (Bootstrapped *N* = 2000, BCa95%CI) (\**p* < .05, \*\**p* < .01, \*\*\**p* < .001).



***Hypothesis 2.6 Attachment anxiety will be associated with voice intrusiveness and hearer dependence whereas attachment avoidance will be associated with voice dominance and hearer distance.***

As shown in Table 6, Spearman's rho correlations indicated that hypothesis 2.6 was not supported. Attachment anxiety was not significantly related with voice intrusiveness and hearer dependence and attachment avoidance was not significantly associated with voice dominance and hearer distance ( $ps > .05$ ). However, attachment anxiety was related significantly to voice dominance,  $r_s = .34, p = .049$ .

After excluding potential outlier cases ( $N = 2$ ), attachment anxiety was no longer significantly associated with voice dominance,  $r_s = .26, p = .160$ . Controlling for age did not have a significant impact on the correlation estimates.

**Table 6.** *Correlation Matrix for PAM and VAY with Spearman's rho correlation coefficients ( $N=34$ ).*

Variables	1	2	3	4	5	6
1 PAM Anxiety	_____					
2 PAM Avoidance	-.17 $N = 33$	_____				
3 VAY Hearer's dependence	-.19 $N = 32$	.31 $N = 31$	_____			
4 VAY Hearer's distance	.13 $N = 34$	-.02 $N = 33$	-.28 $N = 32$	_____		
5 VAY Voice intrusiveness	-.004 $N = 34$	.24 $N = 33$	.16 $N = 32$	.31 $N = 34$	_____	
6 VAY Voice dominance	.34* $N = 34$	.08 $N = 33$	-.09 $N = 32$	.69*** $N = 34$	.46** $N = 34$	_____

*Note.* PAM = Psychosis Attachment Measure; VAY = The Voice and You.  
\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .



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### 2.3.3.2 Relating to voices in young people vs adults.

*Hypothesis 3. Relating from a position of distance will be the prominent way of relating to voices in a clinical population.*

Exploration of the mean scores for the VAY suggested that participants related to their predominant voice primarily from a position of distance ( $M = 13.24$ ,  $SD = 5.97$ ), in response to a voice perceived as dominant ( $M = 15.74$ ,  $SD = 5.40$ ). The mean score for hearer dependence was lower ( $M = 7.34$ ,  $SD = 6.72$ ), indicating that participants may not make extensive use of this relating style to their voices.

In order to compare this sample with clinical adult samples, available summary data were taken from three studies, Hayward et al. (2008), Sorrell et al. (2010) and Dannahy et al. (2011) as presented collectively in Hayward et al. (2016). The estimates used for the analysis were the mean of averages and the mean of standard deviations for the three adult samples.

As illustrated in Table 7, independent samples t-tests showed that hearer dependence and voice intrusiveness were lower whereas hearer distance and voice dominance were significantly higher compared to the adult samples ( $ps < .05$ ). The hypothesis was supported although it seems that young voice-hearers might adopt a more distancing and a less dependent relating style toward their voices compared to adults.

**Table 7.** Independent sample *t*-tests comparing the means of the VAY subscales between the present sample and existing adult samples.

VAY subscale (min-max)	<i>n</i>	<i>M</i> ( <i>SD</i> )	<i>t</i>	<i>df</i>	<i>p</i>
Hearer Dependence (0- 27)					
Present study	32	7.34 (6.72)			
Adult studies	89	16.14 (6.00)	-6.53	119	<.001
Hearer Distance (0-21)					
Present study	34	13.24 (5.97)			
Adult studies	89	9.84 (4.42)	3.02	121	0.003
Voice Dominance (0 -21)					
Present study	34	15.74 (5.40)			
Adult studies	89	7.78 (5.98)	7.1	121	<.001
Voice Intrusiveness (0-15)					
Present study	34	8.65 (4.78)			
Adult studies	89	14.65 (4.80)	-6.22	121	<.001

*Note.* VAY = The Voice and You, *M* = Mean, *SD* = Standard Deviation.

### 2.3.3.3 Relating to voices and relating to others.

***Hypothesis 4.1 Relating from a position of distance with the voices will be related to a neutral distant (suspicious, uncommunicative, self-reliant) and lower distant (subservient, withdrawn) relating style with others while relating from a position of dependence with the voices to a lower close (fear of rejection and disapproval) and lower neutral (helpless, shunning responsibility, self-denigrating) and neutral close (fear of separation and of being alone) with social others.***

Contrary to the hypothesis, correlations between the PROQ-3 and VAY hearer variables showed that neutral close relating (fear of separation and of being alone) (NC PROQ-3) was related to hearer distance ( $r_s = .37$ ,  $p = .032$ ). Additionally, neutral distant (suspicious, uncommunicative and self-reliant) and upper distant types of relating (sadistic, intimidating and tyrannising) (ND and UD PROQ-3) related significantly to hearer dependence with  $r_s = .494$ ,  $p = .005$  and  $r_s = .56$ ,  $p = .001$ , respectively.

When controlling for the effect of age, the same relationships remained significant. Excluding potential outlier cases ( $N = 5$ ) from the analysis made all relationships between PROQ-3 and VAY variables statistically non-significant.

***Hypothesis 4.2 Relating from a position of dependence with the voices will be negatively related to social connectedness (overall mSCS) and social belongingness (mSCS belongingness).***

Non-parametric associations were conducted between social connectedness (mSCS), and social belongingness (mSCS belongingness subscale) with the two VAY hearer subscales.

Results suggested that using greater dependence relating styles toward the voices was related to lower perceived social belongingness and connectedness, with  $r_s = -.45, p = .014$  and  $r_s = -.53, p = .004$ , respectively.

Controlling for age did not have a significant impact on these relationships, whereas removing potential outliers ( $N = 2$ ) led to a non-significant association between social belongingness and hearer dependence ( $p > .05$ ).

***Hypothesis 4.3 Perceiving the voice as dominant, intrusive (VAY) and powerful (BAVQ-R Persecutory beliefs) will be related lower perceived social rank (SCS).***

In contrast to the last hypothesis, perceiving the voice as dominant, intrusive or powerful was not related to lower perceived social rank ( $ps > .05$ , Table 8). Taking into account the effect of age did not influence the examined relationships.

**Table 8.** *Correlation Matrix for voice intrusiveness, voice dominance, persecutory beliefs about voices and perceived social rank presenting Spearman's rho correlation coefficients (N=34).*

Variables	1	2	3	4
1 VAY Voice intrusiveness	—			
2 VAY Voice Dominance	.46** N = 34	—		
3 BAVQ-R Persecutory beliefs	.72*** N = 31	.80*** N = 31	—	
4 SCS	-.18 N = 32	-.29 N = 32	-.21 N = 30	—

*Note.* VAY = The Voice and You; BAVQ-R = Beliefs about Voices Questionnaire-Revised; SCS = Social Comparison Scale.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

## **2.4 Discussion**

This study explored several well-established links of the cognitive-interpersonal adult model of voice-hearing in a clinical sample of young voice-hearers, irrespective of diagnosis. Although some links were not supported, overall, the results indicate that the model might be applicable to the understanding of voice-hearing in youth (see Table 9 below).

**Table 9.** *Summary of the cognitive-interpersonal model of AVH exploratory hypotheses and hypotheses exploration outcomes.*

Hypothesis	Outcome	Decision
<b>Relating to voices and voice-related distress</b>		
<i>Hypothesis 1.1</i> Voice dominance and intrusiveness, hearer's distance and resistance mode of responding will be related to voice-related distress.	Voice dominance, voice intrusiveness and a resistance mode of responding were significantly correlated with voice-related distress. Hearer's distance was not related to voice-related distress. Persecutory beliefs were taken into account with or without depression and anxiety levels. Results showed that none of the hypothesised relationships were any longer significant.	Partially supported
<i>Hypothesis 1.2</i> Hearer's distancing from the voices and using a resistance mode of responding will be related to voice dominance.	Hearer's distance and resistance was significantly correlated with voice dominance	Supported
<b>Other cognitive and behavioural factors of voice-related distress</b>		
<i>Hypothesis 2.1</i> Persecutory beliefs about the voices will be related to voice-related distress, independent from other voice characteristics such as their content, frequency, and loudness.	Persecutory beliefs were significantly related with voice-related distress when controlling for voice frequency. Controlling for the effect of loudness or negative voice content rendered the relationship between persecutory beliefs and voice-related distress statistically non-significant.	Partially supported
<i>Hypothesis 2.2</i> Persecutory beliefs about the voices will be related to negative self and other schemas.	Persecutory beliefs about voices were not significantly related to negative self or other schemas. A trend was found in the relationships with negative self-schemas.	Rejected
<i>Hypothesis 2.3</i> Negative schematic beliefs about the self and the world will correlate with voice-related distress and negative voice content.	Negative self and other schematic beliefs were not significantly correlated with negative voice content or voice-related distress.	Rejected

*Hypothesis 2.4* Attachment anxiety and avoidance will be related to voice-related distress.

Attachment avoidance and anxiety were not significantly related with voice-related distress

Rejected

*Hypothesis 2.5* Negative beliefs about the self and others will be associated with attachment anxiety and avoidance.

Negative self and other schematic beliefs were not related to attachment anxiety, but both were significantly related to attachment avoidance.

Partially supported

*Hypothesis 2.6* Attachment anxiety will be associated with voice intrusiveness and hearer dependence whereas attachment avoidance will be associated with voice dominance and hearer distance.

Attachment anxiety was not significantly related with voice intrusiveness and hearer dependence and attachment avoidance was not significantly associated with voice dominance and hearer distance. However, attachment anxiety was related significantly to voice dominance (marginally).

Rejected

### Relating to voices in young people vs adults

*Hypothesis 3* Relating from a position of distance will be the prominent way of relating to voices in a clinical population.

Participants primarily related to voices from a position of distance, and primarily perceived the voice as dominant.

Supported

### Relating to voices and relating to others

*Hypothesis 4.1* Relating from a position of distance with the voices will be related to a neutral distant (suspicious, uncommunicative, self-reliant) and lower distant (subservient, withdrawn) relating style with others while relating from a position of dependence with the voices to a lower close (fear of rejection and disapproval) and lower neutral (helpless, shunning responsibility, self-denigrating) and neutral close (fear of separation and of being alone) with social others.

Neutral close relating (fear of separation and of being alone) was related to hearer distance. Neutral distant (suspicious, uncommunicative and self-reliant) and upper distant types of relating (sadistic, intimidating and tyrannising) were related significantly to hearer dependence.

Rejected

*Hypothesis 4.2* Relating from a position of dependence with the voices will be negatively related to social connectedness, and social belongingness.

Greater dependence relating styles toward the voices was related to lower perceived social belongingness and connectedness.

Supported

*Hypothesis 4.3* Perceiving the voice as dominant, intrusive, and powerful will be related lower perceived social rank.

Perceiving the voice as dominant, intrusive, or powerful was not related to lower perceived social rank.

Rejected





### ***2.4.1 Relating to voices and voice-related distress.***

The first set of exploratory hypotheses, examining associations between relating to voices and distress was partially supported. The more dominant and intrusive the voices were perceived to be, the greater the voice-related distress young people experienced. This is in line with previous studies focusing on relating with voices in adults (Hayward et al., 2008; León-Palacios et al., 2015; Sorrell et al., 2010; Vaughan & Fowler, 2004).

Moreover, in contrast to the initial exploratory hypothesis, hearer's distance was not significantly related to voice-related distress, although resistive responding (emotional and behavioural) was. A reason for this finding could be the conceptual difference between the two constructs, with resistance representing a mode of responding to the occurrence of voice-hearing rather than a relating position toward the voices. A closer inspection of the BAVQ-R resistance (Chadwick et al., 2000) and VAY hearer distance subscales (Hayward et al., 2008) shows that resistance includes statements describing a non-compliant (e.g., refusing to follow with voice commands) and hostile (e.g., shouting to the voices) behavioural response and a negative emotional response (e.g., anxiety, anger, fear, sadness) toward the voices, whereas hearer distance represents a suspicious, uncommunicative, and withdrawn mode of relating to the voices (e.g. "I do not like to get too involved with my voice"). Additionally, resistance does not seem to require the existence of an interpersonal relationship with the voice(s) whereas distance does. So, young people might not perceive themselves as relating to voices, especially those voices that they perceive as dominant and intrusive. Thus, the VAY hearer distance items might not feel relevant to their experience and/or it might be difficult for them to keep a distance from their difficult voices. This seems to be consistent with young people's narratives of negative, controlling, "haunting" voices lacking a relational reciprocity compared to accounts of pleasant voices (Parry & Varese, 2020). It could also be the case that although hearer distance is linked with distress, this was not apparent here, due to insufficient statistical power.

The correlation of greater resistance with higher levels of voice-related distress was in accordance with Chadwick and Birchwood (1994) who suggested that persecutory, dominant voices are resisted, which leads to further voice occurrence and

distress. Indeed, early studies showed problem-focused coping strategies to voices, such as resistance which includes mostly strategies to inhibit voices, can be ineffective in reducing distress (Farhall & Gehrke, 1997) and could increase voice-related distress (Singh et al., 2003). Peters et al. (2012) supported these findings by indicating an association between hearer resistance and voice-related distress, while others have found an association of resistance with general distress (depression and anxiety) (Chadwick et al., 2000; Fannon et al., 2009; Morris et al., 2014).

A relationship of moderate strength was observed in the link between hearer's distance and resistance to the perceived voice dominance. Thus, the more dominant the voices were perceived to be, the higher the tendency of young people to resist the voices. In adult studies, the link between voice dominance and distance is well-established (Hayward et al., 2008; León-Palacios et al., 2015; Sorrell et al., 2010; Vaughan & Fowler, 2004) confirming the theoretical claim that when the voices are perceived as dominant, hearers tend to adopt a distancing position of relating (Gilbert et al., 2001). Studies have also linked beliefs about malevolence and omnipotence of voices- both moderately to strongly related to voice dominance (Hayward et al., 2008; León-Palacios et al., 2015) -with resistance (Chadwick et al., 2000). This finding has also been recently supported in young voice-hearers (Cavelti et al., 2019b). It is important to highlight that the nature of the findings is correlational. Hence, it could also be that resisting or trying to achieve a "safe" distance from voices could actually enhance the beliefs about how dominant the voices, which could then lead to distress.

After controlling for levels of depression and anxiety (separately and combined) to isolate the effect of distress elicited by voices, only voice dominance was a significant correlate. This could be due to the contribution of voice intrusiveness and hearer resistance to general negative affect rather than voice-specific distress. This would be partially in line with León-Palacios et al. (2015) who found an indirect association between voice intrusiveness and hearer distance with depression and anxiety (via persecutory beliefs about voices), and a direct link between voice dominance and anxiety.

After controlling for persecutory beliefs about voices, the unique contribution of relating to voices (voice dominance and voice intrusiveness) to distress became almost

non-existent. This finding is in contrast with Vaughan and Fowler (2004) who reported that the perceived dominant style of the voice, rather than beliefs about voice malevolence, were more strongly linked with distress. However, this finding is consistent with more recent studies which suggest that persecutory beliefs about the voices potentially moderate the strength or mediate the association between relating styles and voice-related distress (Sorrell et al., 2010) and general distress (León-Palacios et al., 2015). In this sense, as long as the individual thinks they are being persecuted by the voices, perceiving the voices as intrusive and dominant could result in distress and/or the greater the belief that voices are persecutory, then the stronger the association with voice dominance and intrusiveness with distress. In any case, this would lead to staying away from the voices and vice versa.

#### ***2.4.2 Beliefs about voices, characteristics, and negative content: links with voice-related distress***

The second group of exploratory hypotheses related to additional factors that might be linked with voice-related distress, namely persecutory beliefs about voices, physical voice characteristics, negative schematic beliefs and insecure attachment style.

The first exploratory hypothesis was that persecutory beliefs about voices were a significant determinant of distress even after controlling for voice characteristics. Being consistent with adult findings (Birchwood & Chadwick, 1997; Peters et al., 2012; van der Gaag et al., 2003), persecutory beliefs were still moderately associated with distress, when controlling for voice frequency. In contrast, when loudness was taken into account, persecutory beliefs were only weakly correlated with distress having a marginally statistically non-significant relationship. This is contrary to adult studies that have supported appraisals of voices to contribute to distress over and above their physical characteristics (Birchwood & Chadwick, 1997; Peters et al., 2012; van der Gaag et al., 2003). Therefore, for young people AVH loudness might be contributing significantly to distress, as it could be more difficult for them to dismiss loud voices and/or loud voices could lead to life disruption (Parry & Varese, 2020), which in turn could be strengthening beliefs about the persecutory nature of the voices. Comparing the loudness of AVH reported in the most comprehensive phenomenological study of AVH to date in a psychiatric population (McCarthy-Jones et al., 2014b), a large group

of young people in the present study (38%) reported hearing shouting voices compared to the 4% of adult voice-hearers hearing yelling voices. Thus, AVH in young people might be different in their phenomenology from those in adults, at least in the present sample. In any case, it could be worth considering whether experiencing voices as louder than one's own voice might become a significant contributor of distress over and above beliefs about voices.

When negative voice content (amount and intensity) was controlled for, it seemed to potentially moderate or mediate the relationship between persecutory beliefs and voice-related distress, as its strength became non-existent. This finding is consistent with prior research suggesting that negative voice content influences negative beliefs and can be an indicator of need for care (Baumeister et al., 2017; Johns et al., 2014; Larøi et al., 2019). Early on, Chadwick and Birchwood (1994) stressed the importance of voice content, stating that voice content is put forward as evidence for particular beliefs. Negative content might also predispose hearers toward beliefs about the persecutory nature of the voices (van Der Gaag et al., 2003). Cole et al. (2017) stressed the need to include voice content as a determinant of distress in future studies, as it may be linked with distress, not only via the mediating role of voice beliefs but also directly. Recent youth research (Cavelti et al., 2019a) has showed negative content to correlate moderately to strongly with general distress. In the present study negative content was more strongly related to voice-related distress than beliefs about voices, supporting its unique contribution to distress and its close link with appraising the voices to be persecutory, potentially enhancing or even triggering persecutory beliefs in the first place.

#### ***2.4.3 Negative schematic beliefs, beliefs about voices and negative voice content***

Most of the remaining hypothesised links between factors of the cognitive-interpersonal model of voice-hearing were not supported. First, negative schematic self and other beliefs did not relate to persecutory beliefs about voices. Schematic beliefs about others seem relevant to the formation of negative voice beliefs, given that hearers can impose person-like characteristics onto voices and potentially view the voices using the same lens through which they view other people (Benjamin, 1989; Chin et al., 2009; Hayward et al., 2008, 2011; Vaughan & Fowler, 2004). With regards to voice intent and

its link with cognitive representations of self and others, Chadwick et al., (1996) argued that appraisals of voices' malevolence may arise from negative evaluative beliefs about self, e.g., deserving punishment. Thomas et al. (2015) found that negative self-schemas were moderately to strongly related to both omnipotence and malevolence beliefs about voices and negative other beliefs were moderately related to malevolence. Another study also indicated negative self and other schemas to be related to persecutory beliefs about voices (Cole et al., 2017). Additionally, there was a trend toward a significant weak to moderate relationship between negative schematic self-beliefs with persecutory beliefs about voices ( $r_s = .33$ ,  $p = .077$ ), somewhat supporting that negative-self schemas were more widely associated with beliefs about voices than were negative-other schemas (Thomas et al., 2015). Thus, although the schemas a person holds about themselves and the social world might influence the appraisals of voices (Chadwick et al., 1996; Morrison, 2001; Paulik, 2012), it seems that this association might not be strong in young voice-hearers within the context of differing diagnoses, outside psychosis.

Second, in this study, negative interpersonal beliefs were not correlated with voice-related distress and negative voice content, consistent with some adult findings but not with others. Birchwood et al. (2004) argued that interpersonal schemas have a direct impact on distress which was later supported in Cole et al. (2017), who identified an indirect path from negative beliefs about others to voice-related distress (via persecutory beliefs about voices) and both direct and indirect paths from negative beliefs about the self to voice-related distress. However, findings in the present study seem to be in agreement with Smith et al. (2006) who failed to find a link between voice severity and negative evaluative beliefs about self or others. Furthermore, a study with young people indicated that voice severity, operationalised as functional impairment, distress and frequency, was only negatively associated with positive self-beliefs but did not relate to negative self/other beliefs (Noone et al., 2015). Hence, there might be a role for positive self-beliefs to buffer against distress and impairment related to voices, but this remains to be examined.

Third, the lack of a significant relationship between negative voice content and negative schematic beliefs in this study is inconsistent with models proposing that

interpersonal schemas may directly influence voice content (e.g., Beck and Rector, 2003; Paulik, 2012). However, in clinical samples of adult voice hearers, Smith et al. (2006) found no link between negative evaluative beliefs and content, which was later also supported by Thomas et al. (2015) who found no correlation between self-other schematic beliefs and negative voice content. This might reflect that negative voice content may arise from specific mental representations, such as specific intrusions from memory not recognized due to a failure to encode contextual cues (Steel et al., 2005; Waters et al., 2006). Although these specific mental representations linked to content might be influenced by beliefs about voices, they might not be linked with broader interpersonal schemas that are more closely related to the adaptation to voice experience rather than to mechanisms involved in voice formation (Thomas et al., 2015). However, it is still to be examined whether internalized representations of specific others or specific situations may still pertain to voice content (Larøi et al., 2019). Here, it is worth noting that the mean levels of negative self/other beliefs have been a lot higher than these found in a clinical adult samples with psychosis (Fowler et al., 2006) and other diagnoses (Cole et al., 2017) and in a clinical adolescent sample distressed by PE (Noone et al., 2015). Consequently, although this group of young people seem to hold strongly negative schematic beliefs these do not seem directly related to beliefs about voices, negative voice content or voice-related distress, but might reflect a psychological vulnerability that is part of their clinical profile more generally.

#### ***2.4.4 Negative schemas, insecure attachment, relating to voices and voice-related distress***

A recently supported model explaining the role of schemas and attachment in the formation of beliefs about voices and distress proposed that insecure attachment style predicts negative beliefs about self and others, which in turn influences negative beliefs about voices, and is overall predictive of voice-related distress (Cole et al., 2017).

This study failed to find a correlation between insecure attachment styles and voice-related distress, as suggested in the few adult studies. Specifically, an early study found an association between attachment anxiety and voice-related distress (Berry et al., 2012). Later studies have confirmed the association between both insecure attachment

styles and voice-distress, through the mediating roles of self and other schemas and persecutory beliefs about the voices (Cole et al., 2017; Robson & Mason, 2015). However, the results of the present study agree with Dudley et al. (2018) that found no significant association between insecure attachment styles and severity/distress from voices. A potential explanation could be that it is more fearful-avoidant attachment, characterized by negative views of self and other, that is associated with severity of voices (Ponizovsky et al., 2013), which was not specifically assessed with the measure used in this study.

Furthermore, this study hypothesised that both negative interpersonal schemas would be associated with both insecure attachment styles. The results showed that negative schematic self and other beliefs were not related to attachment anxiety but were moderately to strongly related to attachment avoidance. This is somewhat consistent with previous literature suggesting that insecure (both anxious and avoidant) attachment would predict levels of negative beliefs about oneself (Wearden et al., 2008) and others (Cole et al., 2017). Furthermore, contrary to the prediction of this study, attachment anxiety was marginally related to voice dominance and not voice intrusiveness, being in disagreement with previous adult findings (Berry et al., 2012; Robson & Mason, 2015). However, results in this study could be explained based on the distress maintenance cycle of voice-hearing suggested by Berry et al. (2017) who suggest that, once voices develop, insecure attachment styles influence how voices are appraised. Thus, it could be hypothesised that anxious attachment style (i.e., an attachment style characterized by great sense of need to rely on others, negative beliefs about the self and a worry about other's rejection or abandonment), might result in beliefs that voices are powerful and the relationship to them would be characterised by hearer dependence and voice dominance (Berry et al., 2017).

#### ***2.4.5 Inter- relating with voices: young versus adult voice-hearers***

Findings from testing the third exploratory hypothesis, showed that young voice-hearers primarily tend to relate to the voices from a position of distance and perceive voices as dominant. This shows that the predominant relating style toward the voices in this clinical sample of young voice-hearers is similar to adult samples. However, young people seemed to distance themselves a lot more and responded dependently to the

voices a lot less compared to adults. They also reported experiencing their voices as a lot more dominant and a lot less intrusive (Dannahy et al., 2011; Hayward et al. 2008; Sorrell et al., 2010). A potential explanation could be that adult samples might have been experiencing voices for that have persisted for years compared to youth and thus, they might have adapted their relating by depending to voices at a greater level and finding ways to feel less dominated by them compared to young people. As relational closeness has been linked with pleasant voices whereas relational distance with unpleasant, usually dominant, voices (Parry & Varese, 2020), higher levels of hearer distance in the present sample could be explained due to the grand majority of participants reporting that AVH were distressing more than 50% of the time (67.64%) and having extremely negative content (70.59%), e.g., threats to harm themselves or others. The reason for lower voice intrusiveness in youth could be due to the disruption caused by AVH in this sample, which only reached a moderate level for less than half of the sample, thus reflecting a less intrusive AVH nature.

#### ***2.4.6 Relating to voices and relating to others: more different than similar?***

The last set of exploratory hypotheses compared participants' relating style to voices with social relating.

Firstly, in contrast to what was expected based on adult literature, relating to voices from a position of distance, i.e., being suspicious, uncommunicative and withdrawn, was weakly correlated with adopting a neutral close relating style, i.e., fearing separation and being alone, toward social others. Additionally, relating to voices from a position of dependence, i.e., being afraid of rejection and disapproval; feeling helpless, shunning responsibility, being self-denigrating, was moderately correlated with neutral distant, i.e., suspicious, uncommunicative and self-reliant, and upper distant types of relating, i.e., intimidating and tyrannising, with social others. So, in terms of proximity and power, relating to voices and social others appears to be of the opposite direction, contrasting adult findings (Birchwood et al., 2004; Hayward, 2003).

One explanation could be that young people do not perceive themselves as having an interpersonal relationship with their voices, which has been suggested for some adult hearers (Chin et al., 2009) as an attempt to preserve their self-hood, a way of



rejecting the stigma attached to AVH and/or contributing to maintain the narrative of voices as a symptom (Garrett & Silva, 2003). Another explanation would be that young people conceptualise voices in a different manner from social others. Thus, pervasive patterns of social relating might not be extended to the voice-hearer relationship in young people. However, it is worth noticing that, although negative relating with the voices and with social others did not follow the same direction, there was still a link between being dependent on the voices and distant from social others, whereas distancing from the voices was correlated with a negative close relating style with others, characterised by fear of being abandoned. Relating from a position of dependence to the voices was associated with lower perceived social connectedness and belongingness, supporting the initial exploratory hypothesis made in this study. This is in agreement with findings from adult patients with schizophrenia spectrum diagnoses where engagement and immersion in the voice-hearer relationship was linked with poor communication and withdrawal from social others (Favrod et al., 2004). Thus, it could be speculated that seeking approval from and closeness to the voices is related to distancing oneself from social others and feeling less connected with the social world. This relationship could be bidirectional. Dependence to the voices could be a consequence of the relating function that voices serve when hearers feel disconnected and as not belonging to the social world, and thus view voices as a replacement for depleted social networks (Mawson et al., 2011) or difficult social relationships (Parry & Varese, 2020). Distance from social others could also be due to other factors such as protecting oneself from negative responses and stigma (Mawson et al., 2011) reinforcing a retreat into the voice world (Benjamin, 1989). However, this relationship could be bi-directional as benevolent beliefs about voices could result in social relating difficulties or that these difficulties lead to more positive beliefs about voices as an adaptative function.

Lastly, perceiving the voice as dominant, intrusive or persecutory was not related with lower perceived social rank. This finding is consistent with other findings in this study which indicate that appraisals of voices and relating to voices might not be mirroring the way young people relate to social others, in contrast to adults (Birchwood et al. (2000, 2004).

#### ***2.4.7 Strengths and Limitations***

This is the first study to explore links from the interpersonal-cognitive model of voice-hearing focusing on adolescents, using data from young voice-hearers with several underlying mental health difficulties. Thus, it has contributed toward the very limited literature on the applicability of adult psychological AVH models to youth (Cavelti et al., 2020; Cavelti et al., 2019b), has extended qualitative findings on the importance of inter-relating with voices and others on distress (Parry & Varese, 2020; Parry et al., 2020), and has explored a wide range of potential distress factors. Additionally, voice-hearing was assessed with clinical interviews, ensuring AVH presence to the level of complexity and frequency needed for this study and minimising any validity issues that might arise when only using self-report questionnaires (Kelleher et al., 2011). Lastly, the use of measure commonly used in adult studies (e.g., PSYRATS-AH, BAVQ-R, VAY) allow for a direct comparison between youth and adult findings.

Nevertheless, this study had several limitations. First, the sample size was small, so it cannot be concluded that the non-significant findings reflect a true absence of relationships or if this arose from a lack of power in this study. Second, due to the exploratory nature of this study, multiple exploratory hypotheses were tested increasing the risk of false-positive results. Therefore, any interpretations made were tentative, driven by the existing literature which has been carried out mainly with adults, and any conclusions should be examined further in larger, independent samples of young people with AVH. Third, due to the cross-sectional design of the study, causal inferences regarding the relationship between the variables of interest cannot be drawn and interpretation of results was based on previous adult findings. Moreover, the operationalisation of voice-related distress is based on a factor analysis by Woodward et al. (2014), which combines items on the amount and degree of voice-related distress with items on negative content and control over the experience. Thus, it seems the significant relationship between negative content (amount and degree) with voice-related distress might be obscured by the overlap between these two variables. Additionally, voice-related distress in the studies mentioned has been defined differently. For example, Cole et al. 2017 used the Hamilton Program for Schizophrenia

Voices Questionnaire (Van Lieshout & Goldberg, 2007) which is a self-report scale and only used one item asking about the degree (intensity) of voice-related distress. In Noone et al. (2015), frequency, distress, and functional impairment experienced over the preceding two weeks were used as an indicator for severity. Thus, the present findings might not be directly comparable to other studies due to methodological differences in the operationalisation of voice-related distress. In terms of the representativeness of the sample, participants had very high levels of both self and other negative beliefs and low positive and other beliefs compared to clinical adult samples with psychosis (Fowler et al., 2006) and other diagnoses (Cole et al., 2017), and compared to clinical adolescent samples distressed by PE (Noone et al., 2015). Furthermore, participants in this study tended to have higher anxious but mainly higher avoidant attachment compared to another study with adolescents with early psychosis using the same measure (Korver-Nieberg et al., 2013). Hence, there is a possibility that young people with high levels of negative schematic beliefs and insecure attachment were overrepresented in this study.

#### ***2.4.8 Future directions and Clinical implications***

The present findings underscore the importance of future investigations of the links of the cognitive interpersonal model, using a longitudinal and adequately powered study that will allow the exploration of the dynamic relationship between psychological factors and voice-related distress in youth. Adding to this, since distressing AVH are found in young children (Maijer et al., 2017) it would also be worth expanding the age range of future investigations to include younger populations, while accounting for systemic influences within families (Parry & Varese, 2020). Taking into account that most questionnaires are developed for adults, another suggestion for future research would be to develop new or adapt existing questionnaires to reflect the developmental stage of young voice-hearers and the peculiarities of their AVH experiences. Considering that young people with distressing voices might be found outside mental health services, an investigation of cognitive-interpersonal model of AVH could be expanded to community samples, to further examine potential factors that contribute a need for care for AVH in youth. Future research could also focus on young people's

experiences of support with AVH, focusing on any barriers and facilitators in receiving support, considering that only one study has focused on this so far (Kapur et al., 2014).

This study had a number of important clinical implications. Most young people who seek help for AVH have reported feeling distressed by the experience (Maijer et al., 2014, 2017), indicating a need for support. Although a few studies have explored the feasibility of Cognitive Behavioural Therapy (CBT) - informed interventions for young people with distressing AVH (Maijer et al., 2020), or the acceptability and potential clinical utility of such protocols for distressing PE in youth more broadly (Jolley et al., 2018), these interventions were not based on evidence specific to distress factors of AVH in youth. Hence, this study provides preliminary evidence suggesting that psychological interventions targeting beliefs about voices (e.g., malevolence, omnipotence), relating to voices (e.g., voice dominance) and maladaptive responses to voices (e.g., resistance) might be beneficial in young people. Voice loudness and negative content were important distress contributors and should be considered as markers for more severe presentations and stronger beliefs about the persecutory nature of the voices in young people who disclose AVH. Exploring the negative voice content in therapy could be beneficial for young people, especially in identifying connections of content to past relationships or experiences (Parry & Varese, 2020). This is observed to strengthen the adoption of a less pathologising AVH narrative by young people, which could then allow for a change within the relationship with the voice(s) to enhance their wellbeing (Parry & Varese, 2020). Lastly, when designing a support plan for young voice hearers, particular attention should be paid to those who might seem immersed or dependent on their relationship with voices as it this could contribute to issues in their social life, e.g., social withdrawal, feelings of disconnect and loneliness (Mawson et al., 2011; Parry & Varese, 2020), thereby impacting on their overall well-being and psychosocial development.

#### **2.4.9 Conclusion**

To conclude, this study provided preliminary evidence that beliefs about the voices being persecutory and dominant, adopting resistive responses to voices and voices being loud and having negative content might be significant contributors of distress in young people with AVH and co-occurring mental health difficulties.

Clinicians working with youth with AVH should assess and potentially target these factors within psychological interventions, paying additional attention to the voice-hearer relating as it might be an index for social relating and connectedness difficulties.

**3. Voice-hearing in young people, distress factors and social relating: young people who hear voices vs. psychiatric controls (“Vista” Study 2)**

### 3.1 Introduction

Research on typical development has shown adolescence is an important time for the development and growth of social relationships (Blakemore, 2008). Social relating and its quality during this period can be reflected on different key dimensions, including social support, connectedness, and views of oneself in comparison to social others. During adolescence, social support from a variety of different sources is important to well-being and functioning (Rueger et al., 2010) whereas negative perceptions of relationships with peers and family have been found to be related to emotional and behavioural problems (Garnefski & Diekstra, 1996). Social support may be particularly important for adolescents who experience voice-hearing. More severe hallucinations are associated with higher levels of perceived social stress (Palmier-Claus et al., 2012), however social support can protect against psychotic experiences and stress in adolescents, even in those who have suffered multiple events of victimisation (Crush et al., 2018). Furthermore, social connectedness is related to good social adjustment and fewer issues in young people's relationships (McElhaney et al., 2008), while negative views of oneself in comparison and in relation to others can impact on youth's self-relating (e.g., self-esteem), have a negative impact on their sense of security in the social domain (Gilbert, 1997, 2005; Gilbert & Irons, 2009) and make them more likely to experience issues in their relationships (e.g., arguments with friends, social isolation). This interpersonal adversity could also contribute to subsequent social disengagement and negative self-views (Caldwell et al., 2004; McElhaney et al., 2008).

Young people with voice-hearing experiences or auditory verbal hallucinations (AVH) may nonetheless find it difficult to develop and maintain positive social relationships. Adolescents with psychotic experiences (PE), including hearing voices, have reported that school environment can be highly judgmental as they have witnessed peers being treated badly due to their psychological difficulties (Gronholm et al., 2016). This in turn makes sharing their mental health experiences with peers highly risky for their social status in peer groups (Gronholm et al., 2016). Thus, stigma-related concerns among these young people could lead to concealing their experiences and potentially distancing themselves from their peers to avoid disclosing their voice-hearing experience and receiving negative reactions (Anglin et al., 2014; Yang et al., 2015).

Adult research has shown that, although some individuals have reported that social relationships have been useful in coping with voice-hearing, voices might create distance in social relationships, acting as a boundary for making and maintaining friendships (Mawson et al., 2011). Some voice-hearers have explained that they have kept their experience secret to “protect” their friends from feeling distressed by the truth. Therefore, keeping social distance from others functions as a means to avoid uncomfortable or unsupportive responses (Mawson et al., 2011). Cross-sectionally, positive as well as negative schizotypal traits have been related to higher isolation and conflicts with friends and family, fewer social outings and independent social activities as well as lower perceived social support (Aghvinian & Sergi, 2018). Studies examining social relationships in young people who are at clinical risk state for psychosis (At-Risk Mental State, ARMS) with PE (including voice-hearing) show that they present with poorer social functioning, lower levels of social support, more reported social isolation (Cornblatt et al., 2003; Pruessner et al., 2011), having fewer close friends and less diverse social networks, less positive and more negative relationships with family members and friends, and higher levels of loneliness (Robustelli et al., 2017), being consistent with recent large general population studies (Dodell-Feder et al., 2020). Those with poorer social relationships have reported higher levels of positive PE and poorer overall functioning (Robustelli et al., 2017). Specifically, in adolescents, frequent perceptual PE have also been related with low social functioning (Schimmelmann et al., 2015) and distressing AVH with lower family support (Løberg et al., 2019). Clinical case-control studies comparing young people with and without PE with non-psychotic disorders indicated that those with PE presented with poorer global socio-occupational functioning even when the effect of multimorbidity (Kelleher et al., 2014; Wigman et al., 2014) and cognitive functioning, anxiety, depression levels and severity of psychiatric disorder was taken into account (Pontillo et al., 2018). In samples of help-seeking adolescents, perceptual PE have also been associated with poorer social functioning (Brandizzi et al., 2014). It is noteworthy that, in adolescents and young adults with ARMS, presence of PE in addition to poor social functioning has robustly emerged as a key predictor of both later poor functional outcome (Brandizzi et al., 2015; Carrión et al., 2013) and transition to psychosis (Addington et al., 2017; Cannon et al., 2008; Cornblatt et al., 2015; Valmaggia et al., 2013) although the latter has not been consistently supported in adolescent-only samples (Ziermans et al., 2011).



In contrast, a small number of qualitative studies with adult voice-hearers have indicated that voices could be adaptive, especially for those with depleted social networks and social contact, suggesting that they might fulfil subjective social needs when these are not met in other social relationships (Beavan & Read, 2010; Corstens et al., 2012; Mawson et al., 2010, 2011). Thus, voices can be utilised as a replacement for social relationships, for example, as a ‘sounding board’ when making decisions and as a way to cope with the impact of negative voices (Mawson et al., 2011). Additionally, in patients with a psychosis diagnosis, holding positively-valenced beliefs and engaging with the voices has been associated with less communication with non-voice others (Favrod et al., 2004). As voices can be socially disruptive, either directly, e.g. interrupting conversations, having content that undermines the trust in social others (Birchwood, 2003; Woods et al., 2015), or indirectly (by eliciting negative feelings, e.g., stigma, fear, and loneliness (Woods et al., 2015), adult research has suggested that voice-hearers might be inclined to spend substantial time talking to their voices, potentially creating interpersonal relationships with them (Corstens et al., 2012). This could be at further expense of both objective (e.g., size of social network) and more outward-facing subjective social needs (e.g., engaging with non-voice relationships) that the voices might be fulfilling, interfering with feelings of social connectedness.

The link between social relating difficulties and voice-hearing may be a dynamic, reciprocal process operating in both directions (Gayer-Anderson & Morgan, 2013). General population research suggests that social functioning difficulties might be present before the onset (Hameed et al., 2018; Sullivan et al., 2013) and that they can deteriorate at and after the onset of adolescent PE (Asher et al., 2013; Bouhaddani et al., 2019; Trotta et al., 2019), especially when PE are persistent (Downs et al., 2013). Focusing on key markers for social functioning problems, childhood trauma (CT) has been associated with hallucinations in adults with and without primary psychotic disorders (Daalman et al., 2012), with child sexual abuse being especially linked with AVH in a dose-response relationship (Bentall et al., 2012). CT has also been associated with increased odds of presenting with perceptual symptoms in ARMS (Loewy et al., 2019), with early adulthood AVH (Abajobir et al., 2017) and with distressing voices in high-school children (Løberg et al., 2019). In community youth samples, trauma has also been associated with PE in a dose-response relationship (Croft et al., 2019;

Kelleher et al., 2013) and with persistence of AVH (Bartels-Velthuis et al., 2016). As young people with AVH are more likely to have been exposed to greater levels of trauma, they may be more vulnerable to experiencing social relating difficulties. This could be explained partially through the mechanism of maladaptive schemas. Past and current traumatic experiences and dysfunctional experiences with family and peers, could facilitate the development of negative self and other schemas that in turn could influence the relationships of adolescent voice-hearers (Garety et al., 2001; Young, 1994). Although the mediating role of negative schemas between CT and PE has been found in the general population (Gibson et al., 2019), evidence from adult studies of psychosis have failed to confirm the mediating role of these beliefs in the relationship between CT and AVH (Hardy et al., 2016). Nevertheless, regardless of their mediating role, negative schemas have been linked with hallucinations in community-based young adult research (Gracie et al., 2007) and with attenuated positive symptom severity in young people with ARMS (Stowkowy & Addington, 2012). Negative beliefs about others have also been associated with the presence and severity of distressing PE in Child and Adolescent Mental Health Services (CAMHS) patients (Noone et al., 2015). In accordance with Garety et al. (2001), early adversities, as reflected in poor premorbid adjustment, could also be related to voice-hearing in youth and thus with later issues in social relating. In ARMS individuals, poor premorbid adjustment has been linked with vulnerability to later experiencing first-rank psychotic symptoms (Morcillo et al., 2015) and with hallucinations in FEP patients (Evensen et al., 2011). Nonetheless, in late adolescence, Lyngberg et al. (2015) found no significant association between poorer premorbid functioning and positive symptom severity, including voice-hearing.

Although the link between AVH in youth and social relating could be in part because of greater trauma exposure and/or negative schematic beliefs, social relating difficulties might not be linked with voice-hearing *per se*. Specifically, they could be an artefact of more severe symptomatology in general as AVH in adolescence is increasingly associated with several psychopathologies and in particular with severe, multiple diagnoses (Kelleher et al., 2012), making AVH an index of mental health problem severity. Cohort studies have also found that PE in adolescence are associated with depression and anxiety symptoms (Isaksson et al., 2020) and persistent or distressing PE have been linked with elevated levels of depression and anxiety both

cross-sectionally and longitudinally (Løberg et al., 2019; MacKie et al., 2011). Studies with help-seeking youth have also supported the link between attenuated psychotic symptoms and depressive symptoms (Poletti et al., 2019; Wigman et al., 2011). In CAMHS, AVH in those considered ARMS seem to commonly co-occur with several psychopathologies, with depression and anxiety disorders being the most frequently observed (Tor et al., 2018; Welsh & Tiffin, 2014). Nevertheless, a recent clinical study has failed to find greater anxiety levels in young people with PE compared to psychiatric controls (Heinze et al., 2018). As co-morbid, non-psychotic (mostly affective) disorders in young people with ARMS have been correlated with greater risk of persistent poor functioning (Fusar-Poli et al., 2014; Rutigliano et al., 2016), greater general symptomatology might be confounding and/or might be involved in the pathway from youth AVH to impaired social functioning. Preliminary evidence has supported this, finding that emotional and behavioural difficulties explained the largest part of the relationship between PE and social functioning in adolescence (Asher et al., 2013).

This study aimed to explore the links between AVH and social relating in a clinical sample of help-seeking adolescents. As existing research has mostly focused on socio-occupational or global functioning overall, in this study, social functioning was conceptualised in a multi-dimensional and nuanced sense. Measures of subjective and objective social functioning, representations of social strain and support from key youth relationships, social comparison, and connectedness were included. To identify any relating difficulties more broadly, this study also used a measure of negative relating, based on relating theory (Birtchnell, 1993, 1996, 2002). This aimed to capture less-than-competent interpersonal relating, as reflected on two intersecting axes, with four poles: one of closeness (seeking to be involved) versus distance (withdrawing from others) and one of ‘upperness’ (relating from a position of dominance) versus ‘lowerness’ (relating from a position of submission). Ideally, during development, individuals learn how to attain all four states of relatedness (poles) and their intermediate positions with varying ability. However, less-than-competent relating is considered negative and any experiences of negative relating may prevent people from improving their relating skills in social interactions. Additionally, most studies with young people have considered PE in total, hindering explorations of the potential unique link between AVH and social

relating. To overcome this, a case-control design was used, comparing young people with current complex AVH experiences to a clinical control group without AVH. This allowed to focus on social relating variables that might be uniquely linked to the presence of AVH. To explore this, key variables that might account for social functioning differences between groups, such as historical (premorbid adjustment, CT) and current confounders (negative schemas, depression, and anxiety) were also measured. It was hypothesised that young people with AVH would present with more social relating difficulties compared to clinical controls. This could be either due to voice-hearing contributing to these difficulties and/or due to voice-hearing indexing clinical severity and complexity due to co-occurring psychopathologies. The unique connection of voice-hearing with social relating has been supported in clinical studies where presence of PE in adolescents with non-psychotic disorders predict social functioning problems over and above multimorbidity (Kelleher et al., 2014; Pontillo et al., 2016, Wigman et al., 2014). However, there is also evidence that, when general psychopathology variables are taken into account, AVH are no longer significantly relate with social functioning (Sommer et al., 2010). Thus, social relating differences between the study groups could be explained due to AVH simply being a marker of more severe psychopathology.

## **3.2 Methods**

### **3.2.1 Design**

The present study involved a cross-sectional case-control design which constituted part of the “Vista” project (see section 2.2.1 for details and Appendix B, Figure 1 for the recruitment flowchart). Assessment measures included interviews and questionnaires with two clinical populations: young people who hear voices and young people who do not have this experience.

### **3.2.2 Procedure**

Ethical and Health Research Authority approval was granted by the London - Brighton & Sussex Research Ethics Committee (reference number: 17/LO/2078, Appendices B and C). The consent process was the same as in the study in Chapter 2. Participants were asked to complete self-report questionnaires and research interviews over multiple appointments within the same calendar month.

### **3.2.3 Participants**

Sixty-eight participants were recruited from Child and Adolescent Mental Health Services (CAMHS) and Early Intervention in Psychosis (EIP) services within Sussex Partnership NHS Foundation Trust.

The case group (young people who hear voices) consisted of the participants mentioned in Chapter 2. This study also included a psychiatric control group with the following inclusion criteria: 1) no report of current voice-hearing, 2) being 14-18 years of age at the time of referral to the study to ensure adolescent status, 3) under the care of a CAMHS team or an EIP service, 4) capacity to provide written, informed consent. For those under 16 years of age, a parent or legal guardian also needed to provide their written, informed consent for the young person to take part. Inclusion criteria 2 and 3 were established in order to ensure that the control group would be matching the case group in terms of overall clinical severity but without experiencing voice-hearing. There was no inclusion criterion specific to diagnosis considering that the voice-hearing group would also have received a variety of diagnoses (if any).

Exclusion criteria for the control group were: 1) insufficient English language ability for purposes of providing informed consent and completing assessment measures, 2) a diagnosis of moderate or severe learning disability as assessed by their clinical team and 3) immediate risk to self or others.

Data collection was undertaken between March 2018 and June 2019.

### **3.2.4 Measures**

#### **3.2.4.1 Clinical measures.**

The clinical measures included in Chapter 2 were also completed with the psychiatric control group. These were: the Comprehensive Assessment of At-Risk Mental States – Short form (CAARMS; Yung et al., 2005), the Mini International Neuropsychiatric Interview (MINI) for psychotic disorders studies (Version 7.0.2) (Sheehan et al., 1998), the Beck Depression Inventory-II (BDI-II, Beck et al., 1996), the Beck Anxiety Inventory (BAI, Beck & Steer, 1993) and the Structured Clinical Interview for Axis-I DSM-IV Disorders (SCID-I-RV; First, Spitzer, Gibbons, et al., 2002) modules B (Psychotic symptoms) and C (Psychotic disorders) rated by the researcher based on information gathered during the CAARMS interview.

For this study, CAARMS symptom severity was operationalised as the summed scores of the product of severity and frequency ratings of the three symptom subscales, excluding perceptual abnormalities (PA). If one rating was missing, the CAARMS severity was not calculated (Morrison et al., 2012).

#### **3.2.4.2 Negative childhood experiences.**

To capture negative childhood experiences up to the age of participation, the Childhood Trauma Questionnaire – Short Form (CTQ-SF) (Bernstein et al., 2003; Bernstein & Fink, 1998) was administered. CTQ-SF is a short 28-item self-report inventory, consisting of five subscales representing different types of trauma: physical abuse, sexual abuse, emotional abuse, emotional neglect, and physical neglect. Items are rated on a five-point Likert scale ranging from 1 to 5, with each subscale having five items and total scores ranging from 5 (no history of abuse or neglect) to 25 (very

extreme history of abuse and neglect). Scores across all five subscales are totalled to create an Overall CTQ score. The CTQ has been validated in large community and clinical samples, including adolescent populations (Bernstein et al., 2003; Forde et al., 2012; McLaughlin et al., 2014; Mills et al., 2015; Spann et al., 2012; Stewart et al., 2015) and has been used in ARMS and first-episode psychosis studies (Bendall et al., 2013; Garcia et al., 2016; Thompson et al., 2014; Yung et al., 2015). Internal consistency estimates for the five subscales have been found to range from .65 (for the emotional neglect subscale) to .96 across a range of clinical and non-clinical samples (Bernstein et al., 2003; Bernstein & Fink, 1998; Forde et al., 2012; Kuo et al., 2015; McLaughlin et al., 2014; Mills et al., 2015; Scher et al., 2001).

### **3.2.4.3 Functioning.**

#### **3.2.4.3.1 *Pre-morbid Functioning.***

The Premorbid Adjustment Scale (PAS) (Cannon-Spoor et al., 1982) is a semi-structured research interview, designed to capture retrospectively the level of functioning up to 1 year before the onset of psychosis in terms of developmental goals (van Mastrigt & Addington, 2002). Due to the transdiagnostic nature of this study, all types of mental illness were considered. The order mental health difficulties were considered was: 1) first episode of psychosis, 2) first onset of psychotic symptom(s) reaching psychotic threshold according to CAARMS, 3) first psychiatric hospitalisation, 4) being diagnosed with any mental health problem and 5) date of referral and entry into secondary/primary mental health services for treatment. An overall score for the scale was estimated by calculating the mean for two life periods, childhood (6-11 years) and early adolescence (12-15 years) (for those older than 15). Scores ranged from 0 to 1, where lower numbers reflected a higher level of functioning (Cannon-Spoor et al., 1982). The PAS has been widely used in research and has shown good predictive and concurrent validity (Brill et al., 2008) and discriminate validity (Cannon-Spoor et al., 1982; Krauss et al., 1998). It has also displayed good internal consistency (between .81 and .93, Krauss et al., 1998) and inter-rater reliability (.79, Rabinowitz, Levine, Brill, & Bromet, 2007). The PAS has been used in studies with young people who experience a first episode of psychosis (Amminger et al., 1997; Fraguas et al., 2014), and young people with ARMS (Dannevang et al., 2018; Tarbox et al., 2013).

#### **3.2.4.3.2 *Current functioning.***

The Time Use Survey (TUS; adapted from the UK 2000 Time Use Survey; Short, 2006; see Fowler et al., 2009) is an interview-type assessment that explores how participants spent their time over the past month. Two main scores are calculated: constructive economic activity that includes time spent in work, education, voluntary work, housework or chores and childcare, and structured activity that includes constructive economic activity plus time spent in leisure and sports activities. Each score is calculated as the average number of hours per week and it provides an estimate of social and occupational functioning. In this study, TUS structured activity was used.

TUS has displayed good reliability in clinical samples (inter-rater reliability at .99, Hodgekins, Birchwood, et al., 2015; Hodgekins, French, et al., 2015) and has been validated within epidemiological time use research (Short, 2006), in FEP and ARMS samples (Hodgekins, Birchwood, et al., 2015; Hodgekins, French, et al., 2015).

#### **3.2.4.4 *Current Social relating.***

The Social Connectedness Scale (mSCS; adapted from Lee & Robbins, 1995), The Brief Core Schema Scales (BCSS; Fowler et al., 2006), the shortened Person's Relating to Others Questionnaire (PROQ-3; Birtchnell et al., 2013) and the Social Comparison Scale (SCS; Allan & Gilbert, 1995) were used in this study and they are described in Chapter 2.

The Support and Strain Scales self-report questionnaire (SSS) (Walen & Lachman, 2000) was used as a measure of perceived peer, family and romantic partner relationship quality. It consists of 28 items, with four items of perceived support and four items of perceived strain from family and peers. The romantic partner scales contain similar items, but instead they include six support and six strain items. Items are rated on a 4-point Likert scale from “not at all” (= 1) to “a lot” (= 4). Responses to items were averaged, to create support and strain scores for each type of relationship as well as an overall support and strain measure. Higher scores reflect higher support and strain, with a possible score range from 0 to 4. For those without a romantic partner, mean overall support and strain was calculated from the peer and family scales only. If one item is missing from any subscales (with the exception of Partner scales as it might not



had been applicable to all participants), the mean overall was not computed and was considered missing. In previous studies, the SSS has demonstrated acceptable reliability for all subscales (Friends, Family, Partner, overall Strain and overall Support) with Cronbach's alphas ranging from .64 to .91 (Cotter & Lachman, 2010; Robustelli et al., 2017; Walen & Lachman, 2000; Whisman et al., 2014). Factor analysis has confirmed a two-factor structure for all three types of relationships, representing overall strain and support (Walen & Lachman, 2000). The SSS has been used in previous research with young adults and adolescents in community and ARMS samples (e.g., Robustelli et al., 2016).

#### **3.2.4.5 Neurocognitive performance.**

The Wechsler Memory Scale – third edition logical memory I (LM-I) subtest (WMS- III) (Wechsler, 1997) is an interview-type task, used as a measure of auditory immediate memory. Participants listened to the recordings of two short stories (Story A and Story B) and were asked to repeat as many details of the stories as they could. Participants listened to the second story (Story B) twice and were asked to retell the story once again. The researcher rated an immediate recall performance score for each story retelling by giving one point for each story unit accurately recalled, out of a total of 25. A total immediate recall score was calculated, with possible scores ranging from 0 - 75. For participants 16 years or older, total raw scores were first scaled based on the WMS-II manual conversion age-weighted tables (Wechsler, 1997) and then z-scored. For participants younger than 16, no conversion tables existed thus the raw score was directly transformed into z-scores. Transformation into standardised z-scores used population means and standard deviations (Paniak et al., 1998; Wechsler, 1997). The LM-I subtest has shown good test-retest reliability (.70 – .77) (Lo et al., 2012) and has been used in at -risk for psychosis research, including adolescent samples (Velthorst et al., 2019; Walder et al., 2008).

Executive function was assessed with the Controlled Word Association Test (COWAT) (Benton & Hamsher, 1976), an interview-type task asking participants to verbally generate words that begin with a given letter (F, A, S) while timed in 1-minute trials. Correct responses should not include numbers, words beginning with the same root (e.g., speak, speaking) or proper nouns. Total number of unique words generated

for each letter were then summed to provide an overall verbal fluency performance score. This total score was then transformed into standardised z-scores taking into account years of education and age of participants based on published population means and standard deviations (Porter et al., 2011; Tombaugh et al., 1999). COWAT has been used in psychosis research, including studies with young people who were ARMS (Bowie et al., 2012; Hawkins et al., 2004; Kim et al., 2011) and adolescents experiencing a first episode of psychosis (Mayoral et al., 2008).

An overall neurocognitive performance score was calculated as the mean z-score from LM-I and COWAT.

### **3.2.5 Analysis Plan**

All analyses were carried out using SPSS (Version 25, IBM Corp., 2017).

#### **3.2.5.1 Data and assumption checking.**

Independent sample t-tests, Mann-Whitney U tests and Fisher's exact tests were carried out to investigate whether missingness was related to any demographic or clinical presentation variables comparing those who did and did not complete the study measures within each study group. Where possible, bias-corrected and accelerated bootstrap intervals (BCa95%CI) using 2000 samples were calculated to ensure the robustness of the results due to the small size of the compared groups. A Bonferroni-corrected p-value (p-value divided by the total number of comparisons,  $N = 49$ ) accounted for multiple comparisons. The adjusted p-value was  $p = .001$ .

Visual inspection of histograms and boxplots was carried out to check for normality in data distributions and outlier cases. The Shapiro-Wilk test and the Levene's test on median were used to numerically identify normality or homogeneity of variance issues, respectively. Due to the small sample size, these rare cases were considered to potentially represent data coming from the population under investigation and were included in the analyses.

Different transformations were applied to outcome variables that deviated from normal distribution. When all tested transformations led to further deviation from normality, the untransformed variable was included in the analysis instead.

To describe the sample and investigate any between-group differences in key demographic and clinical characteristics independent sample t-tests, Mann-Whitney U tests and likelihood ratio chi-square tests were conducted before the main analysis. Bonferroni-corrected significance p-values were considered to account for multiple comparisons,  $p = .002$ .

### **3.2.5.2 Exploratory hypothesis testing plan.**

The ANCOVA assumptions were tested before including any covariates in the analysis. To test for hypothesis 1, multiple ANCOVAs were used to assess between-group differences on social variables, namely, the negative relating sub-scales and overall Negative relating to others (PROQ-3), Schemas about Self/Others (BCSS), Social Comparison ratings (SCS) and perceived belongingness (SCS belongingness subscale), Social Support and Strain (SSS) and Social Connectedness (mSCS). To evaluate the differences between groups in social relating variables not due to social functioning or clinical severity differences, the following variables were considered as potential conceptual covariates: age, Time Use Structured Activity, BDI-II, BAI, current CAARMS Overall severity (without PA) and overall neurocognitive functioning performance. Independent sample t-tests and Mann-Whitney U tests indicated that levels of BDI-II, BAI, current CAARMS Overall severity (without PA) differed significantly between the two groups and thus, violated the assumption of independence of covariate and predictor effect, thus were excluded from the analysis. ANCOVA assumptions were tested for each ANCOVA and when covariates violated this assumption they were not included in the analysis.

To test for hypothesis 2, multiple ANCOVAs were performed to assess between-group differences on trauma (Overall CTQ), premorbid adjustment (Mean overall PAS) scores while adjusting for Age. ANCOVAs were carried out to compare the two groups in terms of BDI-II and BAI severity, while adjusting for Age and Neurocognitive performance. Bonferroni-corrected significance p-values were

considered to account for multiple comparisons,  $p = .002$  for hypothesis 1 and  $p = .01$  for hypothesis 2.

### 3.3 Results

#### 3.3.1 Sample characteristics

Table 10 and Table 11 present the descriptive statistics of the demographic and clinical characteristics of the sample. In total,  $N = 55$  young people were recruited from CAMHS and  $N = 13$  from EIP services.

**Table 10.** *Sample characteristics for the voice-hearing ( $N = 34$ ) and psychiatric control ( $N = 34$ ) groups.*

Sample characteristic		Voice-hearers ( $N = 34$ )	Controls ( $N = 34$ )
		<i>M (Min-Max; SD)</i>	
Age		16.28 (14-18.95; 1.09)	16.59 (14.03 -18.44; 1.26)
Gender		<i>N (Valid %)</i>	
	Male	7 (20.59)	9 (26.47)
	Female	25 (73.53)	25 (73.53)
	Other	2 (5.88)	0
Identified as transgender		3 (8.82)	0
Sexual Orientation			
	Heterosexual	15 (44.12)	25 (73.53)
	Lesbian/Gay	2 (5.88)	2 (5.88)
	Bisexual	10 (29.41)	7 (20.59)
	Other term	6 (17.65)	0
	Prefer not to say	1 (2.94)	0
Ethnicity			
	White British	29 (85.29)	32 (94.12)
	White Other	2 (5.88)	1 (2.94)
	Asian/Asian British	1 (2.94)	1 (2.94)
	Mixed Ethnicity	2 (5.88)	0
Marital status			
	Single	23 (67.65)	28 (82.35)
	In a long-term relationship	9 (26.47)	6 (17.65)
	Cohabiting	1 (2.94)	0
	Prefer not to say	1 (2.94)	0
Country of birth			
	UK or Northern Ireland	31 (91.18)	31 (91.18)
	Poland	1 (2.94)	1 (2.94)
	Jersey (Channel Island)	1 (2.94)	
	New Zealand	0	1 (2.94)
	Thailand	0	1 (2.94)

Sample characteristic		Voice-hearers ( <i>N</i> = 34)	Controls ( <i>N</i> = 34)
Accommodation type <sup>a</sup>	Germany	1 (2.94)	0
	Owner occupied	15 (45.45)	21 (61.76)
	Rented (Privately)	8 (24.24)	8 (23.53)
	Rented (Local authority)	9 (27.27)	4 (11.76)
	Other type of accommodation	1 (3.03)	1 (2.94)
Educational level	None	22 (64.71)	14 (41.18)
	GCSEs or equivalent	9 (26.47)	18 (52.94)
	A level or equivalent	3 (8.82)	2 (5.88)
Limited day-to-day activities due to disability			
	A lot	1 (2.94)	2 (5.88)
	A little	5 (14.71)	5 (14.71)
	No	28 (82.35)	26 (76.47)
	Prefer not to say	0	1 (2.94)
Employment status <sup>b</sup>	Student	31 (91.18)	24 (70.59)
	Employed part time (paid)	9 (26.47)	11 (32.35)
	Employed part time (voluntary)	0	1 (2.94)
	Unemployed (on benefits)	1 (2.94)	1 (2.94)
	Unemployed (not on benefits)	0	6 (17.65)
Religion	Agnostic	8 (23.53)	12 (35.29)
	Atheist	17 (50.0)	9 (26.47)
	Christian	7 (20.59)	8 (23.53)
	Other	1 (2.94)	5 (14.71)
	Not wished to disclose	1 (2.94)	0
Any self-reported MH diagnosis		24 (70.59)	25 (73.53)
Self -reported diagnosis of Psychosis		5 (14.71)	2 (5.88)
Taking any MH medication		24 (70.59)	17 (50)
Having received any psychological therapy		31 (91.18)	31 (91.18)
Having received any psychological therapy for voices <sup>c</sup>		8 (25)	4 (11.76)
Type of MH service			
	CAMHS	28 (82.35)	27 (79.41)
	EIP	6 (17.65)	7 (20.59)

*Note.* All frequency and descriptive statistics are reported on raw untransformed data; *M* = Mean; *SD* = standard deviation; Valid % represents percentage of participants with available data; <sup>a</sup> *N* = 1 missing from the voice-hearing group; <sup>b</sup> multiple responses allowed; <sup>c</sup> *N* = 2 missing from the voice-hearing group.

**Table 11.** *Frequency statistics of clinical measures in the voice-hearing (N = 34) and psychiatric control (N = 34) groups.*

Sample characteristic	N (Valid %)	
	Voice-hearers (N = 34)	Controls (N = 34)
<b>UHR status</b>		
Not at risk	1 (2.94)	15 (44.12)
Vulnerability group	0	2 (5.88)
Attenuated Psychotic Symptoms (APS)	2 (5.88)	4 (11.76)
Vulnerability + APS	0	1 (2.94)
Over psychotic threshold	31 (91.18)	12 (35.29)
<b>SCID Psychotic disorders</b>		
Not meeting criteria/Not applicable	4 (11.76)	29 (85.29)
Schizophrenia	8 (23.53)	1 (2.94)
Schizoaffective	2 (5.88)	0
Schizophreniform	0	1 (2.94)
Psychotic Disorder Not Otherwise Specified	20 (58.82)	2 (5.88)
Psychotic Mood Disorder	0	1 (2.94)
<b>MINI diagnostic categories<sup>a</sup></b>		
MDE	9 (28.13)	7 (20.59)
Past MDE	28 (87.50)	30 (88.24)
Manic Episode	0	1 (2.94)
Past Manic Episode	9 (28.13)	5 (14.71)
Hypomanic Episode	0	0
Past Hypomanic Episode	1 (3.13)	0
Hypomanic Symptoms	1 (3.13)	0
Past Hypomanic Symptoms	0	1 (2.94)
Panic Disorder	12 (38.71)	6 (17.65)
Past Panic disorder	19 (61.29)	15 (44.12)
Agoraphobia	9 (29.03)	4 (11.76)
Social Anxiety	19 (61.29)	9 (26.47)
Obsessive compulsive disorder	6 (19.35)	6 (17.65)
Post-traumatic stress disorder	7 (22.58)	3 (9.09)
Alcohol Use disorder 12 months	7 (22.58)	5 (14.71)
Substance Use Disorder 12months	7 (22.58)	12 (35.29)
Anorexia Nervosa (Restricting)	1(3.23)	1 (2.94)
Bulimia Nervosa	4 (12.90)	0
Binge Eating	0	3 (8.82)
Generalised Anxiety disorder	2 (6.45)	7 (20.59)

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*Note.* All frequency statistics are reported on raw untransformed data; *M* = Mean; *SD* = standard deviation; Valid % represents percentage of participants with the available data; UHR = ultra high-risk for psychosis; SCID = Structured Clinical Interview for Axis-I DSM-IV Disorders; MINI = Mini International Neuropsychiatric Interview; MDE = Major Depressive Episode; <sup>a</sup> From MDE to Past Hypomanic Symptoms, *N* = 2 missing from the case group and *N* = 3 missing from the rest of MINI categories. *N* = 1 missing from controls for PTSD.

Table 12 and Table 13 show between-group comparisons for the key demographic and clinical characteristics of the sample. After considering the Bonferroni corrected critical p-value, a significant between-group difference was found only in the severity of current CAARMS symptomatology (excluding perceptual abnormalities) with controls having significantly lower scores ( $M = 23.53$ ,  $SD = 17.72$ , 95%CIs, [17.24, 29.71]) compared to voice-hearers ( $M = 39.03$ ,  $SD = 19.50$ , 95%CIs [31.75, 46.31]),  $t(62) = -1.55$ ,  $p = .001$ ,  $d = .87$ .



**Table 12.** Between-group differences in continuous demographic and clinical variables for the control ( $N = 34$ ) vs. case ( $N = 34$ ) groups.

	Voice-hearing Group ( $N = 34$ )		Control group ( $N = 34$ )		$U (z) / t (df)$	$p$
	$M$ (Min- Max; $SD$ )	BCa 95% CIs of Mean [LL, UL]	$M$ (Min- Max; $SD$ )	BCa 95% CIs of Mean [LL, UL]		
Age <sup>1</sup>	1.89 (1- 2.44; .31)	[1.78, 2.00]	1.80 ( 1.23-2.43; .34)	[1.69, 1.91]	-1.16 (66)	.25
Current CAARMS severity <sup>2,a</sup>	6.03 (2.45-8.60; 1.67)	[5.42, 6.62]	4.47 (0-9; 1.90)	[3.86, 5.08]	-1.55 (62)	<b>.001</b>
Current CAARMS Aggression severity <sup>a</sup>	8.83 (0-16; 5.35)	[6.83, 10.83]	7.32 (0-18; 5.33)	[5.46, 9.18]	592.50 (1.12)	.263
Current CAARMS Suicidality severity <sup>a</sup>	8.80 (0-24; 6.59)	[6.33, 11.26]	5.65 (0-20; 6.11)	[3.52, 7.78]	656.50 (2.01)	<b>.044</b>
Lifetime CAARMS severity <sup>a,b</sup>	47.67 (10-76; 20.10)	[40.16, 55.17]	40.91 (1-92; 26.72)	[31.44, 50.38]	584.50(1.23)	.218

*Note.*  $M$  = Mean;  $SD$  = standard deviation;  $U$  = Mann–Whitney test statistic;  $df$  = degrees of freedom; BCa95% of Mean Difference is based on bootstrapping with  $N = 2000$  samples; LL= lower limit; UL= upper limit; CAARMS = Comprehensive Assessment of At-Risk Mental States – Short form. For the parametric test estimates the means and independent t-test results are based on BCa95% bootstrapping with  $N = 2000$  samples; For the non-parametric tests the CIs are based on 95%CI; <sup>1</sup> Transformed using the reversed square-root of the values adding a constant of 1; <sup>2</sup> Transformed using the square-root of the values; <sup>a</sup>  $N = 4$  missing from the voice-hearing group, <sup>b</sup>  $N = 1$  missing from the control group.

**Table 13.** *Between-group differences in nominal demographic and clinical variables for the control (N = 34) vs. case (N = 34) groups.*

	Voice-hearing Group (N = 34)	Control group (N = 34)	Likelihood ratio $\chi^2$ (df)	p
	N ( Valid %)	N (Valid %)		
Female	25 (73.5%)	25 (73.5%)	3.02 (2)	.459
White British	29 (85.3%)	32 (94.1%)	1.48 (1)	.427
Limited day-to-day activities due to disability <sup>a</sup>	6 (17.6%)	7 (21.2%)	.14 (1)	.765
CAMHS	28 (82.4%)	27 (79.4%)	.09 (1)	1
Major Depressive Episode <sup>b</sup>	9 (28.1%)	7 (20.6%)	.51 (1)	.57
Panic Disorder <sup>c</sup>	12 (38.7%)	6 (17.6%)	3.63 (1)	.095
Agoraphobia <sup>c</sup>	9 (29%)	4 (11.8%)	3.07 (1)	.121
Social Anxiety <sup>c</sup>	19 (61.3%)	9 (26.5%)	8.18 (1)	.006
Obsessive compulsive disorder <sup>c</sup>	6 (19.4%)	6 (17.6%)	.03 (1)	1
Post-traumatic stress disorder <sup>a,c</sup>	7 (22.6%)	3 (9.1%)	2.25 (1)	.178
Alcohol Use disorder 12 months <sup>c</sup>	7 (22.6%)	5 (14.7%)	.67 (1)	.527
Substance Use Disorder 12months <sup>c</sup>	7 (22.6%)	12 (35.3%)	1.28 (1)	.289
Anorexia Nervosa Restricting <sup>c</sup>	1 (3.2%)	1 (2.9%)	-	-
Bulimia Nervosa <sup>c</sup>	4 (12.9%)	0	6.21 (1)	.046
Binge Eating <sup>c</sup>	0	3 (8.8%)	4.02 (1)	.24
Generalised Anxiety disorder <sup>c</sup>	2 (6.5%)	7 (20.6%)	2.88 (1)	.153

*Note.* CAMHS = Child and Adolescent Mental Health Services; CAARMS = Comprehensive Assessment of At-Risk Mental States – Short form; Valid % represents percentage of participants with the available data; All tests were run with untransformed variables.; for the likelihood ratio chi square exact sig (2-sided is reported). All MINI Diagnosis except for the Alcohol and the Substance Use disorders refer to current research diagnoses. <sup>a</sup> N = 1 missing from the control group <sup>b</sup> N = 2 missing from the voice-hearing group, <sup>c</sup> N = 3 missing from the voice-hearing group.

### 3.3.2 Data and assumption checking

Missing Values analysis indicated that the highest rate of missing cases was 17.6% for the CTQ overall score in the voice-hearing group and 11.8% for the CTQ overall score, PROQ-3 Overall Negative relating and BAI-total in the control group. In the voice-hearing group, Mann-Whitney U, independent samples t- tests and Fisher's exact tests did not find any differences between the completers and non-completers of any variables,  $ps > .001$  (Bonferroni corrected critical p-value). In the control group, Fisher's exact test indicated a significant difference in the presence of ever having received psychological therapy in completers (29/29) compared to non-completers (0/3) of the SSS Overall Strain Scale,  $p < .001$ . Pairwise deletion of cases was selected, using all available cases in each analysis.

To minimise bias due to normality issues, a square root transformation was used to correct the upper neutral (UN) negative relating subscale, the mean Friends Strain subscale, current CAARMS Overall severity, and BAI variables. A log10 transformation was applied to the mean Partner Strain subscale, Overall CTQ and a reverse square root transformation was used to correct the neutral distant (ND) negative relating subscale. A reverse square root transformation adding a constant score of 1 was used for the Mean Friends Support and Mean Family Support subscales. Lastly, a reciprocal reverse transformation adding a constant of 1 was used for the Mean Partner Support subscale. Any hypothesis testing including variables that had issues with normality was also run using non-parametric tests with the untransformed variables were possible to reduce bias.

In addition to the ANCOVA models, to further explore any differences between the two groups, depending on the variable distribution, independent samples t-tests or Mann-Whitney U tests were performed using all outcome variables untransformed (Appendix D, Tables 1, 2, 3). There were no differences between parametric and non-parametric models with or without covariates included, thus the parametric covariate models were retained and presented here.

### 3.3.3 Case vs. control: Social relating, social connectedness, social comparison, strain and support

Table 14 summarises the results of the one-way ANOVAs and ANCOVAs used to identify between-group differences in social relating variables between young people who hear voices and controls, firstly without adjusting for any covariates and then adjusting for all covariates at the same time. ANCOVAs adjusting for each covariate separately can be found in Appendix E, Table 4.

After controlling for all covariates, one-way ANCOVAs showed a significant main association between being a voice-hearer and lower close (LC), neutral distant (ND), and overall negative relating (Overall PROQ-3), with voice-hearers relating more negatively to others ( $M = 11.97$ ,  $SD = 3.97$ ;  $M = 10.18$ ,  $SD = 4.26$ ;  $M = 65.82$ ,  $SD = 17$  respectively) compared to controls ( $M = 9.42$ ,  $SD = 3.57$ ;  $M = 2.49$ ,  $SD = .80$ ;  $M = 8.16$ ,  $SD = 3.48$ ;  $M = 56.43$ ,  $SD = 15.85$ , respectively).

Social comparison scores were also found to be significantly lower in voice-hearers ( $M = 39.03$ ,  $SD = 18.51$ ) compared to controls ( $M = 49.32$ ,  $SD = 16.31$ ), indicating that, compared to non-voice-hearers, voice-hearers tend to consider themselves of lower social rank compared to social others.

Voice-hearers additionally reported significantly lower perceived social connectedness ( $M = 21.90$ ,  $SD = 10.56$ ) compared to the control group ( $M = 27.03$ ,  $SD = 11.23$ ). However, this association only became significant when adjusting for the effect of age, with being a voice-hearer explaining 10% ( $p = .014$ ), age explaining 13% ( $p = .004$ ), and TUS SA .5% ( $p > .05$ ) of the variance in social connectedness unattributable to other variables in the analysis. Adding age as a covariate in the analysis, reduced the residual  $SS_R$  from  $SS_R = 7267.67$  to  $SS_R = 6332.27$  and increased the variance in social connectedness explained by the group membership from  $\eta^2 = .05$  to  $\eta^2 = .09$ . Further exploring the relationship between age and social connectedness within the two groups, mSCS correlated significantly with age within the control group,  $r_s = -.51$ ,  $p = .002$ ,  $N = 33$ , in contrast to the voice-hearing group,  $r = -.16$ ,  $p = .386$ ,  $N = 30$ .

Additionally, the final ANCOVA model indicated that voice-hearers reported receiving lower support from their peers ( $M = 2.44$ ,  $SD = .91$ ) compared to young people in the control group ( $M = 2.83$ ,  $SD = .93$ ). Nevertheless, a significant difference between the two groups in Mean Friends support scores was found only when the effect of age was taken into account, with group membership explaining 8% ( $p = .025$ ), age 19% ( $p < .001$ ), TUS SA 1.4% ( $p > .05$ ) and Neurocognitive performance .9% ( $p > .05$ ) of the variance in the participants scores that are not attributed to other variables in the analysis. Controlling for the effect of age reduced the residual Sum of Squares from  $SS_R = 6.06$  to  $SS_R = 4.96$  and increased the variance in Mean Friends support explained by the group membership from  $\eta^2 = .05$  to  $\eta^2 = .08$ . Correlations between age and Mean Friends within the two groups showed that Mean Friends support correlated significantly with age within the control group,  $r_s = -.58$ ,  $p < .001$ ,  $N = 33$ , in contrast to the voice-hearing group,  $r_s = -.21$ ,  $p = .250$ ,  $N = 33$ . All associations were non-significant under the Bonferroni corrected alpha level ( $p =$  or  $< .002$ ).

**Table 14.** ANOVA and ANCOVA results for social relating variables comparing the voice-hearing group ( $N = 34$ ) vs the controls ( $N = 34$ ).

Outcome variable	ANOVA			ANCOVA adjusting for all covariates			
	$F (df_1, df_2)$	Partial $\eta^2$	$p$	$F (df_1, df_2)$	Partial $\eta^2$	$Adj R^2$	$p$
Upper neutral (UN)	0.0004 (1,64)	.000006	.985	0.208 (1,60)	.003	.011	.650
Upper close (UC)	1.02 (1,64)	.016	.316	0.873 (1,60)	.014	.009	.354
Neutral close (NC)	2.04 (1,64)	.031	.158	1.406 (1,60)	.023	.037	.240
Lower close (LC)	7.51 (1,64)	.105	<b>.008</b>	7.77 (1,60)	.115	.11	<b>.007</b>
Lower neutral (LN)	.376 (1,64)	.006	.542	0.15 (1,60)	.003	.074	.699
Lower distant (LD)	2.011 (1,63)	.031	.161	1.62 (1,59)	.027	.04	.209
Neutral distant (ND)	5.74 (1,63)	.084	<b>.02</b>	5.29 (1,59)	.082	.04	<b>.025</b>
Upper distant (UD)	.010 (1,62)	.0002	.92	0.043 (1,58)	.001	-.048	.837
Overall PROQ-3 <sup>a</sup>	5.11 (1,61)	.077	<b>.027</b>	4.99 (1,59)	.078	.032	<b>.029</b>
Social comparison subscale of Belongingness <sup>b</sup>	1.76 (1,64)	.027	.189	1.41 (1,61)	.023	-.025	.239
Sum of Social Comparison Scale	5.76 (1,64)	.083	<b>.019</b>	4.64 (1,61)	.071	.028	<b>.035</b>
Total Social Connectedness Scale <sup>a</sup>	3.47 (1, 61)	.054	.067	6.42 (1,59)	.098	.138	<b>.014</b>
Mean Family support	2.37 (1,65)	.035	.128	3.99 (1,61)	.061	.06	.050
Mean Partner support	1.38 (1,28)	.047	.251	0.46 (1,25)	.018	.113	.506

Outcome variable	ANOVA			ANCOVA adjusting for all covariates			
	$F (df_1, df_2)$	Partial $\eta^2$	$p$	$F (df_1, df_2)$	Partial $\eta^2$	$Adj R^2$	$p$
Mean Friends support	3.18 (1,64)	.047	.08	5.29 (1,60)	.081	.182	<b>.025</b>
Mean Family strain	1.5 (1,61)	.024	.225	2.80 (1,57)	.047	.016	.100
Mean Friends strain	1.46 (1,61)	.023	.231	0.38 (1,59)	.006	.091	.538
Mean Partner strain	1.23 (1,28)	.042	.277	1.28 (1,25)	.049	-.025	.269
Overall Support <sup>b</sup>	3.29 (1,64)	.049	.074	3.14 (1,61)	.049	.01	.082
Overall Strain	1.21 (1,60)	.003	.652	0.54 (1,56)	.01	.068	.466

*Note.* <sup>a</sup> Neurocognitive performance did not meet ANCOVA assumptions and was excluded from the final ANCOVA; <sup>b</sup> Age did not meet ANCOVA assumptions and was excluded from the final ANCOVA;  $df_1$  = degrees of freedom for the effect of the model;  $df_2$  = degrees of freedom for the residual; Partial  $\eta^2$  = partial eta-squared;  $Adj R^2$  = Adjusted R-squared; SQRT = Square root ; PROQ-3 = Shortened Person's Relating to Others Questionnaire; BCSS = Brief Core Schema Scales. Values presented for the UN and ND PROQ-3 subscales, Mean Family support, Mean Partner support, Mean Friends support, Mean Friends strain and Mean Partner strain are based on the transformed variables.

### 3.3.4 Case vs. control: Schematic self and other beliefs

Table 15 presents the results of the one-way ANOVAs and ANCOVAs used to identify between-group differences in schematic beliefs between the two groups, firstly without adjusting for any covariates and then adjusting all covariates at the same time. ANCOVAs adjusting for each covariate separately can be found in Appendix E, Table 5.

Voice-hearers scored significantly higher in negative self BCSS ( $M = 12.97$ ,  $SD = 6.45$ ) compared to controls ( $M = 7.94$ ,  $SD = 5.33$ ). A similar main effect was found for negative other BCSS with voice-hearers endorsing greater negative other schematic beliefs, ( $M = 12.58$ ,  $SD = 5.46$ ) when compared to controls ( $M = 7.68$ ,  $SD = 5.19$ ).

Additionally, the voice-hearing group scored lower significantly in positive self BCSS ( $M = 6.5$ ,  $SD = 4.72$ ) compared to the control group ( $M = 9.79$ ,  $SD = 5.86$ ), as well as in positive other BCSS ( $M = 8.22$ ,  $SD = 3.79$ ) compared to controls ( $M = 10.66$ ,  $SD = 5.25$ ).

After considering the Bonferroni corrected significance threshold ( $p =$  or  $< .002$ ), the between group differences in BCSS Negative self and in BCSS Negative other belief scores remained significant. All other associations were non-significant under the Bonferroni corrected alpha level.



**Table 15.** ANOVA and ANCOVA results for schematic beliefs comparing the voice-hearing group ( $N = 34$ ) vs the controls ( $N = 34$ ).

Outcome variable	ANOVA			ANCOVA adjusting for all covariates			
	$F (df_1, df_2)$	Partial $\eta^2$	$p$	$F (df_1, df_2)$	Partial $\eta^2$	$Adj R^2$	$p$
Negative Self BCSS total	11.97(1,64)	.158	<b>.001</b>	11.67 (1,60)	.163	.122	<b>.001</b>
Positive Self BCSS total	6.27 (1,64)	.089	<b>.015</b>	4.83 (1,60)	.075	.053	<b>.032</b>
Negative Other BCSS total	13.13 (1,60)	.18	<b>.001</b>	10.05 (1,56)	.152	.124	<b>.002</b>
Positive Other BCSS <sup>a</sup>	4.53 (1,62)	.068	<b>.037</b>	5.16 (1,59)	.08	.048	<b>.027</b>

*Note.* <sup>a</sup> Age did not meet ANCOVA assumptions and was excluded from the final ANCOVA;  $df_1$  = degrees of freedom for the effect of the model;  $df_2$  = degrees of freedom for the residual; Partial  $\eta^2$  = partial eta-squared;  $Adj R^2$  = Adjusted R-squared; BCSS = Brief Core Schema Scales.

### 3.3.5 Case vs. control: premorbid adjustment, childhood trauma and clinical symptomatology

Table 16 presents the results of the one-way ANOVAs and ANCOVAs used to identify between-group differences in overall childhood trauma scores (Overall CTQ), mean premorbid adjustment (Mean overall PAS) and in clinical symptomatology, namely BDI-II depression scores and BAI anxiety scores, without adjusting for any covariates and then adjusting for all covariates at the same time. ANCOVAs adjusting for each covariate separately can be found in Appendix E, Table 6.

A one-way ANCOVA adjusted for the effect of age showed that voice-hearers had worse mean overall PAS ( $M = .38$ ,  $SD = .14$ ) compared to the control group ( $M = .26$ ,  $SD = .10$ ). No between group differences were identified in the Overall CTQ trauma scores ( $p < .05$ ), with both groups having a median of 40 (voice-hearing group,  $M = 47.6$ ;  $SD = 20.21$ ; controls,  $M = 43.4$ ;  $SD = 16.75$ ).

Regarding clinical symptomatology, after adjusting for both age and neurocognitive performance, belonging to the voice-hearing group had a significant association with BDI-II total scores; with voice-hearers reporting greater depression levels ( $M = 38.13$ ,  $SD = 11.58$ ) compared to the control group ( $M = 24.42$ ,  $SD = 15.02$ ). A one-way ANCOVA adjusted for the effect of age also showed that there was significant main association between belonging to the voice-hearing group and BAI scores, with voice hearers reporting higher anxiety levels ( $M = 33.59$ ,  $SD = 14.31$ ) compared to the control group ( $M = 17.93$ ,  $SD = 13.92$ ). After considering the Bonferroni-corrected significance threshold ( $p < .01$ ), all the between-group differences mentioned remained statistically significant.

**Table 16.** ANOVA and ANCOVA results for overall trauma, premorbid adjustment, depression and anxiety comparing the voice-hearing group ( $N = 34$ ) vs the controls ( $N = 34$ ).

Outcome variable	ANOVA			ANCOVA adjusting for all covariates			
	$F (df_1, df_2)$	Partial $\eta^2$	$p$	$F (df_1, df_2)$	Partial $\eta^2$	$Adj R^2$	$p$
Mean Overall PAS	14.02 (1,64)	.18	<.001	7.4 (1,63)	.19	.17	< .001
Overall CTQ	.522 (1,56)	.01	0.473	1.23 (1,55)	.02	.08	.273
BDI-II total	16.22 (1,61)	.21	<.001	16.86 (1, 57)	.23	.20	< .001
BAI total <sup>a</sup>	20.90 (1,62)	.25	<.001	19.63 (1,61)	.24	.23	< .001

*Note.* <sup>a</sup> Neurocognitive performance did not meet ANCOVA assumptions and was excluded from the final ANCOVA;  $df_1$  = degrees of freedom for the effect of the model;  $df_2$  = degrees of freedom for the residual; Partial  $\eta^2$  = partial eta-squared;  $Adj R^2$  = Adjusted R-squared; SQRT= Square root ; PAS = Premorbid Adjustment Scale; CTQ= short-form Childhood Trauma Questionnaire; BDI- II = Beck Depression Inventory-II, BAI = Beck Anxiety Inventory. Values presented for Overall CTW and BAI total are based on the transformed variables. ANCOVAs for Mean Overall PAS and Overall CTQ were adjusted only for Age.

### 3.4 Discussion

In a clinical sample of adolescents from CAMHS and EIP services, young people with and without AVH were compared in a range of social relating measures, while adjusting for age, neuro-cognitive performance, and current functioning. When compared to the clinical control group, young people with AVH reported relating to others more negatively overall, using more lower close and neutral distant patterns of negative relating, perceived themselves of lower social rank compared to social others, reported receiving lower support from their friends and feeling less socially connected with the world and others. No correlations were robust to a correction for multiple testing. The links between AVH and potential confounding variables were also explored. The two groups of young people did not differ considerably in terms of overall childhood trauma levels. Significant relationships were found between hearing voices and scoring lower on overall premorbid adjustment, positive self and other schematic beliefs, and higher on negative self and other schematic beliefs, depressive and anxiety symptoms as well as on the severity of current psychotic experiences (other than AVH). Between-group differences in positive self and other schematic beliefs did not reach statistical significance following the correction for multiple testing.

#### 3.4.1 *Social relating: relating, rank, support/strain, connectedness*

Higher scores on lower close relating in the AVH group shows they may tend to have fear of abandonment, usually by “upper” others, constantly seek reassurance and acceptance from others, and they might present with a dependent style of relating (Birtchnell, 1993, 1996). This type of relating has also been hypothesised to be linked with feelings of self-inadequacy, shame, guilt, and inferiority in relation to others. This was partly supported in this study, as young people with AVH had lower perceived social rank and more negative self-beliefs compared to controls. Young people with AVH might experience these feelings due to “stigma consciousness”, i.e. worries about being seen as having characteristics that locate them in a stigmatized group (Pinel, 1999). This could relate to fear of being identified as voice-hearers and to endangerment of their social status in peer groups and subsequent abandonment (Gronholm et al., 2016). Lower close relating could also be reflected in high levels of advice seeking

(e.g., needy, and unskilled attempts to engage with peers around problem solving) which is found in adolescents with low perceived social acceptance and insecurities about social relationships (McElhaney et al., 2008). In contrast, higher scores on neutral distant relating show that young voice-hearers might tend to use a seemingly contrasting way of relating. Neutral distant relating is suggested to describe being uncomfortable when others come too close, avoiding social activities, keeping to oneself and pushing others away. Hence, neutral distant relating could reflect the higher social disengagement and avoidance, and increased hostility found in young people who feel left out or belonging to an “outsider” group, that could lead to less social confidence (McElhaney et al., 2008). Neutral distant relating could be further explained by the greater negative beliefs about others as well as the presence of other PE, such as persecutory beliefs, that could be the case for the AVH group since they scored higher on BCCS negative others and overall CAARMS severity. A tendency to keep others away could also be due to young people’s efforts to avoid stigmatising or unsupportive responses about their voice-hearing experiences (Yang et al., 2015), communication with others feeling too overwhelming if voice-hearing becomes disruptive (Woods et al., 2015) or because they might engage with voices instead of non-voice others, with voices fulfilling the role of social relationships (Beavan & Read, 2010; Mawson et al., 2011). Generally, negative experiences in any state of PROQ-3 relatedness may prevent people from practicing and improving their relating skills in their social interactions (Birchneil, 1993, 1996). Thus, the overall higher negative relating in young people with AVH could reflect their tendency to relate in a maladaptive manner potentially due to earlier and current negative social experiences among other factors. Although these two relating styles seem contrasting, they might express young people’s oscillation between wanting to be supported by close others while fearing of losing their relationships and thus, distancing themselves to either avoid abandonment or rejection.

Additionally, the voice-hearing group scored lower in perceived social rank, which reflects feelings of involuntary subordinate self-perception. Hence, they may see themselves as undesirably inferior, less attractive and more “outsiders”, feeling concerned they have traits that others disapprove of, do not value (e.g., not bright enough), or lacking valued abilities (e.g., physical attractiveness) compared to others

(Gilbert, 1992, 2000). This finding is consistent with early psychosis research showing that young adult patients score lower in SCS compared to matched controls and their SCS score is related to the presence of positive PE (Allison et al., 2013). Based on adult research with clinical voice-hearers, low social rank has also been associated with AVH (Gilbert et al., 2001). A possible explanation would be that presence of AVH could cause or enhance pre-existing low social rank perceptions via self-stigma related to the experience. Being aware of stereotypes related to PE could lead to feelings of low self-esteem and self-efficacy (Corrigan, Druss, et al., 2014; Corrigan & Kleinlein, 2005; Link & Phelan, 2001) leaving young people vulnerable to internalising those stereotypes (Brohan et al., 2010; Kleim et al., 2008; Watson et al., 2006) and so, see themselves as inferior to others. Furthermore, views of one's own lack of power and inferiority in relation to others have been linked with perceptions about relative power and superiority of voices, voice-related distress and depression (Birchwood et al., 2000, 2004). Therefore, the appraisal of social power and rank may be a primary contributor to severity of AVH, or vice versa, with feelings of subordination to voices feeding back into social relationships (Birchwood et al., 2000).

Compared to controls, the voice-hearing group also reported lower social support from friends. This finding is in accordance with previous literature linking positive schizotypal traits (Aghvinian, & Sergi, 2018) and ARMS status in youth with lower self-reported levels of social support (e.g., Cornblatt et al., 2003; Pruessner et al., 2011) and less positive relationships with friends (Robustelli et al., 2017). Considering the important role of friends support in adolescence (Friedlmeier & Granqvist, 2006; Harris, 1995), lower perceived social support could reflect reduced buffering against stress and therefore higher vulnerability to experiencing AVH (Crush et al., 2019; Palmier-Claus et al., 2012). Although lower perceived peer support could follow the AVH onset (Davies, Sullivan, & Zammit, 2018), it could also be an expression of social adversity that has been considered a risk factor for the development of PE (Gayer-Anderson & Morgan, 2013; Selten et al., 2013). Lower perceived friends support could be a function of young voice-hearers using less approach-oriented coping (e.g., help-seeking) (Pruessner et al., 2011; Wigman et al., 2014), not disclosing their voice-hearing to peers for stigma-related reasons and/or due to lack of interpersonal trust

(Birchwood, 2003; Camara et al., 2017; Gronholm et al., 2016; Mortenson, 2009) and thus providing friends with fewer opportunities to provide support.

The lack of group differences in overall strain or support might imply a particular role for friends in young people with AVH. Evidence on the links between distressing youth AVH and lower family support (Løberg et al., 2019), and the unique buffering effect of family and overall support against the development of adolescent PE (Crush et al., 2018) was based on national representative cohorts, which potentially differ from the help-seeking groups in this study. Thus, the lack of differences in overall social support and strain could be due to both study groups scoring relatively low and high in these domains respectively, compared to the general population (Walen & Lachman, 2000).

Voice-hearers additionally reported feeling less socially connected compared to controls. According to Lee and Robbins (2000), social connectedness reflects the way individuals see themselves in relation to the social world and the internalised experience of interpersonal closeness in both close relationships and society at large. Poor social connectedness has been related to increased loneliness, social avoidance and discomfort, difficulty with intimacy and sociability (Lee et al., 2001). Social disconnect from others in daily life might result from the voices eliciting feelings of stigma, fear, and loneliness (Woods et al., 2015) which could in turn make them more likely to engage with the voices and limit their interactions with others in their environment (Corstens et al., 2012). Disrupted or limited social interaction could diminish the sense of belongingness and connectedness that could be achieved through social communication (Forsyth, 2014).

### ***3.4.2 Historical and Current AVH correlates***

Young people with AVH reported poorer overall premorbid functioning, supporting the hypothesis that poorer functioning before the onset of mental health difficulties could be a potential indicator for AVH. In ARMS, poor premorbid functioning predicts the onset of psychosis in those at-risk (Dragt et al., 2011) and in FEP, poorer social premorbid functioning has been linked with hallucinations (Evensen

et al., 2011). Thus, poor premorbid adjustment might be a marker for social relating issues (e.g., friendship quality, adjustment to peer groups) that start before the onset of AVH (Garety et al., 2001), and that could further deteriorate at and after the onset of AVH. As hypothesised, young people with AVH also reported holding both self and other negative schematic beliefs with more conviction and positive self and other beliefs less strongly. Negative interpersonal beliefs have been linked with voice-related distress in adults (Birchwood et al., 2004; Cole et al., 2017). This is relevant to the present study as voices were at least minimally distressing for all participants. Previous general population youth research has linked hallucinations with negative schemas, and an inverse weak correlation with positive schemas (Gracie et al., 2007). ARMS research has also indicated that negative schematic beliefs were associated with positive PE (Stowkowy & Addington, 2011). In a clinical sample of children and adolescents, voice severity was also negatively correlated with positive self-beliefs whereas negative beliefs about others were associated with the overall presence and severity of distressing PE (Noone et al., 2015). These beliefs could emerge due to having experienced early life trauma and/or negative early life interpersonal experiences (Birchwood et al., 2000; Young, 1994) that could be reflected in the lower PAS scores mentioned above. In terms of co-occurring symptoms, young people with AVH scored higher in both current anxiety and depressive symptoms compared to the controls. This was expected as youth population-based research has associated the presence of AVH with a wide range of psychopathologies (Kelleher et al., 2012), including depressive and anxiety symptoms (Bartels-Velthuis et al., 2016; Isaksson, Vadlin, Olofsdotter, Åslund, & Nilsson, 2020b; Laurens et al., 2020; Yamasaki et al., 2018). Furthermore, persistent or distressing PE in youth have been linked with elevated levels of depression and anxiety both cross-sectionally and longitudinally (Downs et al., 2013; Havers et al., 2019; Løberg et al., 2019; MacKie et al., 2011) being in agreement with the findings of this study. It is noteworthy that due to their link over time, hallucinations and depression in adolescence seem to have a bi-directional relationship (Sullivan et al., 2014; Zavos et al., 2016).

Bringing the above findings together, the presence of AVH could have a unique association with social relating difficulties (Kelleher et al., 2014; Pontillo et al., 2016; Wigman et al., 2014) potentially, among other reasons, due to evolving self-

disturbances leading then to AVH experiences that could be associated with fear of being stigmatised and thus keeping social distance. This could be due to issues in effective communication with others as AVH can be disruptive and undermine trust in others or due to young people turning to voices as a replacement of their social interactions and relationships. Elaborating further, voice-hearing could be an expression of a developmental pathway that started earlier in life, as indicated by the poorer premorbid adjustment before the onset of voice-hearing. Thus, negative schemas and poorer premorbid adjustment could be indicators of young voice-hearers presenting with a vulnerability to social relating difficulties even before the onset of voices and a marker for later social stressors.

The AVH group also reported higher depressive and anxiety symptoms, as well as more severe other psychotic experiences in accordance with previous literature (Bartels-Velthuis et al., 2016), supporting the premise that AVH might be an index of a more complex and severe clinical presentation. Evidence shows that youth with PE, including AVH, have an increased risk for any current and lifetime mental health disorder (Carey et al., 2020; Healy et al., 2019) and multi-morbid lifetime psychiatric disorders as well as poorer current social and global functioning when compared to youth who did not report PE (Carey et al., 2020; Laurens et al., 2020). Although in adult non-clinical samples AVH did not significantly affect functioning when others relevant factors were considered (Sommer et al., 2010), it seems that when coupled with other psychiatric problems, AVH could have greater association with social functioning. This could be the case for the present clinical sample, as AVH in adolescence appears to be an index for greater risk of several diagnosable psychopathologies (Kelleher et al., 2012, 2014) and impaired functioning, even after controlling for co-morbidity (Wingman et al., 2014). AVH could also be a marker for a complex clinical presentation that crosses over several diagnostic domains (van Os & Reininghaus, 2016) and thus, be linked to lower social functioning. This would be in agreement with the literature supporting that comorbidity is a marker of severity (Kessler et al., 2005) and specifically, that co-occurrence of PE with diagnosable psychiatric diagnoses in early adolescence constitutes a risk factor for later mental health diagnoses and treatment (Rimvall et al., 2020). Based on previous research, emotional difficulties might explain



a considerable part of the relationship between PE and social functioning in adolescence (Asher et al., 2013). This could be either by contributing to negative appraisals of AVH, potentially eliciting further increase in depression, anxiety and maintenance of AVH (Yung et al., 2007) or as part of the pathway from AVH to poor social functioning, as young people might develop low mood and anxiety due to their unusual perceptual experiences (Yung et al., 2007). These two affective domains of symptomatology could also contribute to ‘safety behaviours’ (Clark & Wells, 1995) and social withdrawal (Allan & Gilbert, 1997; Gilbert, 1992) and so directly interfere with social relating. Based on this explanation, AVH might not relate directly or significantly with some social relating outcomes when other psychopathology is considered. However, due to the cross-sectional case-control exploratory nature of this study the interplay between AVH and other factors in association with social relating could not be examined.

### ***3.4.3 Strengths and Limitations***

This study had several strengths. First, this study focused on differences in social relating associated with voice-hearing specifically. Previous research has shown that individual PE experiences can be linked with functioning and other psychopathology differently (e.g., Laurens et al., 2020; Noone et al., 2015) and thus they might relate to different support and treatment needs. Second, the presence of AVH was verified using a comprehensive assessor-rated clinical interview which allowed to establish the complexity and clinical significance of the AVH in the present sample (e.g., did not include experiences such as e.g., one’s name being called, noises, had to be as frequent as once a week and the onset of the experience should have been 3 months before taking part or longer). This is in contrast with the majority of previous research on AVH in youth that has used self-report questionnaires to establish the presence of AVH at specific time points. Third, the case-control design meant that a clinical sample of young people with AVH was compared with a control group who also experienced serious mental health problems, making the between-groups differences more striking.

Nevertheless, this study also had several limitations. First, since this study was cross-sectional, the issue of temporality between AVH and most social relating

variables and commonly co-occurring psychopathology could not be addressed. Second, the vulnerable nature of the study groups and use of in-depth time-demanding interviews led to smaller sample size, allowing for increased probability of Type II errors and low statistical power. Third, multiple comparisons between the two study groups were carried out and a few significant associations were not robust to corrections made for multiple testing. Considering the small sample size, the conservative Bonferroni correction for multiple comparisons, further reduced the statistical power of the analyses and thus, negative results should be interpreted with caution as they might not be representing a true absence of effects. Furthermore, a few outcome variables needed to be transformed to improve issues with normality and allow for the use of parametric covariate statistical tests. To minimise bias, any analyses including these variables were also run using non-parametric tests with untransformed variables, finding no significant differences between the outcomes of parametric and non-parametric statistical tests. Lastly, another methodological limitation relates to the sampling method as one-to-one case control matching was not performed, due to a very limited selection of suitable participants. Nevertheless, there were no significant differences between the two groups in terms of service type, age, gender, self-reported disability status, non-psychotic research diagnoses and risk behaviours (current suicidality, aggression).

Future research could investigate the putative mechanisms that link AVH to social relating difficulties, for example, negative schemas, depression, and anxiety. As adolescence is a time that people form peer networks and begin the transition from family to independence (Mackrell & Lavender, 2004), it would be particularly important to further understand how AVH might negatively impact the process of developing social relationships. Thus, qualitative research with young people could uncover any AVH-related factors (e.g., AVH replacing relationships, disrupting communication, fueling negative schematic beliefs) that could contribute to relating difficulties (e.g., negative relating patterns with others, feeling socially disconnected) as the majority of relevant studies have been conducted with adult samples (e.g., Beavan & Read, 2010; Mawson et al., 2010).

#### **3.4.4 Clinical implications**

AVH in help-seeking youth could be a marker for current social relating problems as well as for co-occurring psychopathology, including depression, anxiety, and other psychotic symptoms. Since AVH in youth have also been linked with poorer mental health, social and global functional outcomes that seem to persist throughout adolescence to early adulthood (Brandizzi et al., 2014; Carey et al., 2020; Davies et al., 2018; Healy et al., 2018; Healy et al., 2019), young people who report such symptoms could be considered a target group for interventions to reduce distress, ameliorate current social relating and potentially minimise poor long term outcomes. Given the social relating profile of the young people with AVH, relation-based therapies for AVH similar to those developed for adults might be helpful (e.g., Relating therapy) (Hayward et al., 2017). This type of therapy could focus on finding more adaptive ways of responding to difficult relationships with others, regardless of whether this is people in the individual's environment (e.g., peers) or voices. Therapeutic focus on negative schematic beliefs could also be relevant while considering their connection with low mood and anxiety that could contribute to AVH severity as well as vice versa.

#### **3.4.5 Conclusion**

The results of this study have implications for therapeutic approaches, although these require further testing given the preliminary nature of current findings and the study's cross-sectional design. To conclude, this study suggests that AVH in help-seeking youth could be an indicator for engaging in more negative relating, feeling less connected with others and less supported by friends, perceiving oneself as having lower social rank and holding more negative and less positive schematic beliefs about oneself and others. These exploratory findings extend prior evidence of AVH being a risk marker for increased psychopathological complexity, as reflected by high levels of co-occurring depression, anxiety as well as other PE. Although poorer premorbid adjustment might indicate an early vulnerability to social relating difficulties before AVH onset, it is possible that AVH might contribute to these issues. Further investigations could focus on factors that negatively impact social relating in this group of young people, including other psychopathological domains that could be targets of

interventions, as well as recording young people's accounts about the impact of AVH on their social lives. In clinical practice, particular attention should be paid on ways to support this group of young people to ameliorate their current social functioning and improve long term outcomes.

- 4. Attitudes to Voices ('A2V'): A survey exploring the factors influencing clinicians' intention to assess distressing voices and attitudes towards working with people who hear voices.**

#### 4.1 Introduction

Disclosure of voice-hearing can be difficult for patients and requires several barriers to be overcome, e.g. shame, stigma and anticipation of a negative response (Bogen-Johnston et al., 2019). Once voice-hearing is disclosed, patients have reported that they would like to receive feedback in managing their voice-hearing (Baker et al., 1997) as well as a desire to discuss their experiences with mental health clinicians (Coffey & Hewitt, 2008; Griffiths et al., 2019). There is evidence that clinicians can help people manage their voices through curiosity and responsiveness to their needs (De Jager et al., 2016; Griffiths et al., 2019; Iudici et al., 2017). However, additional literature suggests that mental health staff might find it difficult to engage in conversations about patients' experience and especially their content and meaning; even at times feeling sceptical about the value or appropriateness of such conversations (Coffey et al., 2004; Harrison et al., 2008; White et al., 2019). Even within a specialist service for the treatment of psychotic experiences, clinicians may not always feel comfortable about having these conversations (Bogen-Johnston et al., 2020). Primary care practitioners have also reported similar concerns such as lack of confidence in interviewing (Brunero et al., 2018) and anxiety (Roberts et al., 2013) in supporting people with mental health difficulties. With regards to young people with psychotic experiences, general practitioners (GPs) report that they have the least confidence in identifying and managing these experiences, highlighting the need for specialist support and advice when consulting with this group (Kehoe et al., 2020).

At the point of developing psychotic experiences, young people tend to experience feelings of stigma and shame (Yang et al., 2015) and usually first ask for help with other difficulties such as peer relationships, anxiety and depression (Boydell et al., 2013; Falkenberg et al., 2015; Stowkowy et al., 2013). Generally, it has been suggested that young people will rarely volunteer information on hearing voices, unless being asked directly and sensitively in a normalising environment (Kelleher et al., 2014; Mertin & Hartwig, 2004). Moreover, young people are vulnerable to feeling that their own understanding and explanations for their voice-hearing experiences are dismissed due to the power of clinicians' opinions and biomedical explanations (Bampton, 2012).

Thus, it may be beneficial for mental health professionals to be vigilant for and prepared to ask about hearing voices and other unusual experiences during routine assessments (Stowkowy et al., 2013), in a sensitive and normalising way using simple and non-medical language (Sikich, 2013).

Within the context of health services, clinicians' negative responses to disclosure of voice-hearing might be a realistic concern. Given that disclosure of voice-hearing could happen in both primary and mental health care clinicians, it is worth considering research across all relevant settings. Research has suggested that both mental health clinicians and GPs stigmatise patients with mental illnesses (Chaplin, 2000; Dabby et al., 2015; Hansson et al., 2013; Lauber et al., 2006; Lawrie et al., 1998; Nordt et al., 2006; Stuber et al., 2014). Studies comparing the attitudes of different professional groups found that general medical and primary care practitioners held more stigmatising attitudes towards people with mental illness (Stone et al., 2019) especially concerning people with a diagnosis of schizophrenia (Hori et al., 2011; Mittal et al., 2014; Smith et al., 2017).

Clinicians' training, professional and personal experience likely influence their behaviour and attitudes in their interactions with patients who hear voices. Primary care practitioners' stigmatisation of patients with mental illness has been suggested to depend on their level of experience with this patient group, with more experience relating to decreased stigmatisation (Caplan et al., 2016). Nevertheless, other studies have found that years of professional experience do not influence negative attitudes toward patients with mental health problems (Dabby et al., 2015; Lauber et al., 2006), indicating that the quality of experience and contact (e.g., contact that disconfirms negative stereotypes or includes a common goal) could play a significant role in reducing stigmatising views (Couture & Penn, 2003; Jorm et al., 2012).

Additionally, Sandhu et al., (2019) suggested that having a close relationship with someone who has a diagnosis of a mental health disorder was associated with psychiatrists and medical students expressing reduced stigma. In terms of training, professionals' lack of confidence in discussing and responding to patients' disclosures of voice-hearing experiences (Coffey & Hewitt, 2008) could be linked to lack of

training (Kramarz et al., 2020). McCluskey and de Vries (2020) indicated that mental health nurses reported not being trained or equipped sufficiently to address voice-hearing, contributing to reduced support levels for voice-hearers. In specialist Early Intervention in Psychosis services (EIP), a qualitative study suggested that although clinicians believed that talking about voices was important, their confidence and training, their understanding of voice-hearing and their beliefs about whether voices were a concern for patients would at least partly determine their specific role in continuing a conversation about voices (Bogen-Johnston et al., 2020).

Nonetheless, sometimes, the stress experienced by clinicians seems to go beyond concerns about capability and resources involving feelings of powerlessness and helplessness in reducing voice-related distress (McMullan et al., 2018). Although recent research has suggested that staff have empathy for patients and want to understand voice-hearing experiences, lack of subjective understanding, perceived clinical risks, and the diversity of voice-hearing experiences might be associated with professionals' reported lack of clinical confidence (Kramarz et al., 2020).

#### ***4.1.1 Theory of Planned Behaviour: An explanatory framework for clinician assessment of voice-hearing***

The Theory of Planned Behaviour (TPB; Ajzen, 2005) is a useful model for explaining clinician behaviours (Eke et al., 2012; Lecomte et al., 2018; Levy et al., 2016). TPB proposes three main drivers of intention to perform an action: attitudes - comprising imagined outcome of the action and how much that outcome is valued; subjective norms - comprising perceptions of what others would usually do and what they would approve or disapprove of doing, and how important that is to the person planning an action; and perceived behavioural control - comprising internal (e.g., self-efficacy for the action) and external facilitators and barriers (e.g., other duties that may need to be performed at a given time). These TPB drivers predict intention to perform the behaviour, which in turn predicts actual behaviour (Armitage & Conner, 2001).

The TPB can explain influences on clinicians' intention to assess voice-hearing experiences once disclosed by patients. The attitude component of TPB can incorporate



stigmatising attitudes about voice-hearers and beliefs about the legitimacy or value of discussing voice-hearing experiences. For example, clinicians in mental health services might hold the belief that talking about voices might do harm or cause further distress (Coffey & Hewitt, 2008; McMullan et al., 2018) which reduces the likelihood of them engaging in such conversations. The norm component of TPB could refer to clinical practice culture which could discourage detailed discussions about voice-hearing with patients. For instance, White et al. (2019) revealed that recently qualified mental health nurses could not identify examples of colleagues having discussions with patients about their voices. This could set a workplace culture that discourages discussion about voices with patients during experiential clinical learning (Cleary et al., 2011; Wright et al., 2011). The final component of TPB, perceived behavioural control, could relate to clinicians' perceived confidence in their ability to perform an action (e.g., not sufficiently skilled in asking detailed questions about voices; Kramarz et al., 2020) and the degree that a clinician has control over the action regarding situational factors (e.g., time constraints; McCluskey & de Vries, 2020). Lastly, TPB allows for the inclusion of background factors that could influence the three main drivers of behavioural intention. These could include personal, social and informational variables found to affect clinicians' intentions to discuss voices in past research (Ajzen, 2005).

#### ***4.1.2 Rationale for the present study***

Once voice-hearing is disclosed by patients, conversations about these experiences could help patients explore their voices and potentially reduce their negative impact (Romme et al., 2009; Watkins et al., 2020) or where less positive, could leave patients feeling dismissed (Bampton, 2012). Regarding young people, a cautious-but-curious investigation of the psychopathological and psychosocial context of their voice-hearing experience is recommended (Maijer, Hayward, et al., 2019). This is vital, as evidence suggests that young people who report such experiences could be a target group for early intervention to improve their functional outcomes, given that psychotic-like experiences might be an early marker of later, ongoing mental distress (Carey et al., 2020; Lindgren et al., 2019). Gaining accurate and detailed information about voice-

hearing may therefore facilitate clinicians in devising a helpful support plan (England, 2007).

Current literature suggests that more needs to be learnt about the responses of clinicians when a patient speaks about their distressing voice-hearing experiences (e.g., McCluskey & de Vries, 2020). The Theory of Planned Behaviour (TPB) offers an explanation for attitudes, subjective norms, and perceived behavioural control in relation to discussing voice-hearing experiences, which in turn predict intention to discuss voices, and the action itself. For the purposes of this study, “assessing voice-hearing” was the primary behaviour of interest, referring to a detailed exploration of the experience including questions about its phenomenology (e.g., frequency, duration, content), the meaning and beliefs assigned to the voices by the patients and the impact on their emotions and functioning. Understanding the influences on clinician intentions can support the development, evaluation, and implementation of targeted training approaches.

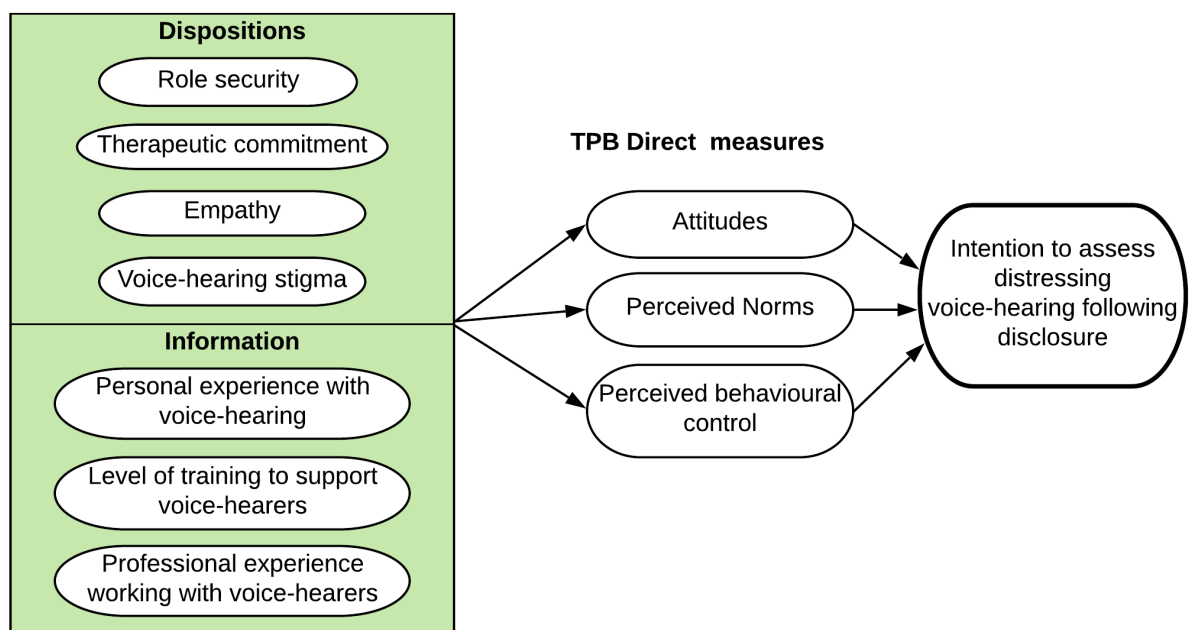
#### **4.1.3 Aims**

This study focused on clinicians in primary and secondary, including specialist psychosis, health services. First, this study aimed to capture clinicians’ training and experience of working with young people or adults who hear voices and clinicians’ beliefs, attitudes, and practices in working with voice-hearers. In particular, this study aimed to explore differences in clinicians’ perceived self-efficacy in voice-hearing practice, stigma, and attitudes toward working with young people or adults who hear voices between Child and Adolescent Mental health Services (CAMHS), Early Intervention in Psychosis (EIP), Adult Mental health services (AMHS) clinicians and Primary care practitioners (PCP). Second, this study investigated the influence of TPB constructs as predictors to assess distressing voice-hearing within different clinician groups. Based on findings about correlates to clinicians’ intentions to discuss voices, the putative influence of relevant background factors on intention to assess voice-hearing was also taken into consideration. These included the dispositional factors of stigmatising beliefs and general job attitudes toward working with patients who hear voices, and informational factors of professional and personal voice-hearing experience,

perceived self-efficacy to voice-hearing practice, and past training in working with voice-hearers (see Figure 6).

Finally, this study aimed to identify, specifically for clinicians' working with young people who hear voices, the most influential specific behavioural, normative and control beliefs on clinicians' intention to assess distressing voices.

**Figure 6.** *Diagrammatic representation of potential predictors of clinicians' intention*



*to assess distressing voice-hearing following disclosure.*

## 4.2 Method

### 4.2.1 Design

This study was a between and within-group cross-sectional exploratory study using a battery of self-report questionnaires.

### 4.2.2 Ethical approval

The study was sponsored by the University Research Grants Committee Sponsorship Sub-Committee, at the University of Sussex, UK and received ethical approval the Health Research Authority (Reference: 048 HAY/ IRAS ID: 257355, Appendix F). Participants gave informed consent for their participation in this study before completing self-report questionnaires online.

### 4.2.3 Participants

The study inclusion criteria required participants to be clinicians working in an NHS mental health service; Child and Adolescent Mental Health Services (CAMHS), Early Intervention in Psychosis (EIP) Services and/or Adult Mental Health Services, or in primary care services.

A total of 1531 mental health clinicians, working in 27 NHS mental health Trusts and 343 primary care clinicians in 32 Clinical Commissioning Groups consented to take part in the survey. Those who only consented and exited the survey were removed ( $N = 33$  from mental health services and  $N = 1$  from primary care). Those who only reported having a non-clinical role were also removed from the dataset ( $N = 12$  from mental health services and  $N = 14$  from primary care services).

### 4.2.4 Procedure

Clinicians were invited to complete the survey online by the research department of their NHS Trusts or their Clinical Research Network and distribution of advertisement material. Data were collected via the Qualtrics online survey platform. Participants were informed that after completing and submitting the consent page of the

survey their consent was to be assumed and any data entered after that point would be recorded. The questionnaires were completed anonymously. Participation was voluntary and duration of completing the survey was between 30- 40 minutes.

To allow for comparison between predictors of intention to assess voice-hearing depending what age of patient clinicians typically work with in their respective services, CAMHS and EIP clinicians completed a survey with reference to patients who were 12-18 years of age, whereas Adult Mental health service clinicians were asked about patients aged 19 and over. Primary care clinicians were randomised so that half of them were shown the version of the survey asking about patients 12-18 years of age and the remaining half would complete the version of the survey asking about patients 19 years or over. Participant demographic and professional background characteristics appear in Table 17 below.

**Table 17.** *Sample characteristics for all clinician groups (N = 1751).*

Sample characteristic		Adult Mental health (N = 996)	EIP (N = 253)	CAMHS (N = 214)	Primary Care (Adult service user version) (N = 158)	Primary Care (Young service user version) (N = 160)
		<i>M (Min-Max; SD)</i>				
Age		40.75 (18-72; 11.71)	39.97 (19-68;10.60)	38.26 (20-71; 10.49)	44.65 (25-67; 9.53)	45.47 (23-69; 9.20)
Experience in current profession (years)		11.22 (0-49; 10.54)	9.7 (0-35; 9.24)	8.92 (0-39; 8.88)	14.59 (0-40; 10.58)	14.31 (0-44; 10.48)
Experience in mental health services		12.93 (0-49; 10.29)	13.48 (0-35; 9.36)	10.41 (0-40;8.54)	1.26 (0-25; 4.34)	1.49 (0-44; 5.98)
Experience in young people mental health services		-	4.99 (0-25; 5.10)	6.85 (0-33; 6.71)	2.25 (0-11; 3.79) <sup>a</sup>	2.61 (0-22; 6.47) <sup>a</sup>
Experience in adult people mental health services		11.26 (0-48; 9.68)	-		2.47 (0-25; 5.26) <sup>b</sup>	2.91 (0-36; 6.65) <sup>b</sup>
		<i>N (Valid %)</i>				
Gender						
	Male	278 (28.78)	65 (25.69)	45 (21.03)	46 (29.11)	61 (38.13)
	Female	671 (69.46)	184 (72.73)	168 (78.50)	112 (70.89)	98 (61.25)
	Other	4 (.41)	2 (.79)	1 (.47)	0	0
	Prefer not to say	13 (1.35)	2 (.79)	0	0	1 (.63)
Ethnicity						
	White British	701 (72.57)	215 (84.98)	169 (79.34)	115 (72.78)	107 (66.88)
	White Other	11 (11.59)	16 (6.32)	22 (10.33)	13 (8.23)	6 (3.75)
	Asian/Asian British	47 (4.87)	9 (3.56)	10 (4.69)	22 (13.92)	32 (20)

Sample characteristic	Adult Mental health ( <i>N</i> = 996)	EIP ( <i>N</i> = 253)	CAMHS ( <i>N</i> = 214)	Primary Care (Adult service user version) ( <i>N</i> = 158)	Primary Care (Young service user version) ( <i>N</i> = 160)
Black/African/Caribbean/Black British	46 (4.76)	9 (3.56)	3 (1.41)	2 (1.27)	4 (2.50)
Mixed Ethnicity	28 (2.90)	3 (1.19)	6 (2.82)	2 (1.27)	6 (3.75)
Other ethnic group	12 (1.14)	1 (.40)	2 (.94)	3 (1.90)	2 (1.25)
Prefer not to say	20 (2.07)	0	1 (.47)	1 (.63)	3 (1.88)
Nationality					
British	814 (84.27)	234 (92.49)	189 (88.32)	140 (88.61)	142 (88.75)
Old EU	59 (6.11)	8 (3.16)	13 (6.07)	5 (3.16)	4 (2.50)
New EU	17 (1.76)	0	4 (1.87)	2 (1.27)	0
Other	62 (6.42)	11 (4.35)	7 (3.27)	10 (17.24)	11 (18.33)
Prefer not to say	14 (1.45)	0	1 (.47)	1 (.63)	3 (1.88)
Secondary care mental health service type					
EIP		253 (100)	0	-	-
Looked After CAMHS	-	-	7 (3.27)	-	-
Community CAMHS/AMHS (Tier 3)	437 (45.24)	-	141 (65.89)	-	-
Community CAMHS (Tier 2)	-	NA	16 (7.48)	-	-
Community CAMHS (Neuro behavioural Clinic)	-	NA	2 (.93)	-	-
Inpatient	248 (25.67)	NA	30 (14.02)	-	-
Specialist Service e.g., Assertive Outreach	164 (16.98)	-	-	-	-
Youth Offending Service	-	NA	2 (.93)	-	-

Sample characteristic	Adult Mental health ( <i>N</i> = 996)	EIP ( <i>N</i> = 253)	CAMHS ( <i>N</i> = 214)	Primary Care (Adult service user version) ( <i>N</i> = 158)	Primary Care (Young service user version) ( <i>N</i> = 160)
Other	117 (12.11)	NA	16 (7.48)	-	-
Primary Care Type of Team					
General Practice	-	-	-	145 (92.36)	150 (94.34)
Primary Mental Health	-	-	-	2 (1.27)	1 (.63)
IAPT	-	-	-	8 (5.10)	6 (3.77)
Other				2 (1.27)	2 (1.26)
Professional background					
Psychological Wellbeing Practitioner	12 (12.42)	0	2 (.93)	2 (1.27)	4 (2.5)
Psychiatrist	109 (11.28)	14 (5.53)	21 (9.81)	1 (.63)	0
Mental health/Senior mental health nurse	318 (32.92)	86 (33.99)	56 (26)	0	0
Clinical Psychologist	72 (7.45)	27 (10.67)	31 (14.49)	1 (.63)	0
Counselling Psychologist	14 (1.45)	4 (1.58)	0	-	0
Counsellor	8 (.83)	3 (1.19)	2 (.93)	-	0
Art therapist	9 (.93)	0	7 (3.27)	-	0
Cognitive Behavioural Therapist	23 (2.38)	27 (10.67)	15 (7.01)	2 (1.27)	1 (.63)
Psychotherapist	16 (1.66)	2 (.79)	18 (8.41)	4 (2.53)	1 (.63)
Social Worker	53 (5.49)	30 (11.86)	21 (9.81)	-	-
Assistant psychologist	50 (5.18)	15 (5.93)	24 (11.21)	-	-
Occupational therapist	56 (5.80)	24 (9.49)	5 (2.34)	-	-
Support, Time and Recovery worker	3 (.31)	0	0	-	-
Nursing Trainee	19 (1.97)	1 (.40)	1 (.47)	0	0



Sample characteristic	Adult Mental health ( <i>N</i> = 996)	EIP ( <i>N</i> = 253)	CAMHS ( <i>N</i> = 214)	Primary Care (Adult service user version) ( <i>N</i> = 158)	Primary Care (Young service user version) ( <i>N</i> = 160)
Clinical Psychologist trainee	20 (2.07)	3 (1.19)	4 (1.87)	-	-
Healthcare Assistant/ Support Worker	123 (12.73)	20 (7.91)	23 (10.7)	9 +	8 (5)
Student other	39 (4.04)	7 (2.77)	11 (5.14)	3 (1.90)	-
Research	24 (2.48)	3 (1.19)	0	-	0
<b>Other</b>	84 (8.70)	23 (9.09)	1 (.5)	8 (5.06)	9 (5.63)
Practice nurse/Nurse practitioner	-	-	-	24 (15.19)	37 (23.13)
General Practitioner	-	-	-	103 (65.19)	95 (59.38)
Practice paramedic	-	-	-	3 (1.90)	7 (4.38)
Any Experience in MH	-	-	-	66 (41.77)	71 (44.38)

*Notes.* <sup>a</sup> included only clinicians with experience working in young people mental health services, *N* = 18 for PCP who completed the young patient survey, *N* = 16 for PCP who completed the adult patient survey; <sup>b</sup> included only clinicians with experience working in adult mental health services, *N* = 66 for PCP who completed the young patient survey, *N* = 66 for PCP who completed the adult patient survey. *N* = Valid % represents percentage of participants with the available data; EIP = Early Intervention in Psychosis services; CAMHS = Child and Adolescent Mental Health Services; IAPT= Improving Access to Psychological Therapies services; AMHS= Adult Mental Health Services. Old EU refers to Austrian, Belgian, Danish, Dutch, Finnish, French, German, Greek, Irish, Italian, Luxembourg, Portuguese, Spanish, and Swedish nationalities. New EU refers to Bulgarian, Croatian, Cypriot, Czech, Estonian, Hungarian, Latvian, Lithuanian, Maltese, Polish, Romanian, Slovakian and Slovenian nationalities.

#### **4.2.5 Measures**

##### **4.2.5.1 Demographic and Professional background.**

Demographic information gathered included self-reported age, gender identity, nationality, ethnic background, current mental health service, profession, years of experience in current profession, in mental health services in general, and in young people's services more specifically, and information on whether clinicians conduct clinical assessments or provide psychological interventions as part of their professional role.

Further questions asked about clinicians' experiences relating to voice-hearing. Clinicians were asked to indicate the total number of young voice-hearers they have worked with, frequency of contact with patients with distressing voices, personal experience with voice-hearing, level, and type of training to support patients who hear voices and specific training received if applicable, and their perceived need and willingness to receive further training on working (supporting and assessing) with distressed voice-hearers.

##### **4.2.5.2 Voice-hearing practice self-efficacy.**

A self-efficacy questionnaire was constructed following recommendations by Bandura (2006). It had three items aiming to measure the perceived capability of clinicians to do three different tasks in their clinical routine: 1) ask a patient if they hear voices; 2) discuss voice-hearing experiences with a patient who hears distressing voices; and 3) provide useful information to a patient who hears distressing voices. The items were rated on a 100-point scale, ranging from 0 = "Cannot do" to 100 = "Highly certain can do", showing the strength of their belief in their ability to execute these tasks.

##### **4.2.5.3 Theory of Planned Behaviour (TPB).**

###### **4.2.5.3.1 Direct measures.**

A TPB measure was constructed to capture clinicians' intention to assess voice-hearing when a patient discloses hearing distressing voices in a meeting with them. It

included items relating to the direct predictors of intention to assess voice-hearing, namely attitudes, subjective norms, and perceived behavioural control of clinicians with regards to this behaviour. To ensure that there was common understanding about what “assessing” meant, a definition of the term (“asking a service user a series of open-ended questions to get detailed information about their experience”) was provided.

For the development of the direct measures of the TPB, guidelines from the authors of the TPB (Fishbein & Ajzen, 2011) and the recommendations from other researchers in this field (Francis et al., 2004) were used to ensure item stem phrases measured the constructs of interest. The TPB direct measures questionnaire consisted of 21 items, 3 on behavioural intention (e.g., “I intend to assess their voice-hearing experiences from now on”), 7 on attitudes (e.g., “When a patient discloses hearing voices to me, assessing their voice-hearing experiences would be extremely useless-extremely useful”), 5 on subjective norms (e.g., “Most people whose opinions I value professionally would assess the young person's voice-hearing experiences”), 6 on perceived behavioural control (e.g., “When a patient discloses hearing voices to me, whether or not I assess their voice-hearing experiences is beyond my control”). Responses were recorded on a 7-point Likert scale, with higher scores representing more positive attitudes, approving subjective norms and more perceived behaviour control (more example items in Appendix G, Table 1). The mean of the item scores was calculated to provide an overall construct score. The TPB subscales in all clinician groups showed good internal consistency, as  $> .79$ .

#### **4.2.5.3.2 Indirect measures.**

The TPB measure for the EIP and CAMHS clinicians also included indirect, belief-based, predictors in the form of 30 specific belief items associated with forming attitudes, subjective norms and perceived behavioural control regarding assessing voice-hearing and the outcome evaluation for each belief (Ajzen, 1991) (see Appendix G, Table 2). Indirect measures were calculated by multiplying the individual belief with its corresponding outcome evaluation and then summing the products for each TPB predictor construct. For the indirect measure of attitudes, each of the 12 behavioural beliefs which represented a particular outcome of assessing voice-hearing (rated on a 7-

point Likert scale, extremely unlikely to extremely likely) was multiplied with evaluations of outcomes (rated on -3 to +3 bipolar scale from extremely bad to extremely good). Therefore, each pair of items produced a single datum from -21 to +21. For some of the behavioural beliefs (e.g., “Doing something positive for the patients is...”), outcome evaluation items were omitted as they exhibited little variance in the pilot study (see Appendix G, Table 3 for example items). These items were replaced with a constant, based on the most frequently selected response option by the pilot participants (Francis et al., 2004). For the indirect measure of subjective norms, 5 normative beliefs were multiplied with items indicating clinicians’ motivation to comply. For the indirect measure of perceived behavioural control, 13 control beliefs were multiplied with perceived power of beliefs these beliefs. Then, total scores of the weighted beliefs were calculated to represent a composite score for attitude, subjective norms, and perceived behavioural control. Higher scores indicate that a clinician is in favour of, experiences social pressure to, and feels in control of assessing voice-hearing.

For the development of the indirect measures, an elicitation phase took place to identify commonly held beliefs about assessing distressing voice-hearing among CAMHS and EIP clinicians (see details in Appendix G, Supplementary Method 1). The final TPB questionnaire for the CAMHS and EIP clinicians had 76 items with 53 of them relating to the indirect TPB measures.

#### **4.2.5.4 Attitudes and beliefs relating to working with people with distressing voices.**

To measure clinicians’ attitudes and beliefs relating to working with people with distressing voices, a 35-item modified version (McLeod et al., 2002) of the Alcohol and Alcohol Problems Perception Questionnaire (AAPPQ; Cartwright, 1980) was used. The original AAPPQ had been designed to capture therapists’ attitudes towards working with patients who abuse alcohol, and it has been modified in psychosis research (Berry & Greenwood, 2016; McLeod et al., 2002) to measure attitudes and beliefs of mental health professionals related to treating people with delusions and hallucinations. For the purpose of this study, the questionnaire items were amended to refer only to voice-hearing, so the phrase “hallucinations and delusions” was substituted with the phrase

“distressing voices”. All items were scored on 7-point Likert-type agreement scale, with higher scores reflecting more positive attitudes or beliefs toward working with patients with distressing voices. For this study, the following domains were used and computed as the mean scores of their items: role security including two subscales referring to clinicians’ perceptions of their adequacy in their role (e.g., “I feel I know how to counsel people who hear distressing voices”) and legitimacy of their professional tasks (e.g., “I feel I have a clear idea of my responsibilities in helping people who hear distressing voices”), therapeutic commitment consisting of the subscales of motivation (e.g., “I want to work with people who hear distressing voices”), work satisfaction (e.g., “In general, I like working with people who hear distressing voices”) and work self-esteem (e.g., “At times I feel I am no good at working with people who hear distressing voices” (reverse-scored)) and lastly, empathy (e.g., “I can relate to the experiences of those people who hear distressing voices”). A previous study with clinicians from EIP and Adult Mental health services found the subscales to have internal reliability with  $\alpha > .70$  (Berry & Greenwood, 2016). In the present study, one item from the Therapeutic Commitment and Empathy domains, and two items from the Role security domains were removed to improve their internal consistency, resulting in Cronbach’s alphas of .85, .66 and .89, respectively.

#### **4.2.5.5 Stigma towards voice-hearing.**

The Attribution Questionnaire-9 (AQ-9; adapted from Corrigan, Powell, et al., 2014) was included to assess clinician stigma towards people who experience voice-hearing. It included 9 questions containing a vignette. Each question asked about each of the nine factors of stigma, relating to responsibility (blame, pity, danger, and help) and dangerousness (danger, fear, avoidance, coercion, and institutionalisation). Each response was endorsed on a 9-point Likert scale, from 1 (Not at all) to 9 (Very much). Clinician stigma was estimated as the total score of all items, ranging from 9 to 81, with higher scores representing more stigmatising attitudes. In the original AQ-9, the vignette portrays a male patient with schizophrenia (“Harry is a 30-year-old single man with schizophrenia. Sometimes he hears voices and becomes upset. He lives alone in an apartment and works as a clerk at a large law firm. He had been hospitalized six times

because of his illness”). Vignette amendments were made following guidance on reliable and valid vignette design (Steiner et al., 2017). As voice-hearing can be present in different diagnoses (Larøi, 2012; Majjer et al., 2017), information on diagnosis was removed for this study. To minimise any bias in responses due to differential expectations of diagnosis based on gender, all indications of gender were removed from the vignette. The amended vignette used was as follows: “Sam is a young person who can sometimes hear distressing voices. Sam lives at the family home and goes to college. Sam has been admitted to hospital several times due to mental health problems.” Corrigan et al. (2014) found AQ-9 internal consistency and test-retest reliability for mental health practitioners to be .71 and .87, respectively. To improve the internal consistency of AQ-9, two items were removed from the total score estimation (“I would feel pity for Sam”, “How likely is it that you would help Sam?”), resulting in Cronbach’s alpha of  $\alpha > .68$ .

#### **4.2.6 Data Analysis**

Participants’ responses to the A2V survey were exported to SPSS (Version 25, IBM Corp., 2017).

##### **4.2.6.1 Data checking.**

Participants who did not complete the first question regarding their experience working with voice-hearers were removed from the sample (Adult Mental health services,  $N = 17$ , CAMHS and EIP services,  $N = 17$ , Primary care,  $N = 10$ ). Bootstrapped 95%CI ( $N = 2000$ ) Fisher’s exact tests and independent sample t-tests showed that participants who continued completed the first survey question compared to those who left the survey did not differ significantly by any sociodemographic characteristic or professional experience in their current role or of working in mental health services,  $ps > .008$  (Bonferroni-corrected significance p-value). The remaining participants were 996 from Adult Mental health services, 467 from CAMHS and EIP. In Primary care, 158 clinicians completed the survey asking about adult patients and 160 the survey asking about young patients (12-18 years of age).

A series of Pearson's bivariate correlations were calculated between direct and indirect measures of the same TPB constructs, to confirm the validity of the indirect measures in CAMHS ( $N = 160$ ) and EIP ( $N = 207$ ). All indirect TPB measures correlated significantly with their respective direct measures ( $ps < .001$ ), with Pearson's  $r$  correlation coefficients ranging from  $r = .45$  to  $r = .62$ .

Missing data were evaluated with independent sample Welch's  $t$ -tests and Pearson's chi-square tests to investigate whether missingness was related to any demographic or background variables comparing those who did and did not complete the study measures, within each clinician group and in the whole sample. A Bonferroni-corrected  $p$ -value accounted for multiple comparisons ( $p = .005$ ).

#### **4.2.6.2 Power and sample size.**

Considering that the main analysis of the study was a multiple hierarchical linear regression model predicting the intention to assess distressing voices, an a-priori sample size calculation was conducted using G\*Power software (Faul et al., 2009). With 11 predictors (i.e., attitudes, subjective norms, perceived behavioural control, therapeutic commitment, role security, empathy, stigma, professional and personal experience with voice-hearers, two dummy variables representing the level of training in supporting voice-hearers), an effect size of  $f^2 = 0.10$ ,  $\alpha = .05$ , and a power of .95, a minimum sample size of 262 was required for each clinician group.

#### **4.2.6.3 Data assumptions and hypothesis testing.**

To explore differences in clinicians' perceived self-efficacy in voice-hearing practice, stigma and attitudes toward working with patients who hear voices (aim 1), two one-way MANOVAs were used to identify any differences in voice-hearing practice self-efficacy (first model), and in attitudes toward working with people who hear voices and stigma (second model) between clinicians working in CAMHS, EIP, Adult Mental health and Primary care services. Post hoc tests with Bonferroni corrections were used and chosen in line with recommendation from Field (2017) based on whether group sizes and variances were equal or not.

ANOVAs were conducted to investigate the effect of clinician group on each outcome variable, using Browne-Forsythe F robust test, a Bonferroni corrected  $p$ -value = .007 to correct for multiple comparisons and Hedges'  $g$  effect size corrected for unequal sample sizes (Hedges & Olkin, 1985).

Due to univariate normality tests showing distributional issues, Pillai's trace test was selected (Field, 2017). Due to potential issues with Homogeneity of variance-covariance matrices indicated by the two MANOVA Box's Tests of Equality of Covariance, with values 688.06,  $F(24, 1682178) = 28.49$ ,  $p < .001$  and 75.18,  $F(40, 1012824.53) = 1.86$ ,  $p = .001$  for the two MANOVAs respectively, Kruskal Wallis tests were run to validate the ANOVA test results.

To explore the influence of TPB direct measures and other background factors as predictors to assess distressing voice-hearing following patient disclosure within different clinician groups (aim 2), a hierarchical multiple regression analysis was performed. The multiple regression model was conducted separately for the Adult Mental health, CAMHS, EIP and Primary care clinician groups and for the overall sample. The hierarchy of entry for predictors was as follows: first direct TPB measures of attitude, subjective norms and perceived behavioural control were entered; secondly, all remaining explanatory variables (m-AAPPQ role security, therapeutic commitment, empathy, and total AQ-9 stigma scores) were added (Figure 6); finally, dummy variables for personal experience with voice-hearing (Yes/No), specific training in working with voice-hearers (Formal training vs. No formal training but considerable clinical experience vs. No training and/or minimal experience) and professional experience of working with voice-hearers (having worked with more vs. less than 10 voice-hearers) were added. When testing the model with the total sample, dummy variables representing clinician group (EIP, CAMHS, Primary care groups vs. Adult Mental health clinicians being the reference category) were added in the first block to investigate whether the type of service significantly contributes to intention to assess distressing voices in patients. Effect sizes for individual predictors were calculated using Cohen's  $f^2$  (Cohen, 1988).



Lastly, to identify specific indirect TPB behavioural, normative, control beliefs that exerted the greatest influence on clinicians' intention to assess distressing voices, the sample was dichotomised based on no/low vs. moderate/high intention (Francis et al., 2004).

Two binary logistic regression models were run separately within the CAMHS and the EIP clinicians. Due to the large number of potential predictors, the models were built based on the principle of parsimony, including only predictors that improved the model (Field, 2017).

Data assumptions underlying the MANOVAs (aim 1), hierarchical linear (aim 2) and logistic regression models (aim 3) were tested (Field, 2017) within each clinician group and in the overall sample. All main analyses were conducted with and without potential outlier cases. To mitigate any multivariate normality deviations, confidence intervals and significance values estimation for both type of regressions were based on the Bootstrapped results (BCa95%CI and  $N = 2000$  samples). For Aim 2, robust regressions were also run as a sensitivity analysis to ensure regression coefficients were not biased due to any homoscedasticity issues. A detailed description of the data assumptions check can be found in Appendix G, Supplementary Analysis 1.

#### **4.2.6.4 Missing values analysis**

The missing values analysis for the variables used in all groups indicated that the highest rate of missing cases was for the stigma AQ-9 scale in all clinician groups, ranging from 8.9% ( $N = 14$ ) in primary care clinicians who responded the survey for adult patients to 34.1% ( $N = 73$ ) in CAMHS clinicians (see Appendix G, Supplementary analysis 2, Table 4 and 5 for details). Missing values analysis for the additional 30 indirect TPB belief items completed by the EIP clinicians revealed differences between completers and non-completers in all control belief items ( $ps < .005$ ). Completers of the items were older and had more experience working in mental health services than non-completers ( $ps = \text{or} < .005$ ). There were no significant differences between completers and non-completers of indirect TPB belief items in CAMHS clinicians ( $ps > .005$ ) (See

Appendix G, Table 6). Pairwise deletion of cases as selected, using all available cases in each analysis.

Descriptive statistics of the study variables are summarised in Appendix G, Tables 7 and 8, and Pearson's correlation matrices for all main study variables within clinician groups appear in Appendix G, Tables 9 to 15.

### 4.3 Results

#### 4.3.1 Aim 1: Clinician group differences in voice-hearing practice self-efficacy, stigma and attitudes toward working with people who hear voices

Using Pillai's trace, there was a significant effect of type of service clinicians worked at on their voice-hearing practice self-efficacy,  $V = .30$ ,  $F(12,4908) = 45.18$ ,  $p < .001$ , partial  $\eta^2 = .10$ . Separate univariate Brown-Forsythe F tests revealed significant differences between type of service in self-efficacy to ask a patient if they hear voices (Adjusted  $R^2 = .15$ ), self-efficacy to discuss distressing voice-hearing (Adjusted  $R^2 = .20$ ) and on providing useful information on voice-hearing (Adjusted  $R^2 = .25$ ) (all  $ps < .001$ ) (Table 18).

Post hoc Games Howell tests showed that Adult Mental health clinicians did not significantly differ from CAMHS clinicians in self-efficacy scores in asking a patient if they hear voices and in discussing voice-hearing with a patient distressed by voices ( $p = .801$  and  $p = .128$  respectively). However, both adult and CAMHS clinicians had higher scores than primary care clinicians, irrespective of the target patient age group ( $ps < .001$ ), with Hedge's  $g$  ranging from 0.68 to 1.27. There were no differences among primary care clinicians responding to an adult based on the target patient age group as adult or young person ( $p = .919$  and  $p = .979$  respectively).

Self-efficacy to provide useful information to patients with distressing voices showed similar differences between the five clinician groups, although CAMHS and Adult Mental health services clinicians seemed to be marginally different with Adult MH clinicians having higher scores from CAMHS clinicians ( $p = .047$ ,  $g = 0.20$ ). Again, the scores of the primary care clinicians did not differ significantly according to target patient age ( $p = .866$ ). EIP clinicians had significantly higher scores in all self-efficacy items compared to all other groups ( $p < .001$ ), with effect sizes ranging from  $g = 0.31$  to 2.17. See Appendix G, Table 7 for details on the descriptive statistics of the voice-hearing practice self-efficacy scales by clinician group.

Pillai's trace also indicated a significant effect of clinicians' type of service on their stigma, therapeutic commitment, role security and empathy scores,  $V = .30$ ,  $F(12, 4194) = 38.92$ ,  $p < .001$ , partial  $\eta^2 = .10$ . Univariate Brown-Forsythe tests revealed significant type of service effects on stigma (Adjusted  $R^2 = .06$ ), therapeutic commitment (Adjusted  $R^2 = .28$ ), role security (Adjusted  $R^2 = .23$ ), and empathy scores (Adjusted  $R^2 = .05$ ) (Table 18) ( $ps < .001$ ).

Post hoc Games Howell tests showed that Adult Mental health, CAMHS and EIP clinician groups did not differ significantly with each other in stigma ( $ps > .05$ ) and reported significantly reduced stigma compared to primary care clinicians ( $p < .001$ ,  $g = 0.61-0.81$ ). Stigma scores in primary care clinicians were similar, irrespective of the target patient age ( $p = .999$ ). Therapeutic commitment scores were significantly higher in EIP clinicians compared to all other clinician groups ( $ps < .001$ ,  $g = 0.52-2.04$ ), and higher for Adult Mental health compared to CAMHS clinicians ( $p = .022$ ,  $g = 0.28$ ). Primary care clinicians scored lower on therapeutic commitment compared to all mental health clinicians ( $p < .001$ ,  $g = 1.17-2.06$ ) but did not differ depending on target patient age ( $p = .767$ ). EIP clinicians reported greater role security scores compared to all other clinicians ( $ps < .001$ ,  $g = 0.57-1.94$ ). There was no difference in role security between CAMHS and adult clinicians ( $p = .130$ ). The primary care clinician groups scored lower compared to all mental health clinicians ( $p < .001$ ,  $g = 0.88-1.94$ ) but they did not differ depending on target patient age ( $p = .418$ ). EIP clinicians had the highest empathy scores compared to all other clinician groups (Adult Mental health and primary care clinicians,  $p < .001$ ,  $g = .033$  and  $g = 0.80-0.95$ ; CAMHS,  $p = .003$ ,  $g = 0.40$ ). Adult Mental health clinicians reported significantly greater empathy than primary care clinicians ( $ps < .001$ ,  $g = 0.41-0.53$ ) but not compared to CAMHS clinicians ( $p = .931$ ). Primary care clinicians scored lower on empathy compared to all mental health clinicians ( $p < .001$ ,  $g = 0.41-0.95$ ), however, when the target patient age was 12-18 years, there was no difference in reported empathy amongst primary care compared to CAMHS clinicians ( $p = .032$ ).

Non-parametric tests were performed to validate the results of the ANOVA tests and Games-Howell tests. Kruskal Wallis one-way analysis of variance showed a

significant effect of type of service on all outcome variables ( $p < .001$ ). Mann-Whitney U tests with Bonferroni corrected critical p-value ( $p = .007$ ) comparing all clinician groups for the outcome variables showed similar results. The only exception was in the levels of self-efficacy to provide useful information on voice-hearing between Adult MH and CAMHS clinicians, where Adult MH clinicians seemed to have higher scores ( $p = .002$ ) (see Appendix G, Tables 16-25). All analyses were run without multivariate outlier cases ( $N = 152$  and  $N = 66$  for the two MANOVA models respectively), including the separate univariate tests using the Brown-Forsythe  $F$  and post-hoc Games-Howell tests. Similar results with the initial analysis for all outcomes and all clinician group comparisons were obtained.

**Table 18** ANOVAs results for the voice-hearing practice self-efficacy scales, attitudes toward working with patients who hear voices (*m-AAPPQ* subscales) and stigma (*AQ-9*) by clinicians' type of service.

Outcome variable	Predictor	Sum of Squares	Mean Square	<i>df</i>	<i>F</i>	<i>p</i>	Partial $\eta^2$
Self-efficacy to ask a patient if they hear voices	Intercept	7633455	7633455	1	21297.4	<.001	-
	Type of service	102200.95	25550.24	4	48.11	<.001	.15
	Error	586379.78	358.42	1636	-	-	-
Self-efficacy to discuss voice-hearing with a patient	Intercept	6699727.2	6699727.2	1	16318.3	<.001	-
	Type of service	164706.68	41176.67	4	68.71	<.001	.20
	Error	671683.41	410.56	1636	-	-	-
Self-efficacy to provide useful information about voice-hearing to a patient	Intercept	3444394	3444394	1	5117.85	<.001	-

Outcome variable	Predictor	Sum of Squares	Mean Square	df	F	p	Partial $\eta^2$
AQ-9 Stigma	Type of service	372821.37	93205.34	4	143.29	<.001	.25
	Error	1101053.8	673.02	1636	-	-	-
	Intercept	1077.95	1077.96	1	41600.9	<.001	-
m-AAPPQ Therapeutic Commitment	Type of service	2.49	0.62	4	23.73	<.001	.07
	Error	35.86	0.03	1384	-	-	-
	Intercept	2503.78	2503.78	1	43150.4	<.001	-
m-AAPPQ Role Security	Type of service	31.91	7.98	4	150.33	<.001	.28
	Error	80.31	0.06	1384	-	-	-
	Intercept	2945.26	2945.26	1	33369.7	<.001	-
m-AAPPQ Empathy	Type of service	36.72	9.18	4	109.1	<.001	.23
	Error	122.15	0.09	1384	-	-	-
	Intercept	16905.59	16905.59	1	11716.8	<.001	-
	Type of service	118.78	29.69	4	22.48	<.001	.06
	Error	1996.91	1.44	1384	-	-	-

*Note.* The *F* value for the main model is based on the Brown-Forsythe robust F-test value. The transformed AQ-9, m-AAPPQ Therapeutic commitment and m-AAPPQ Role Security variables have been used for the models. m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

#### **4.3.2 Aim 2: Predictors of intention to assess distressing voice-hearing across different clinician groups**

For Adult Mental health clinicians, intention to assess distressing voice-hearing was significantly predicted by more positive TPB attitudes,  $f^2 = .02$ , and subjective norms,  $f^2 = .03$ , greater perceived behavioural control,  $f^2 = .03$ , greater therapeutic commitment,  $f^2 = .004$ , and reduced empathy,  $f^2 = .01$ . The final model was found to be a significant fit to the data overall. The predictors explained 52% of the intention to assess voice-hearing, with TPB measures accounting for 98.1% of that (Table 19).

In CAMHS clinicians, more positive TPB subjective norms,  $f^2 = .01$ , lower therapeutic commitment,  $f^2 = .03$ , greater role security,  $f^2 = .02$ , and greater empathy,  $f^2 = .02$ , were significant predictors of intention. The final regression model significantly fitted the data with the overall model explaining 60% of the variance in intention, of which subjective norms explained 91.7% (Table 20).

In the EIP clinicians (Table 21), both TPB attitudes,  $f^2 = .01$ , and subjective norms,  $f^2 = .02$ , predicted intention to assess voices, but presence of either self-reported formal training and/or considerable experience working with voice-hearers,  $f^2 = .02$ , had a negative relationship with intention to assess voice-hearing. Again, the final model significantly predicted clinicians' intention, with the majority of the variance in clinicians' intention explained by the TPB measures.

When potential outlier cases ( $N = 19$  for Adult MH,  $N = 1$  for CAMHS and  $N = 6$  for EIP) were excluded, the bootstrapped regression showed similar results for the Adult MH group, whereas in the CAMHS group, perceived behavioural control became a significant predictor of intention with  $B(SE) = 0.28 (.10)$ ,  $\beta = .30$ ,  $t = 2.87$ ,  $p = .03$ , BCa95% [0.02, 0.49] and in the EIP group, the TPB subjective norms no longer significantly predicted intention with  $B(SE) = 0.10 (.06)$ ,  $\beta = .10$ ,  $t = 1.62$ ,  $p = .05$ , BCa95% [0, 0.36] (see Appendix G, Tables 26-28).

**Table 19.** Linear model of predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience in Adult Mental health clinicians ( $N = 966$ ).

Variable	$b$	$SE_B$	$\beta$	$p$	95%CI for $b$	$R^2$	Adjusted <sup>a</sup> $R^2$	$\Delta R^2$	$F(df)$	$t$
Step 1						0.51	0.51	0.51	266.33 (3,777), $p < .001$	
Constant	0.63	0.2	-	0.008	(0.17, 1.10)					3.15
TPB Attitudes	0.36	0.06	.27	<.001	(0.22, 0.50)					6.58
TPB Subjective Norms	0.27	0.04	.24	<.001	(0.17, 0.37)					6.81
TPB Perceived behavioural control	0.33	0.05	.29	<.001	(0.19, 0.48)					6.55
Step 2						0.52	0.52	0.01	119.40 (7, 773), $p < .001$	
Constant	0.38	0.28	-	.21	(-0.21, 0.95)					1.35
TPB Attitudes	0.38	0.06	.29	<.001	(0.23, 0.51)					6.25
TPB Subjective Norms	0.26	0.04	.23	<.001	(0.17, 0.38)					6.8
TPB Perceived behavioural control	0.38	0.05	.33	<.001	(0.23, 0.51)					7.16
<b>m-AAPPQ - Therapeutic commitment</b>	0.16	0.07	.10	.03	(0.03, 0.31)					2.46
<b>m-AAPPQ - Role security</b>	-0.1	0.05	-.10	.04	(-0.21, -0.0004)					-2.2
<b>m-AAPPQ- Empathy</b>	-0.1	0.03	-.10	.001	(-0.15, -0.04)					-3.47
<b>AQ-9 Stigma</b>	0.01	0.01	.03	.24	(-0.004, 0.02)					1.17
Step 3						0.52	0.52	0.001	75.82 (11, 769), $p < .001$	
Constant	0.38	0.29	-	.21	(-0.23, 1.01)					1.32
TPB Attitudes	0.38	0.06	.29	<.001	(0.23, 0.51)					6.28
TPB Subjective Norms	0.26	0.04	.22	<.001	(0.17, 0.37)					6.65



Variable	<i>b</i>	<i>SE<sub>B</sub></i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	<i>R</i> <sup>2</sup>	Adjusted <sup>a</sup> <i>R</i> <sup>2</sup>	$\Delta R^2$	<i>F(df)</i>	<i>t</i>
TPB Perceived behavioural control	0.38	0.05	.33	<.001	(0.23, 0.51)					7.17
m-AAPPQ – Therapeutic commitment	0.16	0.07	.10	.03	(0.03, 0.31)					2.47
m-AAPPQ – Role security	-0.1	0.06	-.08	.14	(-0.19, 0.03)					- 1.74
m-AAPPQ- Empathy	-0.1	0.03	-.10	<.001	(-0.14, -0.03)					- 3.34
AQ-9 Stigma	0.01	0.01	.03	.30	(-0.01, 0.02)					1.08
<b>Worked with 10 or more voice-hearers</b>	-0.1	0.09	-.02	.43	(-0.25, 0.12)					- 0.84
<b>Personal experience with voice-hearing</b>	0	0.07	-.01	.49	(-0.21, 0.10)					- 0.54
<b>Formal training on voice-hearing<sup>a</sup></b>	0	0.14	-.02	.58	(-0.42, 0.27)					- 0.28
<b>No formal training but considerable experience on voice-hearing<sup>a</sup></b>	0	0.14	-.01	.73	(-.37, 0.28)					-0.1

*Note.* <sup>a</sup> The reference category for training on helping voice-hearers the group without formal training nor considerable experience. *R*<sup>2</sup>, proportion of the variance explained; *F*, F-ratio; *t*, t-test; CI, confidence intervals. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9. 95% bias corrected and accelerated confidence intervals reported in parentheses. Confidence intervals and standard errors are based on *N* = 2000 bootstrapped samples. Variables in bold font represent the added variables in each block of the hierarchical regression.

**Table 20.** Linear model of predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience in CAMHS clinicians ( $N = 214$ ).

Variable	$b$	$SE\ B$	$\beta$	$p$	95%CI for $b$	$R^2$	Adjusted $R^2$	$\Delta R^2$	$F(df)$	$t$
Step 1						.55	.54	.55	54.75(3, 136), $p < .001$	
Constant	1.4	0.4	-	.01	(0.44, 2.62)					3.47
TPB Attitudes	0.28	0.11	.24	.08	(-0.02, .58)					2.55
TPB Subjective Norms	0.33	0.07	.32	<.001	(0.18, 0.49)					4.38
TPB Perceived behavioural control	0.26	0.09	.29	.05	(-0.01, 0.50)					2.97
Step 2						.60	.58	.06	28.83 (7,132), $p < .001$	
Constant	2.06	0.53		<.001	(0.85, 3.21)					3.87
TPB Attitudes	0.3	0.12	.25	.04	(0.04, 0.52)					2.51
TPB Subjective Norms	0.31	0.08	.3	<.001	(0.17, 0.48)					4.1
TPB Perceived behavioural control	0.22	0.1	.24	.17	(-0.09, 0.44)					2.24
m-AAPPQ-Therapeutic commitment	-0.45	0.13	-.33	<.001	(-0.71, -0.15)					-3.5
m-AAPPQ – Role security	0.27	0.1	.28	.02	(0.03, 0.53)					2.57
m-AAPPQ-Empathy	0.13	0.06	.15	.02	(0.03, 0.23)					2.22
AQ-9 Stigma	0.01	0.01	.05	.02	(-0.02, 0.04)					0.81

Variable	<i>b</i>	<i>SE B</i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	<i>R</i> <sup>2</sup>	Adjusted <sup>a</sup> <i>R</i> <sup>2</sup>	$\Delta R^2$	<i>F(df)</i>	<i>t</i>
Step 3						.60	.57	.001	17.704 (11,128), p<.001	
Constant	2.1	0.55		<.001	(0.84, 3.42)					3.79
TPB Attitudes	0.29	0.12	.24	.08	(-0.10, 0.52)					2.35
TPB Subjective Norms	0.31	0.08	.3	<.001	(0.16, 0.51)					3.92
TPB Perceived behavioural control	0.22	0.1	.24	.17	(-0.09, 0.44)					2.2
m-AAPPQ – Therapeutic commitment	- 0.45	0.13	-.33	<.001	(-0.73, - 0.16)					-3.39
m-AAPPQ – Role security	0.26	0.12	.27	.04	(0.01, 0.56)					2.25
m-AAPPQ- Empathy	0.13	0.06	.15	.03	(0.02, 0.24)					2.2
AQ-9 Stigma	0.01	0.01	.05	.52	(-0.02, 0.04)					0.8
<b>Worked with 10 or more voice- hearers</b>	0.07	0.18	.03	.49	(-0.26, 0.60)					0.4
<b>Personal experience with voice- hearing</b>	- 0.01	0.13	-.01	.86	(-0.23, 0.26)					-0.11
<b>Formal training on voice- hearing<sup>a</sup></b>	- 0.03	0.22	-.01	.72	(-0.56, 0.38)					-0.12
<b>No formal training but considerable experience on voice- hearing<sup>a</sup></b>	- 0.02	0.21	-.01	.71	(-0.56, 0.35)					-0.11

*Note.* <sup>a</sup> The reference category for training on helping voice-hearers the group without formal training nor considerable experience. *R*<sup>2</sup>, proportion of the variance explained; *F*, *F*-ratio; *t*, *t*-test; CI, confidence intervals. TPB= Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9. 95% bias corrected and accelerated confidence intervals reported in parentheses. Confidence intervals and standard errors are based on 2000 bootstrapped samples. Variables in bold font represent the added variables in each block of the hierarchical regression.

**Table 21.** *Linear model of predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience in EIP clinicians (N = 253).*

Variable	<i>b</i>	<i>SE B</i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	<i>R</i> <sup>2</sup>	Adjusted <sup>a</sup> <i>R</i> <sup>2</sup>	$\Delta R^2$	<i>F(df)</i>	<i>t</i>
Step 1						.52	.51	.52	65.55 (3,184), <i>p</i> <.001	
Constant	1.53	0.35		<.001	(0.79, 2.67)					4.36
TPB Attitudes	0.54	0.09	.51	<.001	(0.30, 0.77)					5.98
TPB Subjective Norms	0.16	0.06	.16	.02	(0.03,0.31)					2.43
TPB Perceived behavioural control	0.13	0.09	.13	.39	(-0.13, 0.28)					1.5
Step 2						.52	.51	.01	28.27 (7,180), <i>p</i> <.001	
Constant	1.72	0.5		<.001	(0.80, 2.91)					3.46
TPB Attitudes	0.59	0.1	.55	<.001	(0.32, 0.82)					6.05
TPB Subjective Norms	0.16	0.07	.16	.03	(0.03, 0.32)					2.47
TPB Perceived behavioural control	0.16	0.09	.15	.29	(-0.11, 0.30)					1.73
<b>m-AAPPQ – Therapeutic commitment</b>	-0.11	0.13	-.09	.67	(-0.30, 0.22)					-0.86
<b>m-AAPPQ – Role security</b>	0.02	0.1	.02	.94	(-0.23, 0.21)					0.23
<b>m-AAPPQ- Empathy</b>	-0.03	0.05	-.04	.46	(-0.13, 0.06)					-0.6
<b>AQ-9 Stigma</b>	0	0.01	.02	.89	(-0.02, 0.03)					0.4

Variable	<i>b</i>	<i>SE B</i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	$R^2$	Adjusted <sup>a</sup> $R^2$	$\Delta R^2$	<i>F(df)</i>	<i>t</i>
Step 3						.56	.53	.04	20.26 (11,176), <i>p</i> <.001	
Constant	2.09	0.52		<.001	(1.47, 3.50)					4.06
TPB Attitudes	0.61	0.1	.57	<.001	(0.34, 0.84)					6.46
TPB Subjective Norms	0.14	0.06	.14	.03	(0.02, 0.31)					2.22
TPB Perceived behavioural control	0.2	0.09	.19	.18	(-0.07, 0.32)					2.22
m-AAPPQ – Therapeutic commitment	-0.1	0.12	-.08	.69	(-0.29, 0.22)					-0.81
m-AAPPQ – Role security	0.04	0.1	.04	.85	(-0.21, 0.23)					0.41
m-AAPPQ- Empathy	-0.04	0.05	-.05	.35	(-0.15, 0.05)					-0.87
AQ-9 Stigma	0.01	0.01	.03	.77	(-0.02, 0.03)					0.58
<b>Worked with 10 or more voice- hearers</b>	-0.29	0.13	-.12	.02	(-0.50, 0.10)					-2.17
<b>Personal experience with voice- hearing</b>	0.19	0.1	.10	.14	(-0.05, 0.35)					1.93
<b>Formal training on voice- hearing<sup>a</sup></b>	-0.61	0.29	-.30	<.001	(-1.23, - 0.23)					-2.06
<b>No formal training but considerable experience on voice- hearing<sup>a</sup></b>	-0.66	0.29	-.32	<.001	(-1.29, - 0.26)					-2.25

*Note.* <sup>a</sup> The reference category for training on helping voice-hearers the group without formal training nor considerable experience.  $R^2$ , proportion of the variance explained; *F*, F-ratio; *t*, t-test; CI, confidence intervals. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9. 95% bias corrected and accelerated confidence intervals reported in parentheses. Confidence intervals and standard errors are based on 2000 bootstrapped samples. Variables in bold font represent the added variables in each block of the hierarchical regression.

For the primary care clinicians, irrespective of target patient age, the only significant predictors of intention to assess distressing voice-hearing were TPB attitudes,  $f^2 = .03$  for adult and  $f^2 = .06$  for young patients, subjective norms,  $f^2 = .03$  for adult and  $f^2 = .01$  for young patients, and perceived behavioural control,  $f^2 = .02$  for adult and  $f^2 = .03$  for young patients. Predicting the intention to assess voice-hearing in adult patients, the final model explained 71% of the intention variance, with TPB variables accounting for 95.8% of that. Predicting the intention to assess voice-hearing in 12-18-year olds, the final model explained 77% of the variance in intention, with TPB variables accounting for 98.7% of that (Table 22 and Table 23).

When potential outlier cases ( $N = 2$  and  $N = 1$  for the primary care clinicians adult patients and young people target patients, respectively) were excluded, TPB perceived behavioural control was no longer a significant predictor of intention to assess voice-hearing in adult patients, although it remained at trend level;  $B(SE) = 0.37 (.12)$ ,  $\beta = .32$ ,  $t = 2.97$ ,  $p = .05$ , BCa95% [0.01, 0.56]. Stigma (AQ-9) became marginally a significant predictor of intention to assess voice-hearing in young people, with stigma inversely linked to intention,  $B(SE) = -0.03 (.01)$ ,  $\beta = -.10$ ,  $t = -2.15$ ,  $p = .04$ , BCa95% [-0.05, -.001] (Appendix F, Tables 29 and 30).

**Table 22.** Linear model of predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience in Primary care clinicians who completed the adult patient version of the survey ( $N = 158$ ).

Variable	$b$	$SE\ B$	$\beta$	$p$	95%CI for $b$	$R^2$	Adjusted <sup>a</sup> $R^2$	$\Delta R^2$	$F(df)$	$t$
Step 1						.68	.68	.68	100.42 (3,140), $p < .001$	
Constant	0.34	0.29		.44	(-0.25, 0.92)					1.14
TPB Attitudes	0.48	0.12	.38	.001	(0.24, 0.71)					3.95
TPB Subjective Norms	0.23	0.08	.22	.003	(0.07, 0.40)					2.81
TPB Perceived behavioural control	0.34	0.12	.29	.03	(0.11, 0.58)					2.93

Variable	<i>b</i>	<i>SE B</i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	<i>R</i> <sup>2</sup>	Adjusted <i>a</i>	$\Delta R^2$	<i>F(df)</i>	<i>t</i>
Step 2						.69	.68	.01	44.15 (7, 136), <i>p</i> <.001	
Constant	-0.27	0.6		.55	(-1.68, 0.96)					-0.44
TPB Attitudes	0.48	0.13	.38	.001	(0.16, 0.75)					3.81
TPB Subjective Norms	0.24	0.09	.23	.002	(0.13, 0.52)					2.87
TPB Perceived behavioural control	0.41	0.12	.34	.01	(0.09, 0.60)					3.3
<b>m-AAPPQ – Therapeutic commitment</b>	0.26	0.14	.13	.13	(-0.05, 0.59)					1.81
<b>m-AAPPQ – Role security</b>	-0.2	0.11	-.15	.12	(-0.43, 0.01)					-1.77
<b>m-AAPPQ- Empathy</b>	-0.07	0.07	-.05	.46	(-0.23, 0.14)					-0.92
<b>AQ-9 Stigma</b>	0.01	0.01	.03	.56	(-0.01, 0.03)					0.58
Step 3						.71	.68	.01	29.02 (11,132), <i>p</i> <.001	
Constant	-0.18	0.63		.64	(-1.69, 1.11)					-0.29
TPB Attitudes	0.48	0.13	.38	.002	(0.16, 0.74)					3.71
TPB Subjective Norms	0.22	0.09	.21	.005	(0.10, 0.52)					2.56
TPB Perceived behavioural control	0.42	0.12	.36	.009	(0.10, 0.62)					3.45
<b>m-AAPPQ – Therapeutic commitment</b>	0.24	0.15	.12	.15	(-0.07, 0.56)					1.62
<b>m-AAPPQ – Role security</b>	-0.22	0.11	-.16	.12	(-0.46, 0.01)					-1.91
<b>m-AAPPQ- Empathy</b>	-0.03	0.08	-.02	.72	(-0.21, 0.17)					-0.41
<b>AQ-9 Stigma</b>	0.01	0.01	.03	.59	(-0.02, 0.03)					0.5
<b>Worked with 10 or more voice-hearers</b>	0.16	0.17	.05	.20	(-0.11, 0.49)					0.94

Variable	<i>b</i>	<i>SE B</i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	<i>R</i> <sup>2</sup>	Adjusted <i>a</i> <i>R</i> <sup>2</sup>	$\Delta R^2$	<i>F(df)</i>	<i>t</i>
<b>Personal experience with voice- hearing</b>	-0.39	0.2	-.1	.12	(-0.64, 0.09)					-1.99
<b>Formal training on voice-hearing<sup>a</sup></b>	-0.1	0.22	-.03	.44	(-0.50, 0.22)					-0.48
<b>No formal training but considerable experience on voice-hearing<sup>a</sup></b>	0.06	0.19	.02	.84	(-0.32, 0.47)					0.30

*Note.* <sup>a</sup> The reference category for training on helping voice-hearers the group without formal training nor considerable experience. *R*<sup>2</sup>, proportion of the variance explained; *F*, F-ratio; *t*, t-test; CI, confidence intervals. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9. 95% bias corrected and accelerated confidence intervals reported in parentheses. Confidence intervals and standard errors are based on *N* = 2000 bootstrapped samples. Variables in bold font represent the added variables in each block of the hierarchical regression.

**Table 23.** *Linear model of predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience in Primary care clinicians who completed the young people version of the survey (N = 160).*

Variable	<i>b</i>	<i>SE B</i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	<i>R</i> <sup>2</sup>	Adjusted <i>a</i> <i>R</i> <sup>2</sup>	$\Delta R^2$	<i>F(df)</i>	<i>t</i>
Step 1						.77	.76	.77	144.44 (3,133), <i>p</i> < .001	
Constant	-1.04	0.31		.008	(-1.73, - 0.03)					-3.42
TPB Attitudes	0.7	0.11	.47	<.001	(0.48, 0.88)					6.44
TPB Subjective Norms	0.18	0.08	.14	.047	(0.002, 0.27)					2.16
TPB Perceived behavioural control	0.48	0.11	.33	<.001	(0.27, 0.74)					4.47



Variable	<i>b</i>	<i>SE B</i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	<i>R</i> <sup>2</sup>	Adjusted <sup>a</sup> <i>R</i> <sup>2</sup>	$\Delta R^2$	<i>F(df)</i>	<i>t</i>
Step 2						.77	.76	.01	62.68 (7, 129), <i>p</i> <.001	
Constant	-0.69	0.53		.24	(-1.89, 0.43)					-1.31
TPB Attitudes	0.69	0.12	.47	<.001	(0.47, 0.88)					5.97
TPB Subjective Norms	0.2	0.09	.15	.03	(0.02, 0.39)					2.35
TPB Perceived behavioural control	0.54	0.12	.38	<.001	(0.30, 0.84)					4.5
<b>m-AAPPQ – Therapeutic commitment</b>	0.04	0.17	.02	.77	(-0.30, 0.41)					0.24
<b>m-AAPPQ – Role security</b>	-0.1	0.12	-.07	.42	(-0.36, 0.14)					-0.89
<b>m-AAPPQ- Empathy</b>	-0.05	0.08	-.04	.42	(-0.20, 0.08)					-0.7
<b>AQ-9 Stigma</b>	-0.02	0.01	-.07	.16	(-0.04, 0.01)					-1.49
Step 3						.77	.75	.0004	38.74 (11, 125), <i>p</i> <.001	
Constant	-0.65	0.55		.27	(-1.91, 0.50)					-1.19
TPB Attitudes	0.69	0.12	.47	<.001	(0.48, 0.89)					5.86
TPB Subjective Norms	0.2	0.09	.15	.04	(0.01, 0.40)					2.26
TPB Perceived behavioural control	0.53	0.13	.37	<.001	(0.30, 0.85)					4.24

Variable	<i>b</i>	<i>SE B</i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	$R^2$	Adjusted <sup>a</sup> $R^2$	$\Delta R^2$	<i>F(df)</i>	<i>t</i>
m-AAPPQ – Therapeutic commitment	0.03	0.18	.02	.83	(-0.32, 0.40)					0.19
m-AAPPQ – Role security	-0.09	0.13	-.07	.57	(-0.38, 0.23)					-0.73
m-AAPPQ- Empathy	-0.05	0.08	-.04	.45	(-0.20, 0.09)					-0.69
AQ-9 Stigma	-0.02	0.01	-.07	.17	(-0.04, 0.01)					-1.46
<b>Worked with 10 or more voice- hearers</b>	0.04	0.17	.01	.64	(-0.22, 0.36)					0.24
<b>Personal experience with voice- hearing</b>	-0.01	0.18	0	.95	(-0.34, 0.28)					-0.03
<b>Formal training on voice- hearing<sup>a</sup></b>	0.01	0.22	0	.76	(-0.43, 0.28)					0.04
<b>No formal training but considerable experience on voice- hearing<sup>a</sup></b>	-0.06	0.2	-.02	.64	(-0.49, 0.25)					-0.3

*Note.* <sup>a</sup> The reference category for training on helping voice-hearers the group without formal training nor considerable experience.  $R^2$ , proportion of the variance explained; *F*, *F*-ratio; *t*, *t*-test; CI, confidence intervals. TPB= Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9. 95% bias corrected and accelerated confidence intervals reported in parentheses. Confidence intervals and standard errors are based on *N* = 2000 bootstrapped samples. Variables in bold font represent the added variables in each block of the hierarchical regression.

When including all clinician groups ( $N = 1751$ ), type of service,  $f^2 < .02$ , more positive attitudes,  $f^2 = .03$ , greater subjective norms,  $f^2 = .03$ , greater perceived behavioural control,  $f^2 = .02$ , and greater empathy,  $f^2 = .002$ , significantly predicted intention to assess distressing voice-hearing (Table 24Table 12). Compared to Adult MH services, EIP and CAMHS clinicians had greater intention to assess voice-hearing,  $f^2 < .02$ . The final model provided significant fit to the data overall, with predictors explaining 60% of the intention to assess voice-hearing. Most of the variance in the model seemed to be explained by the TPB measures (52%). Excluding potential outlier cases ( $N = 27$ ) had negligible impact (see Appendix G, Table 32) and robust regression models showed similar results in all regression models (Appendix G, Tables 32 -37).

**Table 24.** *Linear model of predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience for all participants (N = 1751).*

Variable	<i>b</i>	<i>SE B</i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	<i>R</i> <sup>2</sup>	Adjusted <sup>a</sup> <i>R</i> <sup>2</sup>	$\Delta R^2$	<i>F</i> ( <i>df</i> )	<i>t</i>
Step 1						.07	.07	.07	36.58 (3,1387), <i>p</i> <.001	
Constant	5.75	0.05		<.001	(5.69, 5.87)					127.38
EIP <sup>a</sup>	0.55	0.1	.15	<.001	(0.41, 0.73)					5.59
CAMHS <sup>a</sup>	0.27	0.11	.07	.02	(0.04, 0.42)					2.5
Primary care <sub>a</sub>	-0.62	0.09	-.19	<.001	(-0.83, - 0.43)					-6.87
Step 2						.60	.60	.52	341.81 (6,1384), <i>p</i> <.001	
Constant	0.34	0.13		.029	(0.06, 0.73)					2.52
EIP <sup>a</sup>	0.17	0.07	.05	.002	(0.07, 0.31)					2.58
CAMHS <sup>a</sup>	0.31	0.07	.08	<.001	(0.20, 0.47)					4.38
Primary care <sub>a</sub>	0.15	0.06	.05	.006	(0.03, 0.27)					2.45
<b>TPB Attitudes</b>	0.44	0.04	.35	<.001	(0.34, 0.53)					11.07
<b>TPB Subjective Norms</b>	0.27	0.03	.23	<.001	(0.21, 0.34)					9.57
<b>TPB Perceived behavioural control</b>	0.31	0.04	.27	<.001	(0.20, 0.40)					8.62
Step 3						.60	.60	.004	208.27 (10, 1380), <i>p</i> <.001	
Constant	0.29	0.2		.16	(-0.11, 0.78)					1.44
EIP <sup>a</sup>	0.19	0.07	.05	.002	(0.09, 0.32)					2.85
CAMHS <sup>a</sup>	0.31	0.07	.08	.001	(0.20, 0.47)					4.38
Primary care <sub>a</sub>	0.12	0.07	.04	.044	(0.004, 0.27)					1.76
<b>TPB Attitudes</b>	0.46	0.04	.36	<.001	(0.35, 0.55)					10.91
<b>TPB Subjective Norms</b>	0.26	0.03	.23	<.001	(0.21, 0.34)					9.46

Variable	<i>b</i>	<i>SE B</i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	<i>R</i> <sup>2</sup>	Adjusted <sup>a</sup> <i>R</i> <sup>2</sup>	$\Delta R^2$	<i>F</i> ( <i>df</i> )	<i>t</i>
TPB										
Perceived behavioural control	0.35	0.04	.30	<.001	(0.23, 0.43)					9.11
m-AAPPQ – Therapeutic commitment	0.07	0.05	.05	.19	(-0.04, 0.18)					1.41
m-AAPPQ – Role security	-0.08	0.04	-.07	.10	(-0.15, 0.01)					-2.11
m-AAPPQ-Empathy	-0.06	0.02	-.06	.007	(-0.11, -0.01)					-2.83
AQ-9 Stigma	0	0	.01	.55	(-0.01, 0.01)					0.79
Step 4						.60	.60	.0003	148.54 (14,1376), <i>p</i> <.001	
Constant	0.28	0.21		.17	(-0.14, 0.78)					1.36
EIP <sup>a</sup>	0.2	0.07	.05	.002	(0.10, 0.33)					2.93
CAMHS <sup>a</sup>	0.31	0.07	.08	.001	(0.20, 0.48)					4.4
Primary care <sup>a</sup>	0.13	0.07	.04	.054	(-0.001, 0.26)					1.76
TPB Attitudes	0.46	0.04	.36	<.001	(0.36, 0.55)					10.88
TPB Subjective Norms	0.26	0.03	.23	<.001	(0.21, 0.33)					9.35
TPB Perceived behavioural control	0.35	0.04	.30	<.001	(0.23, 0.43)					9.06
m-AAPPQ – Therapeutic commitment	0.07	0.05	.05	.21	(-0.04, 0.18)					1.42
m-AAPPQ – Role security	-0.08	0.04	-.07	.16	(-0.15, 0.02)					-2.01
m-AAPPQ-Empathy	-0.06	0.02	-.05	.01	(-0.10, -0.01)					-2.65
AQ-9 Stigma	0	0	.01	.56	(-0.01, 0.01)					0.77
Worked with 10 or more voice-hearers	0	0.06	0	.77	(-0.10, 0.15)					-0.08
Personal experience with voice-hearing	-0.04	0.05	-.01	.54	(-0.14, 0.07)					-0.74

Variable	<i>b</i>	<i>SE B</i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	$R^2$	Adjusted <sup>a</sup> $R^2$	$\Delta R^2$	<i>F</i> ( <i>df</i> )	<i>t</i>
<b>Formal training on voice-hearing<sup>b</sup></b>	0.01	0.09	0	.52	(-0.22, 0.13)					0.08
<b>No formal training but considerable experience on voice-hearing<sup>b</sup></b>	0.04	0.08	.01	.96	(-0.17, 0.17)					0.48

*Note.* <sup>a</sup>The reference category for these dummy variables that represent the type of clinicians service was Adult Mental Health services; <sup>b</sup>The reference category for training on helping voice-hearers was the group without formal training nor considerable experience.  $R^2$ , proportion of the variance explained; *F*, F-ratio; *t*, t-test; CI, confidence intervals. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9. 95% bias corrected and accelerated confidence intervals reported in parentheses. Confidence intervals and standard errors are based on 2000 bootstrapped samples. Variables in bold font represent the added variables in each block of the hierarchical regression.

#### 4.3.3 Aim 3: The effect of TPB beliefs-based measures on intention to assess distressing voice-hearing in young people.

Clinicians were split into no or low intention vs moderate or high intention to assess distressing voice-hearing based on their mean TPB intention score, with scores ranging from 1 up to, but not including, 6 indicating no to low intention and scores 6 to 7 indicating moderate to high intention.

Based on the principle of parsimony (Field, 2017), five weighted beliefs, two behavioural, two normative and one control belief for CAMHS and four behavioural beliefs and one normative belief for EIP clinicians, were kept in the final logistic regression models. The overall model accuracy of predicting clinicians' intention group based on their belief scores was at 86.4% (78.9% for the null model) for CAMHS and 91.8% (84% for the null model) for EIP clinicians.

For EIP and CAMHS clinicians, the behavioural belief that assessing voice-hearing would help with constructing a detailed formulation of the young person's presentation significantly increased the likelihood of having a moderate/high intention to assess voice-hearing. In CAMHS, a one-point increase in this belief increased the

odds of having high/medium intention to assess group by 32% (Table 25) and in EIP by 84%. Similarly, the normative belief that specialist mental health professionals think that they should assess distressing voice-hearing after disclosure of the experience was associated with clinicians having moderate/high intention to assess voices in both clinician groups. In CAMHS, a one-point increase in this normative belief increased the likelihood of clinicians belonging in the moderate/high group by 20% ( $p = .002$ ) (Table 25) and for EIP clinicians by 39% ( $p < .001$ ) (Table 26). Specifically, in CAMHS, the control belief that having voice-hearing assessment tools available in their clinical routine was positively associated with higher likelihood of clinicians reporting moderate/high intention to assess voice-hearing in young people ( $p = .036$ ) (Table 25). However, no significant associations were found between intention and beliefs about whether assessing voice-hearing would lead to mistakenly labelling the young person with a mental health disorder such as psychosis or whether the clinician believes the young person thinks they should assess their voice-hearing experiences,  $ps > .05$ .

Among EIP clinicians, those who believed less intensely that assessing voice-hearing would lead to overfocusing on voices and incomplete exploration of other critical areas of a young person's presentation were more likely to belong in the moderate/high intention group ( $p = .001$ ) (Table 26).

When the analysis was repeated for EIP clinicians without potential outlier cases ( $N = 32$ ), the same predictors were found to be significant (all  $ps < .05$ , Nagelkerke  $R^2 = .82$ , Model  $\chi^2(5) = 84.49$ ,  $p < .001$ ). An additional behavioural belief was also found to contribute significantly to the model (the belief that assessing voice-hearing would help evaluate the impact of voices on the young person's functioning,  $OR = 2.25$ , 95% CI [1.47-10.86], Wald statistic = 1.02,  $p = .004$ ). Re-running the analysis for CAMHS clinicians without potential outlier cases ( $N = 12$ ) resulted in only one predictor belief contributing significantly to the resulting model (normative belief about specialist mental health professionals approving of their assessing voice-hearing;  $OR = 1.28$ , 95% CI [1.13-1.46], Wald statistic = 14.28,  $p < .001$ , Nagelkerke  $R^2 = .62$ , Model  $\chi^2(5) = 62.41$ ,  $p < .001$ ). Welch's t-test results exploring the differences in all 30 weighted

beliefs for no/low vs moderate/high intention groups are presented in Appendix G, Tables 38 and 39.



**Table 25.** Summary of binary logistic regression examining the effect of indirect TPB weighted beliefs on TPB intention for CAMHS clinicians.

Variables	Intention group		<i>b</i> ( <i>SE</i> )	Wald statistic	<i>p</i>	<i>OR</i> <sup>a</sup> (95% CI)
	No /Low ( <i>N</i> = 32)  <i>M</i> ( <i>SD</i> )	Moderate/ High ( <i>N</i> = 116)  <i>M</i> ( <i>SD</i> )				
Constant			-4.10 (2.25)	3.34		0.04
Assessing voice-hearing would help with constructing a detailed formulation of what is happening for the young person	18.19 (2.56)	19.66 (1.87)	0.27 (0.11)	5.78	.015	1.32 (1.05, 1.64)
Assessing voice-hearing would lead to mistakenly labelling the young person with a mental health disorder such as psychosis	-8.78 (4.35)	-6.07 (3.68)	0.13 (0.06)	4.06	.061	1.14 (1.00, 1.29)
The young person thinks I should assess their voice-hearing experiences	.38 (5.92)	5.85 (6.49)	0.02 (0.06)	0.12	.678	1.02 (.91, 1.14)
Specialist mental health practitioners (e.g., psychologists, psychiatrists) think I should assess the young person's voice-hearing experiences	-2.91 (9.00)	9.26 (6.70)	0.18 (0.04)	16.42	.002	1.20 (1.10, 1.30)
Voice-hearing assessment tools (e.g., assessment measures, questionnaires) are available to me.	3.88 (6.88)	5.85 (5.36)	0.11 (0.05)	5.14	.036	1.12 (1.02-1.23)

Note. <sup>a</sup> The no/low intention group was used as reference.  $R^2 = .35$  (Cox-Snell), .55 (Nagelkerke), Model  $\chi^2(5) = 63.75$ ,  $p < .001$ . *OR* = odds ratio, *b* = regression coefficient on the independent variable, CI = confidence interval. Significance values are based on *N* = 2000 BCa 95% bootstrapped samples.

**Table 26.** Summary of binary logistic regression examining the effect of indirect TPB weighted beliefs on TPB intention for EIP clinicians.

Variables	Intention group		<i>b</i> ( <i>SE</i> )	Wald statistic	<i>p</i>	<i>OR</i> <sup>a</sup> (95% CI)
	No /Low ( <i>N</i> =31)  <i>M</i> ( <i>SD</i> )	Moderate/ High ( <i>N</i> = 163)  <i>M</i> ( <i>SD</i> )				
Constant			-15.86 (4.82)	10.84	.001	0
Assessing voice-hearing would help with constructing a detailed formulation of what is happening for the young person	17.32 (3.35)	20.06 (1.58)	0.61 (0.19)	10.13	.002	1.84 (1.27, 2.69)
Assessing voice-hearing would put engagement with the young person at risk.	11.29 (1.68)	12.6 (1.46)	0.03 (0.07)	0.24	.709	1.04 (.91, 1.19)
Assessing voice-hearing would lead to over-focusing on voices and incomplete exploration of other critical areas of a young person's presentation.	-7.29 (5.46)	-4.26 (3.41)	0.27 (0.10)	7.65	.001	1.32 (1.08, 1.60)
Assessing voice-hearing would help evaluate the impact of voices on the young person's functioning	17.32 (2.89)	19.66 (1.57)	0.30 (0.22)	1.81	.111	1.35 (.87, 2.09)
Specialist mental health practitioners (e.g., psychologists, psychiatrists) think I should assess the young person's voice-hearing experiences	-1.42 (9.57)	11.77 (5.19)	0.33 (0.07)	21.19	<.001	1.39 (1.21- 1.59)

Note. <sup>a</sup> The no/low intention group was used as reference.  $R^2 = .43$  (Cox-Snell), .73 (Nagelkerke), Model  $\chi^2(5) = 107.77$ ,  $p < .001$ . OR = odds ratio, b = regression coefficient on the independent variable, CI = confidence interval. Significance values are based on  $N = 2000$  BCa 95% bootstrapped samples.

#### 4.4 Discussion

Overall, EIP clinicians reported more positive attitudes (therapeutic commitment, role security, empathy) towards working with young voice-hearers, higher self-efficacy in voice-hearing practices compared to all other clinician groups and similar levels of stigma toward voice-hearing youth compared to other mental health clinicians. In contrast, primary care clinicians reported the opposite results, irrespective of the patient age group. The present study also supported the utility of the TPB as a framework for understanding potential influences of clinician's intention to assess distressing voice-hearing following patient disclosure, irrespective of type of service or patient age group. Although the addition of background factors, such as job attitudes toward working with voice-hearers, was found to contribute significantly to clinicians' intention in some clinician groups, the effect of their contribution was negligible. Focusing on young people, specific beliefs relating to the usefulness of assessing voice-hearing and to the social pressure coming from the approval/disapproval of other specialist mental health professionals regarding assessing voice-hearing in 12-18-year-old patients were linked with clinician intention to do so in both CAMHS and EIP clinicians.

Exploration of the first aim revealed that all clinician groups reported at least moderate levels of self-efficacy in asking patients if they hear voices and discuss voice-hearing, regardless of the patient age group. The lowest scores in self-efficacy across clinician groups were about providing useful voice-hearing information. Primary care clinicians had the lowest scores for both adult and young patients in self-efficacy for all voice-hearing practices. Although asking about the presence of voice-hearing or discussing the experience might becoming part of mental health clinical practice in recent years (British Psychological Society, 2014), providing information potentially requires clinicians' active engagement with the experience and access to information that could be helpful for patients. This finding is partly in accordance with previous studies showing low confidence of clinicians in engaging with voice-hearing experience (Kramarz et al., 2020). Additionally, mental health clinicians' moderate self-reported confidence in asking about or discussing voice-hearing does not necessarily mean that

they consider such conversations to be appropriate nor that they actually engage in them (Coffey & Hewitt, 2008; Coffey et al., 2004; Harrison et al., 2008; White et al., 2019). However, if clinicians' confidence translates in asking about the presence of voice-hearing, it could be especially beneficial for the early detection of such experiences in young people who might be sceptical in disclosing them, unless they are asked directly (Kelleher et al., 2014; Mertin & Hartwig, 2004).

All secondary mental health clinician groups (EIP, CAMHS, Adult Mental health) reported similar levels of stigma with each other but lower compared to primary care practitioners, with a moderate to large effect, irrespective of the patient age group. Previous literature has shown that primary care clinicians tend to report more negative attitudes towards people with psychotic experiences compared to mental health clinicians (Hori et al., 2011; Mittal et al., 2014; Smith et al., 2017).

In the present study, almost half of the primary care clinicians had no formal training in supporting voice-hearers and no or limited clinical experience with this patient group. Thus, higher levels of stigmatising attitudes could possibly due to having less work experience (Al Saif et al., 2019; Caplan et al., 2016) or due to having fewer positive experiences with this patient group, rather than contact more broadly. Considering that lack of training in supporting this group could be linked to lower levels of confidence in discussing voice-hearing experiences with patients (Kramarz et al., 2020), this could lead to less opportunities for positive contact experiences and building therapeutic rapport that could disconfirm negative stereotypes and reduce stigmatising views (Couture & Penn, 2003; Jorm et al., 2012). Furthermore, most primary care clinicians in this study (about 81%) did not have personal or familiar experience of hearing voices compared to about 68% in mental health professionals, which according to recent studies could be an additional factor for displaying higher levels of stigmatising attitudes (Oliveira et al., 2020; Sandhu et al., 2019).

Findings on job attitudes towards working with voice-hearers showed differences among clinician groups, with EIP clinicians reporting the greatest therapeutic commitment, role security and empathy. Concerning working with young voice-hearers, differences between CAMHS and EIP had moderate to large effect size

for therapeutic commitment and role security and small for empathy. Reporting being more motivated and satisfied, feeling more adequate in their role, legitimate when engaging in their clinical tasks with this group and relating to a greater extent with patients' experiences, could be intuitively expected for EIP clinicians as they have more training and/or experience working with patients with voice-hearing and other psychotic experiences.

All mental health clinicians had higher role security, therapeutic commitment and empathy compared to primary care clinicians, with a moderate to large effect, with the exception of CAMHS who did not differ in empathy from primary care clinicians. The lower positive attitudes in primary care clinicians could be partly attributed to the lack of positive reinforcement when consulting with patients with mental health difficulties which could leave them with low levels of satisfaction in the care they provide (Zolnierek & Clingerman, 2012) and drive doubt in their professional credibility (Brunero et al., 2018; Harrison & Zohhadi, 2005). Differences in self-reported empathy between mental health and primary care practitioners could be explained by the increased social contact of the former group with voice-hearers, which could have increased feelings of empathy and allowed for personal connections (Agrawal et al., 2016; Maranzan, 2016; Pettigrew & Tropp, 2006).

Exploring the predictors of clinicians' intention to assess distressing voice-hearing following disclosure by patients indicated that TPB employed a well-fit model. The three TPB predictors (attitudes, subjective norms, perceived behavioural control) accounted for over than half of the variance in intention, which was higher than the 39% of variance explained typically by TPB (Armitage & Conner, 2001). Mean scores indicated that, overall, clinicians reported high intention to assess voices. This finding is comparable to other studies who found mental health clinicians' intention to discuss the meaning and content of voices moderately high (MacLeod, 2011) and that the majority attended to the content of hallucinations, despite ambivalence in attitudes towards the value of doing so (Aschebrock et al., 2003).

Overall, more positive attitudes, more approving subjective norms, greater perceived behavioural control significantly predicted intention to assess distressing

voice-hearing. For Adult Mental health clinicians and primary care practitioners, all three TPB measures were significant predictors of intention to assess voices. By comparison, in relation to young patients, attitudes and subjective norms in EIP and only subjective norms in CAMHS seemed to significantly explain part of the variance in intention.

Regarding other background factors, in Adult Mental health clinicians, reduced empathy seemed to predict higher intention to assess distressing voice-hearing, although the effect size and its contribution to the model was almost negligible. Correlations showed that empathy was weakly positively associated with attitudes and perceived behavioural control, and there was a positive trend with subjective norms and intention. This could mean that empathy may have acted as a negative suppressor variable, sharing more variance with the unexplained variance in the TPB predictors of attitudes and perceived behavioural control than with the outcome itself (intention) (Maassen & Bakker, 2001). It may be that inasmuch as TPB attitudes and perceived behavioural control may be linked with clinicians' intention to assess voices, it is even more prominent for clinicians who do not have high empathy toward voice hearers. Clinicians with high empathy might also intent to avoid detailed questioning about distressing voice voices as patients might further disclose past or present adverse experiences related to this experience (Longden, Corstens, et al., 2012) which could again be linked to fear of causing distress to both patients and themselves (Young et al., 2001).

In CAMHS, therapeutic commitment was linked with lower intention, whereas higher role security and empathy with higher intention, all with small effect. Correlations between these three job attitudes and intention were positive having small to moderate strength. Considering the high correlation between role security and therapeutic commitment in this group, the negative relationship between therapeutic commitment and intention could be an artefact due to issues with multicollinearity. When running the model leaving therapeutic commitment out of the model, role security and empathy were no longer significant predictors of intention whilst TPB subjective norms remained a predictor.

Focusing on young people 12-18 years of age, this study found that specific beliefs might be linked to CAMHS and EIP clinicians' intention to assess voice-hearing. First, believing that assessing voices would help with constructing a detailed formulation of the young person's presentation and believing that other specialist mental health professionals (e.g., psychiatrists, psychologists) would approve and think clinicians should assess distressing voice-hearing after disclosure of the experience. It seems that believing assessment would help setting a clearer and more accurate base for supporting young people and perceiving their specialist colleagues as being encouraging of having a detailed discussion about voice-hearing increased their self-reported intention to do so. Specifically, in CAMHS, having voice-hearing assessment tools (e.g., questionnaires) available was positively related with moderate to high intention to assess voice-hearing in young people. In contrast to EIP, which is a specialist service for psychosis and tools might be more easily accessible in clinical routine, CAMHS might not have ready-to-access tools that would support exploration of voice-hearing and related experiences.

Previous research has demonstrated that subjective norms are strong predictors of clinicians' intention (Kelly et al., 2012; Perkins et al., 2007), highlighting the increased importance that managers and colleagues play on influencing clinician's behaviours. Specifically in mental health studies employing TPB to explain clinicians' intention of using evidence-based practices (e.g., cognitive behavioural therapy for psychosis), social norms and individual attitudes have been strong predictors of intention, with social norms determining whether evidence-based practice will be delivered (Burgess et al., 2017; Lecomte et al., 2018). Research on influences of psychotherapists current clinical practice has also emphasised the importance of other clinicians or role models and informal discussions with colleagues as key determinants of their current practice and treatment decisions (Cook et al., 2009). Although in this study clinicians' average ratings on subjective norms seemed that they are at least slightly to moderately approving, discouraging service culture toward discussing distressing voices could be due to several reasons including lack of confidence (e.g., Coffey & Hewitt, 2008), practical issues such as lack of staff that might lead to prioritising task completion rather than engaging with patients (McCluskey & Vries,

2020; McMullan et al., 2018; White et al., 2019). Specific to young people, having a working culture that deters clinicians from in-depth discussions on voice-hearing might have to do with the experience per se; voice-hearing in young people may not be as commonly linked with severe mental illness and could potentially be considered as part of normal development (Maijer et al., 2019) thus dismissed.

Perceived behavioural control did not significantly predict intention to assess voices in young people, although it seemed to predict clinicians' intention overall. According to a meta-analysis (Notani, 1998), perceived behavioural control is often a poor predictor of intentions when the target behaviour is relatively unfamiliar to the participants, as one might need an adequate level of actual experiences in order to truly appreciate the carriers involved in achieving the target behaviour. Since assessment of distressing voices in young people might be an unfamiliar behaviour for clinicians, their perceptions of control may be based on unrealistic assumptions.

#### ***4.4.1 Strengths and Limitations***

The study had a relatively large sample size when compared to other studies in this research area and thus achieved good statistical power. It included a range of clinicians from both primary care and secondary mental health services, from multiple regions, such that a representative UK sample of health and social care staff was achieved. Additionally, this is the first study to employ TPB to understand the influences on clinician's intention to discuss distressing voice-hearing in young people and one of the few studies to explore staff views on that subject. Previous studies have focused mostly on mental health acute wards and smaller samples, usually of nurses (Coffey & Hewitt, 2008; McMullan et al., 2018).

The study also had a number of limitations. Although asking CAMHS practitioners to answer questions about patients 12-18 years of age would refer to a commonly treated age group within these services, it is possible that EIP clinicians may not have much experience working with this age group. According to the 2019-2010 National Clinical Audit of Psychosis (Royal College of Psychiatrists, 2020) patients under 18 years of age only constituted 1.8% of the caseload for UK EIP services. This



might have influenced clinicians' responses, reliability and validity of findings given the sample size for this clinician group. Rigidity of professional boundaries could be another factor to consider when interpreting clinicians' responses. Some clinicians might not have viewed assessing voice-hearing as be part of their professional role (e.g., HCA, students); indicated by 15.7% of participants in this study who reported that they do not conduct patient mental health assessments as part of their current role. However, it is worth noting that the definition given in the TPB questionnaire related more to an in-dept detailed conversation about distressing voice-hearing experience rather than a formal psychiatric assessment. Methodological limitations include issues with the normality and skewness of a few variables which might have slightly inflated the likelihood of false positives. However, this should not question the reliability of the model tested, as regression analyses are fairly robust against violations of the normality assumption, especially when residuals do not diverge considerably from a normal distribution (Knief & Forstmeier, 2018).

#### ***4.4.2 Future directions***

Future studies should aim at examining voice-hearing practices, rather than focusing on behavioural intention. Despite evidence that intention is a moderate predictor of clinician self-reported behaviour ( Eccles et al., 2006; Godin et al., 2000), other factors might mediate the relationship between behavioural intention and implementation. Perkins et al. (2007) indicated that even in cases where clinician intention is high to perform a goal-directed behaviour, there might be other obstacles encountered en route to behavioural performance (e.g., habits and automatic processes, behavioural skills and cues). Additionally, studies have found different TPB components to predict behaviours depending on clinicians' professional group membership and their specific norms (Hrisos et al., 2009; Kortteisto et al., 2010; Perkins et al., 2007). Thus, research on guiding the implementation of changes regarding clinicians' behaviour toward patients with distressing voices might be worth focusing on specific clinician groups. Considering the important role of subjective norms in predicting clinicians' behaviour, research on interventions aiming to increase

intention to discuss distressing voices could improve understanding on the most effective forms of social influence within health services.

#### **4.4.3 Implications**

Discussing distressing mental health experiences provides an opportunity for clinicians to provide a safe place for the patient to speak about them and find meaning in a shared understanding, which can be therapeutic (McAndrew et al., 2014). Considering the modest clinician confidence in providing useful information to patients with distressing voice-hearing, offering more knowledge on this experience to clinicians might increase their confidence to talk about it. Since a lack of material support and resources has been identified as one of the key barriers to the translation of knowing to doing in healthcare practice (Cochrane et al., 2007), having access to material and resources (e.g., psychoeducation leaflets, questionnaires) could support clinicians in engaging in conversations about voice-hearing. Regarding young people, any information should be developmentally appropriate, and clinicians' responsiveness should be tailored to their developmental stage to enhance engagement with this patient group (Jones et al., 2017).

To promote in-depth conversations between clinicians and patients about distressing voice-hearing, a suggestion would be to aim at making changes in the work environment. Rather than intervening to alter clinicians' job attitudes toward working with voice-hearers or specific attitudes on assessment, training professionals who set the example or are highly appreciated within a service could be beneficial. This could refer to specialist or senior mental health professionals who are involved in the supervision of their colleagues and in charge of team training activities. Opening conversations about voice-hearing within clinical teams, feeling that talking about voices is approved by peers and could be beneficial to the patients (Coffey et al., 2008) could be a first step to address any reservations among clinicians about having detailed explorations of such experiences in young people once they occur, rather than discourage this practice. Taking into account that some clinicians might find it difficult to explore the nature of young people's voice-hearing experiences (Byrne et al., 2020) the use of structured

tools in young people's services might reduce clinicians uncertainty and facilitate conversations (Bogen-Johnston et al., 2020).

#### **4.4.4 Conclusion**

EIP clinicians had the lowest stigma, most positive job attitudes and highest self-efficacy in voice-hearing practices with young people, while responses of primary care practitioners demonstrated the opposite. Clinicians' intention to assess distressing voices in both young and adult patients after disclosure was moderately high, with the TPB variables of attitudes, subjective norms and perceived behavioural control explaining a large part of its variance. In depth exploration about assessing voices in young people revealed that beliefs about what specialist mental health colleagues encourage and beliefs about the usefulness of assessing voices in drawing a clearer picture about the young person's presentation were key factors in increasing their intention to open these in-depth discussions. Promoting a work culture that encourages opening and engaging in discussions about voice-hearing between colleagues and with patients as well as introducing supportive material about voices (e.g., questionnaires, psychoeducation leaflets), might have a positive effect in encouraging discussion about voices, especially in CAMHS.

## **5. General Discussion**

## 5.1 Aims of the thesis & Summary of chapters

Auditory verbal hallucinations (AVH), or hearing voices in the absence of an appropriate external stimulus, is a relatively common experience in youth. Nevertheless, AVH can cause distress, lead to a need for clinical care and is reported by young people in the context of a wide range of mental health diagnoses. Psychological models aiming to identify the mechanisms that cause and maintain AVH-related distress have suggested a role for several psychological constructs. The most commonly tested model is the cognitive model of AVH (Birchwood & Chadwick, 1997; Birchwood et al., 2000), that claims a focal role for the hearer's beliefs about the power and intent of voices in eliciting distress, over and above voice characteristics. In addition, voices are commonly perceived to possess person-like features, and therefore Birchwood's relating theory (1996, 2002) expands the cognitive model of AVH by suggesting that perceiving the voices relating in a dominant and intrusive manner, and relating to the voice from a position distance, predicts voice-related distress and need for care. To uncover how negative beliefs about the voices are formed, attachment styles and core cognitive representations of the self and others—all shaped from past experiences—are considered to provide the basis for interpreting the meaning of current interpersonal experiences, including with voices (Garety et al., 2001; Thomas et al., 2015; Cole et al., 2017). The literature has additionally supported that perceived social rank and power (Birchwood et al., 2000, 2004) and negative relating to social others (Hayward, 2003) could manifest in perceptions of rank and power in relation to voices.

Whilst the body of literature on psychological models of voice-hearing has identified key contributors to AVH-related distress, it is almost exclusively built on studies with adults; with only two known youth studies to date (Cavelti et al., 2020; Cavelti et al., 2019b). This has left a gap in the understanding of factors that render AVH distressing in youth. Nonetheless, evidence would suggest that social relating may be important in the context of experiences of voice-hearing in youth. AVH might emerge and persist due to difficulties with existing social relationships, potentially with voices fulfilling some of young people's social needs. Relating to voices in this way could, however, enhance social withdrawal and the deterioration of social relationships.

AVH may undermine social relationships through multiple means, for example, by disrupting conversations, fostering mistrust in others or by young people withdrawing from others to avoid negative and/or stigmatising responses for their voice-hearing experiences. In addition, AVH in youth have been linked with several mental health disorders, more severe and complex psychopathology, and poorer functioning; all of which could lead to or exacerbate social relating difficulties.

Young people distressed by their AVH might seek help from mental health services. Thus, examining clinician's practices on working with this group of patients to ensure they receive appropriate support is necessary. Studies so far have shown that the majority of young people with AVH who seek help for their experience find it distressing. Thus, the first step in care would be to assess AVH in order to identify appropriate support. Nonetheless, literature with Adult Mental health clinicians has shown that they might not feel confident in discussing distressing AVH with patients, due to multiple reasons including fear of causing further distress, lack of training and a work culture which does not encourage this practice. However, little is known about how such factors impact on clinicians' practices relating to young voice-hearers.

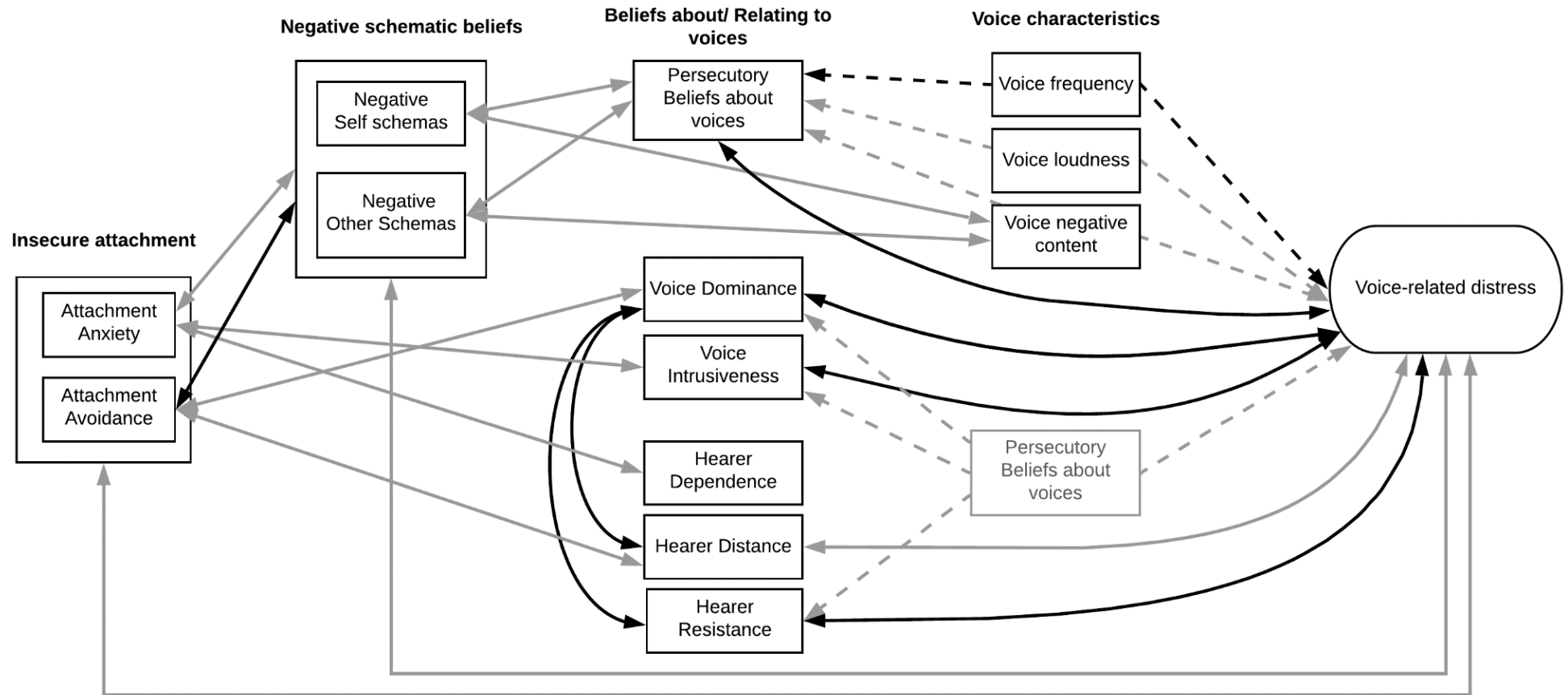
Based on the evidence outlined in this section, this thesis explored distress factors of AVH in youth, the influence of youth AVH on social relating and finally, clinicians' perspectives on working with young people with AVH, focussing on variables that might influence their intention to assess distressing AVH in their clinical practice. The first aim of this thesis was to explore whether the adult cognitive-interpersonal model of AVH is applicable to the understanding of AVH and its related distress in youth. A series of hypotheses stemming from this model were tested in a transdiagnostic clinical sample of young voice-hearers who received care in CAMHS and EIP services (Chapter 2). The second aim of this thesis was to examine associations between the presence of AVH in young people with mental health difficulties and its potential associations with social relating. To address this aim, a clinical sample of young voice-hearers was compared to a psychiatric control group of young people without AVH (Chapter 3). For the purposes of this thesis, social relating was conceptualised in a multi-dimensional sense, including measures of social strain and

support, social comparison and connectedness as well as negative relating styles. The final aim of this thesis was to investigate clinicians' perspectives with regard to working with young people with AVH. The final study of this thesis used the Theory of Planned Behaviour (TPB; Ajzen, 2005) to provide a theoretical framework that could explain clinicians' behavioural intention to assess distressing AVH following patient disclosure. Three main predictors for clinicians' behavioural intention were identified using the theoretical TPB model: attitudes toward assessing AVH, perceived control over conducting the assessment, and perceived subjective norms, which refer to whether assessing distressing AVH is approved or disapproved by the clinicians' important social referent groups. Additional factors that could influence clinicians' intention were considered (Chapter 4).

## **5.2 Integrated overview of findings**

The first study of this thesis tested several hypotheses based on the adult cognitive-interpersonal model of AVH in a clinical sample of young voice-hearers. The results provided preliminary support for the applicability of this theoretical model as a framework for guiding understanding of the emergence and maintenance of AVH-related distress in youth (see Figure 7 below for final model).

**Figure 7.** The updated model of AVH in youth. Black solid lines represent statistically significant bidirectional associations between constructs. Grey solid lines represent bidirectional associations between constructs that were not supported, contrary to the thesis hypotheses. Dotted lines represent partial correlations. Dotted grey lines indicate that the conceptual predictor-outcome association did not remain significant after controlling for the covariates.



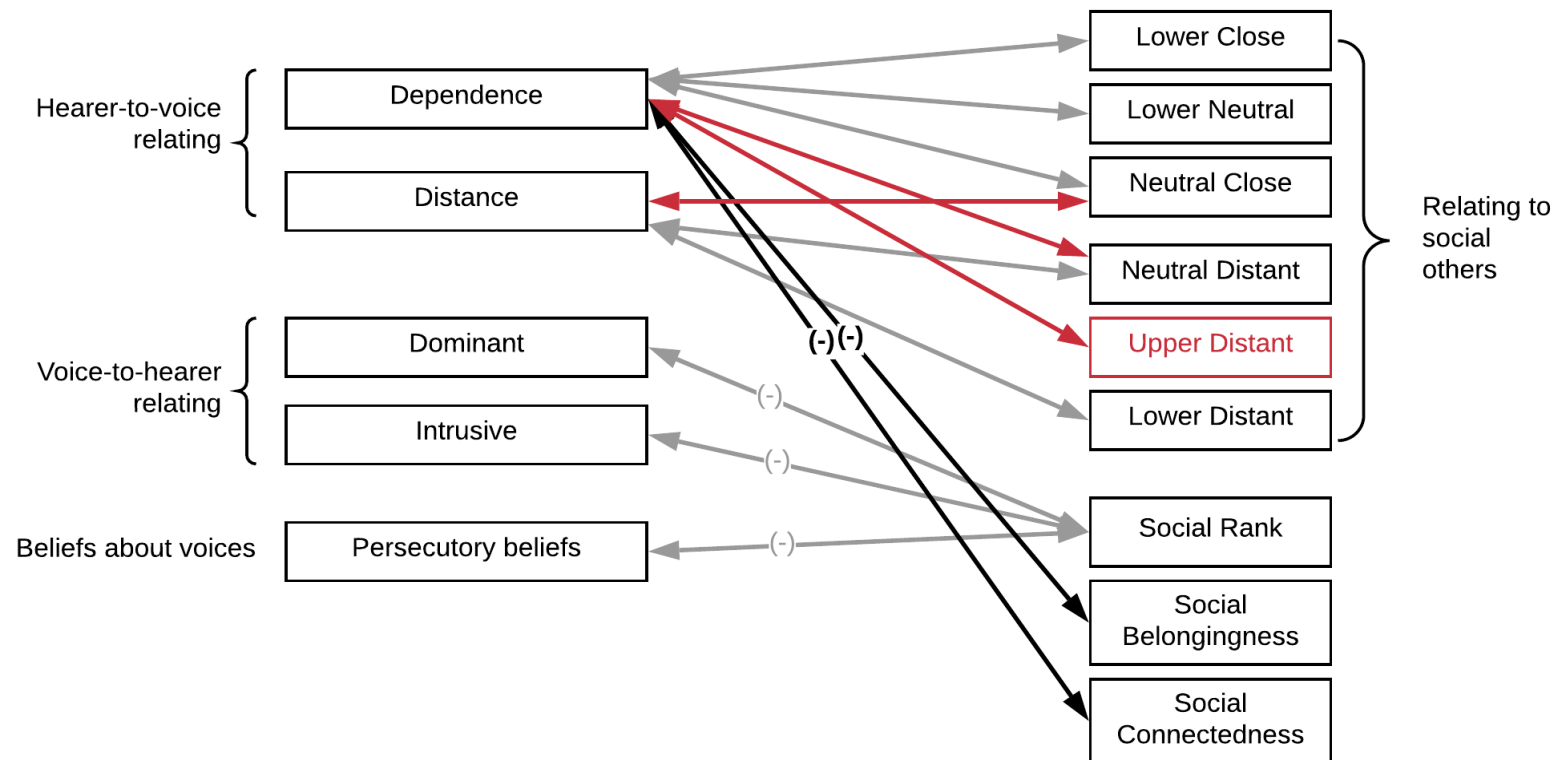


*Dotted black lines indicate that the association between the conceptual predictor and outcome remained significant after controlling for the covariates.*

The findings of this first chapter suggest that the association between persecutory beliefs about voices and distress observed with adults does translate to young people. Persecutory beliefs, in addition to being directly associated with distress, may explain the associations between voice-to-hearer negative relating (dominance, intrusiveness) and distress and resistive responding to their voices and distress. Results from this study indicated that resistive mode of responding might not be the optimal way to manage dominant AVH, as it could lead to experiencing further distress.

Contrary to the study hypothesis, accounting for the effect of voice loudness rendered the relationship between persecutory beliefs about voices and distress statistically non-significant. Moreover, accounting for the effect of negative voice content rendered the relationship between persecutory beliefs about voices and distress almost non-existent. Although previous research has included negative voice content as an AVH distress factor, a key tenet of the cognitive-interpersonal model of AVH is that beliefs about voices would be linked with distress more strongly than voice characteristics and content. This was disconfirmed in the present sample of young voice-hearers. In contrast to the hypothesised similarities between negative relating to voices and others, this study demonstrated that young voice-hearers relating from a position of distance with voices was linked with a neutral close relating (fear of separation and of being alone), whereas relating from a position of dependence with voices was related to a neutral (suspicious, uncommunicative, and self-reliant) and upper distant (sadistic, intimidating and tyrannising) relating to others. Hearer's dependence to voices was negatively associated with perceived social connectedness and belongingness. The lack of mirroring between relating to voices and others was also demonstrated for the dimensions of social rank and power. This may indicate that young voice-hearers who are distressed by AVH relate to voices in a different, and seemingly opposite, manner than they do with social others. See Figure 8 below.

**Figure 8.** The updated associations between relating to voices and beliefs about voices with relating to social others, social connectedness, and belongingness. Black lines represent statistically significant bidirectional associations between constructs whereas grey lines represent bidirectional associations between constructs that were not confirmed, contrary to the hypotheses. Red lines show the unexpected significant bidirectional associations between constructs and upper distant relating. The (-) represents an inverse correlation. The description of relating styles to social others is: lower close = fear of rejection and disapproval; lower neutral = helpless, shunning responsibility, self-denigrating; neutral close = fear of separation and of being alone; neutral distant = suspicious, uncommunicative, self-reliant, upper distant = sadistic, intimidating and tyrannising, and lower distant = acquiescent,



*subservient, withdrawn (Birtchnell, 1994).*

The second study of this thesis extended the findings on the negative associations between AVH and social relating, by comparing the young voice-hearers with a psychiatric control group of young people without AVH experiences, recruited from the same mental health services. Specifically, the findings of this study suggested that young people with AVH reported higher levels of overall negative social relating and higher levels of lower close (fear of rejection and disapproval) and neutral distant patterns of negative social relating. Young people with AVH perceived themselves of lower social rank compared to social others, reported receiving lower support from their friends and feeling less socially connected with the world and others. This latter finding could be linked with the hearers' tendency to depend on voices, as indicated in the first study, suggesting a potential relational function of voices for those who are socially withdrawn. It is worth noting that the association between group membership (young people with versus without AVH) and social connectedness and perceived peer social support became more pronounced when age was taken into consideration. This happened due to the fact that both social connectedness and perceived social support were strongly negatively associated with age in the control group, but not among young people with AVH. This may indicate that young people with AVH might present with low levels on these two social relating dimensions whereas young people without AVH, but with other mental health difficulties, deteriorate as they grow older. This study found lower premorbid functioning in young people with AVH compared to psychiatric controls, which supports this conclusion and suggests voice-hearers experience more severe social relating difficulties, which have an earlier onset than for non-hearers, and which then become more pronounced in adolescence. Interestingly, although appraisals of voice power in the first study were not associated with lower perceived social rank, young people do perceive themselves generally to have lower social rank than non-hearers.

All the differences found between the two groups of young people in terms of social relating were not robust to a correction for multiple testing, so interpretations offered here are made with caution. It is important to note in addition that the voice-hearing group reported significantly greater depression, anxiety and psychotic symptoms (other than perceptual experiences). It is possible that these elevated

symptoms could contribute to between-group differences in social relating, although the two groups did not differ in their current functioning levels. Additionally, although in the first study of this thesis, the predicted role of negative schemas in the cognitive interpersonal model of AVH was not supported, young people with AVH endorsed greater negative self and other schematic beliefs compared to the psychiatric controls. It seems likely that negative interpersonal schemas contribute to more severe clinical symptomatology, poorer social relating and the experience of AVH in this group of young people. Contrary to initial hypothesis, the two groups did not differ in terms of overall childhood trauma levels. Therefore, greater trauma does not appear to explain pre- or peri-morbid social relating difficulties, negative schematic beliefs, or elevated symptomatology amongst young voice-hearers. Nevertheless, childhood trauma prevalence was high in both groups, potentially indicating that underlying trauma is present in severe mental health difficulties more broadly and not uniquely linked with AVH.

In the final empirical chapter, an online survey of clinicians (primary care and secondary mental health care) was implemented to capture their perspectives on working with young people with AVH, focussing on factors that influence their assessment of distressing voices. Findings from this study showed that all clinician groups reported at least moderate levels of self-efficacy in asking patients if they hear voices and discussing voices with them but reported lower self-efficacy in relation to providing useful voice-hearing information to patients. In Early Intervention in Psychosis (EIP) services, more positive attitudes and more approving subjective norms, and in Child and Adolescent Mental Health Services (CAMHS) subjective norms alone, accounted for most of the variance explained in clinician's intention to assess distressing voices. These findings suggested that key referent groups exercising social pressure play a key role in the intention to assess AVH in youth mental health clinicians. This result was further substantiated by the finding that beliefs about other specialist mental health professionals approving of them assessing AVH was a significant contributor to EIP and CAMHS clinician intention of doing so. Believing in the usefulness of assessing AVH in constructing a detailed therapeutic formulation was another important correlate of intention. Finally, for CAMHS clinicians only, having

access to AVH assessment tools (e.g., questionnaires) was associated with higher intention in assessing AVH.

### **5.3 Interpretation of Main findings**

#### **5.3.1 *AVH-distress factors and links with social relating in youth***

The findings presented in this thesis support that voice-hearing in youth can cause a great deal of distress and that voice-related distress can be explained, at least partly, by factors identified in the adult voice-hearing literature. In accordance with adult findings (Mawson et al., 2010), using a relating framework has provided insight into the understanding of the mechanisms implicated in the maintenance of voice-related distress in youth. Young people who perceive their voices to be relating to them in a dominant manner, distance themselves from the experience and tend to use resistive responses which could then be linked to emotional distress. In accordance with this finding, previous qualitative research has reported that young people attempt to ignore “haunting”, commanding and controlling voices, describe their relationship with them using terms that show a lack of relational reciprocity and report feeling distressed by them (Parry & Varese, 2020). Although being distressed by the voices was not an inclusion criterion for participating in the present research (Chapter 2), most participants described their voices as being distressing more than 50% of the time, which could explain their style of relating. It is possible that appraisals of voices as dominant leads to young voice hearers distancing themselves and resisting voices, strengthening and/or preventing disconfirmation of these appraisals (Michail & Birchwood, 2010; Morrison, 1998) and consequently leading to more distress. Direct attempts to resist voices using a hostile and reactive responding style could also increase distress via increasing emotional arousal and attention toward the voices, with distress caused by the voices reinforcing further the beliefs about their persecutory nature, leading in turn to more negative relating and resistance. Thus, efforts to change how young voice hearers relate and respond to voices may have a positive impact on this distress-provoking cycle (Hayward et al., 2014).

Accounting for persecutory beliefs diminished the strength of the associations between hearer resistance, voice intrusiveness and dominance, and distress. This shows that these beliefs seem to play a significant role in understanding these relationships in accordance with adult findings (León-Palacios et al., 2015; Sorrell et al., 2010). Endeavours to alter the beliefs about voice intent and power may therefore lead to a reduction in distress. Similar findings in adults have provided evidence for the development of cognitive behavioural therapy for distressing voice-hearing (Lincoln & Peters, 2019). Although the present findings supported the central premise of the cognitive model of AVH (Chadwick & Birchwood, 1994) that beliefs about voices could be key contributors of distress, in young people this was not independent of the effect of voice loudness and negative voice content. This contradicts several studies with adults (Birchwood & Chadwick, 1997; Peters et al., 2012; van der Gaag et al., 2003). One reason for this could be that young people simply hear louder voices, as 38% of young people report shouting voices which in excess of prevalence rates reported in adult psychiatric populations (McCarthy-Jones et al., 2014b). The loudness of voices could also partly explain why young people seem to be perceiving them as more dominant compared to how adults perceive their voices (Dannahy et al., 2011; Hayward et al. 2008; Sorrell et al., 2010) and could be used as evidence by young voice-hearers for omnipotence and malevolent intent of the voices. Furthermore, negative content has long been mentioned to be a maintaining factor of distress as it can serve as evidence for negative beliefs about the voices (Chadwick & Birchwood, 1994; van der Gaag et al., 2003) or be a causal factor in the formation of such beliefs. In youth research, negative voice content has been correlated with depression (Cavelti et al., 2019a), with voice hearers describing that unpleasant, distressing voices are usually characterised by both negative content and appraisals of being powerful and malevolent (Parry & Varese, 2020). This suggests that models aiming to explain the maintaining factors of AVH-related distress in young people should include negative content as a key component (Cole et al., 2017; Larøi et al., 2019).

Although young people's negative schematic beliefs about the self and others were not associated with AVH-related distress, persecutory beliefs, or negative voice content (Chapter 2), they were significantly higher in young people with AVH



compared to psychiatric controls (Chapter 3). It is possible that negative schematic beliefs are more closely linked to the development and maintenance of AVH rather than directly contributing to AVH-related distress. In the adult literature, negative self-schemas have been recognised as potential underlying factors for the development and maintenance of psychotic symptoms, including AVH (Freeman & Garety, 2003; Garety et al., 2001). In the cognitive model of psychosis, Garety and colleagues (2001) postulated that anomalous experiences such as heightened perceptions, thoughts experienced as voices, and cognitive vulnerability caused by adverse life experiences might lead to changes in the emotional processing that could influence the content of AVH and perpetuate their occurrence. Thus, negative evaluations of oneself and emotional changes that are elicited due to anomalous conscious experiences could lead to the formation of AVH (Freeman & Garety, 2003, Garety et al., 2001). Research with young people experiencing distressing Psychotic Experiences (PE) provided preliminary support for this claim, demonstrating that concurrent emotional difficulties (Ames et al., 2014; Ruffell et al., 2015), more negative other (Anilmis et al., 2015; Noone et al., 2015) and self-schemas (Anilmis et al., 2015) are associated with severity of PE. However, it could be that the relationship between negative schematic beliefs and AVH is also of the opposite direction. The occurrence of AVH might be associated with increase in negative affect and might contribute to the formation of negative self-evaluations, which could be further strengthened by continual occurrence of AVH. Cavelti et al. (2020) suggested that negative self-beliefs could be a consequence of AVH rather than causal in such experiences. Due to the developmental stage of young people, AVH might have a more profound effect on these schemas, especially as young people's sense of identity is more malleable compared to adults (Cavelti et al., 2020). Furthermore, instead of having an effect directly on voice-related distress, negative schematic beliefs may instead exacerbate general distress in young people with AVH. This was indirectly supported by the higher levels of anxiety and depression in young people with AVH compared to psychiatric controls (Chapter 3) and has been demonstrated in a transdiagnostic sample of young people with AVH (Cavelti et al., 2020). In combination with higher levels of general distress, viewing others and themselves via a negative evaluative lens could also explain the greater social relating difficulties young people with AVH face, such as having feelings of inferiority

compared to others and feelings of social disconnectedness (Chapter 3). If these negative social relating difficulties also translate to social withdrawal and distance, they could be reinforcing negative schemas via the lack of opportunities for corrective, positive interpersonal experiences. It is worth noting that although negative schemas might increase general distress, the opposite inference is also possible, as depression might pre-date AVH and lead to negative perceptions of oneself and others (Birchwood et al., 2004).

Additionally, negative schemas might contribute to the maintenance of voice-related distress indirectly. As negative schemas may reinforce negative relating to social others, this could in turn maintain maladaptive relating with voices and consequently voice-related distress (Chapter 2). Chapter 3 demonstrated that young people who hear voices relate more negatively to social others compared to psychiatric controls. Specifically, they tended to be more fearful of rejection and disapproval that could represent a maladaptive “clinginess” toward others (lower close relating), but also keeping a suspicious, uncommunicative stance toward others (neutral distant relating) or potentially lash out by being more sadistic and intimidating (upper distant relating). Linking this with hearer-to-voice relating (Chapter 2), hearers with greater dependent relationships with voices tend to keep a relational suspicious distance from social others and feel less socially connected, whereas those with a distant relationship with voices tend to be fearful of being alone and separated from social others. It may be that negative schemas are at the core of the development and persistence of negative relating patterns to others and to voices, irrespective of the specific type of negative relating that young voice-hearers employ (Chapter 2). Preliminary support for the association between negative schemas and relating to voices has been recently provided in adults. For example, Davenport et al. (2020) found that hearer distance and voice dominance was positively associated with negative self and other schemas whereas hearer dependence was related to negative self-schemas.

Interestingly, although relating to voices was not directly reflected in relating to others in terms of social rank or negative relating positions (Chapter 2), it may be that young people with AVH adopt similar relating styles depending on the way they

perceive the social other, including voices. Specifically, facing dominant others, including voices, might lead to a distant and resisting type of relating. Although voice benevolence was not examined in this thesis, past research with young people (Parry & Varese, 2020) and adults (Favrod et al., 2004) provides evidence that voices perceived as pleasant are more likely to be related to using engaging responses, which was at least partly captured in the hearer dependence measure of this thesis. Furthermore, the type of dyadic interrelation in one dimension, i.e., in the hearer-to-voice or in the hearer-to-social others, could in fact lead to an opposite pattern of relating to the other one. For example, young people hearing controlling, malevolent voices might try to escape this experience and/or keep a distance from it, and seek connection with social others, fearing of being alone and separated from them. Conversely, young people experiencing voices perceived as pleasant might choose to engage with them and depend on them to fulfil part of their social relational needs such as the need for companionship and emotional support (Parry & Varese, 2020), keeping a suspicious uncommunicative stance toward social others. This could be partially supported by findings in Chapter 2, where hearer dependence was related to lower levels of social connectedness.

A more severe and complex presentation, consisting of anxiety and depressive symptoms as well as higher levels of other PE could also be contributing to social relating difficulties, influencing social functioning in this group (Asher et al., 2013; Fusar-Poli et al., 2014; Kelleher et al., 2012; Rutigliano et al., 2016). Furthermore, pre-existing social functioning problems as indexed by poorer premorbid adjustment in young voice-hearers could be representing early social adversities that contributed the formation of negative schematic beliefs and the development of AVH. In addition, AVH could have uniquely negatively influenced young people's social relating. Indirect influences could include social distancing due to fear of being stigmatised (Parry et al., 2020) or undermining trust in others via their content (Birchwood, 2003; Woods et al., 2015) while direct influences could revolve around AVH occurrence interrupting social interactions or causing issues with young people's concentration (Parry & Varese, 2020; Woods et al., 2015), leading to social withdrawal (Parry et al., 2020). The unique connection of AVH with social relating has also been supported in clinical studies where the presence of PE in adolescents with non-psychotic disorders predicts social

functioning problems over and above multimorbidity (Kelleher et al., 2014; Pontillo et al., 2016, Wigman et al., 2014). Overall, AVH seems to be a general risk marker for social relating issues while also potentially aggravating these due to its unique nature as a perceptual, interpersonal experience.

It is worth noting that although childhood trauma has been found to explain negative schemas and AVH presence in adults (Garety et al., 2001), this was not the case in the present research (Chapter 3). A potential explanation for this could be that trauma is not uniquely linked to the presence of AVH (Read et al., 2005). It might be the case that trauma is associated with severity in AVH-related distress but not necessarily with its presence (Bentall et al., 2012; Varese et al., 2012). Another explanation could be that specific protective or resilience factors buffered the effect of trauma and prevented the development of AVH in the psychiatric control group. One such factor could be the presence of greater social support (Crush et al., 2018), which was found to be lower among young people with AVH in the present study. According to a systematic review (Williams et al., 2018) there may be several psychological mediators that could account for the link between childhood trauma and AVH, such as dissociative experiences, affective dysregulation, cognitive processes such as the formation of negative interpersonal schemas, appraisal of subsequent stressors and life circumstances, as well as exposure to other psychosis risk factors (i.e., substance misuse) that might not have been captured in this thesis. Nevertheless, the lack of association between trauma and AVH could possibly be attributable to limitations of the measure used, which does not assess for some common traumatic experiences relevant to AVH (e.g., emotional bullying outside the family) (Varese et al., 2012).

### ***5.3.2 Clinicians' self-efficacy in voice-hearing practices and key factors underlying intention to assess distressing AVH in young people***

The final study presented in this thesis is the first study to explore clinicians' attitudes and self-efficacy in working with youth with AVH. In fact, there has been very limited literature examining youth mental health clinicians' views on PE, and this has mainly focused on specific views of the at-risk-mental states for psychosis concept (Welsh et al., 2011; Welsh & Tiffin, 2012). Only one known study has examined

current practices in youth mental health services, but from the young people's and families' rather than clinicians' perspectives (Kapur et al., 2014).

The modest levels of clinicians' self-efficacy relating to providing useful AVH information to young patient found in this thesis could be partly due to the lack of available resources on AVH to offer to patients and/or uncertainty on the nature of AVH in youth. Especially considering the transdiagnostic nature of AVH experience in youth, it might be challenging for clinicians to identify what information to provide. Findings with adult clinicians have indicated that lack of subjective understanding, perceived clinical risks, and the diversity of AVH experiences may be associated with professionals' reported lack of clinical confidence (Kramarz et al., 2020). Additionally, a study exploring the experiences of CAMHS clinicians, indicated that they expressed difficulty and low confidence in determining which experiences were part of typical adolescent development and which could be considered concerning, or indicative of emerging psychosis (Welsh et al., 2011; Welsh & Tiffin, 2012). Findings from Kapur et al. (2014) show that this lack of confidence in providing information on AVH likely translates into clinical practice, with both parents and young people reporting not receiving satisfactory responses in their effort to understand and receive support for AVH.

The usefulness of the Theory of Planned Behaviour (TPB; Ajzen, 2005) in explaining clinician behavioural intentions was demonstrated, supporting results from other studies (Eke et al., 2012; Lecomte et al., 2018; Levy et al., 2016). Using data from both adult and youth clinicians, all three TPB predictors of behaviours significantly predicted intention to assess AVH following disclosure of distressing voices by patients, accounting for more than half of the variance reported, which is higher than typically found for TPB (Armitage & Conner, 2001). The youth clinicians' mean intention to assess AVH was higher than of those in adult services in this study and in previous literature on intention to discuss the meaning and content of voices in adults (MacLeod, 2011). In EIP, attitudes and subjective norms and in CAMHS only subjective norms seem to play a role in intention. Both groups of youth clinicians reported positive attitudes toward assessing AVH in youth and that they consider others (e.g., colleagues,

patients) as approving of this behaviour. This is in contrast to previous literature with adult clinicians indicating that they might hold negative attitudes about discussing AVH with patients as it could cause further distress (Coffey & Hewitt, 2008; McMullan et al., 2018), or that workplace culture seems to discourage discussion about AVH with patients during experiential clinical learning (White et al., 2019). In agreement with previous literature, social norms and individual attitudes have been strong predictors of intention, with social norms determining whether evidence-based practice will be delivered (Burgess et al., 2017; Lecomte et al., 2018). Findings on beliefs underlying the three key TPB predictors highlighted the importance of subjective norms in youth clinicians' intention to assess AVH and provided information that it is their specialist colleagues' approval that most influences their intention. Thus, a discouraging work culture might severely impact on whether clinicians assess AVH in youth. A CAMHS-specific significant contributor was having access to voice-hearing assessment tools (e.g., questionnaires). This might show that in CAMHS, despite positive attitudes and encouraging subjective norms, assessing AVH in youth might be practically hindered due to lack of specific resources that could guide clinician's discussion with young people.

Lastly, although behavioural intention has been closely linked to actual behaviour (Eccles et al., 2005), in the busy reality of clinical settings other factors, such as habits and automatic processes, might hinder assessment of AVH (Perkins et al., 2007). Thus, despite the encouraging levels of youth clinician's intention to assess AVH, it is worth considering how these might translate into practice. Adding to this, although clinicians reported high perceived behavioural control and self-efficacy for assessing AVH, more than half of CAMHS clinicians reported that they think they need training in assessing AVH and most of them in providing related support to youth. Therefore, self-reported intention does not necessarily mean competence or action.

## **5.4 Overall strengths and limitations**

### **5.4.1 *Limitations***

#### **5.4.1.1 Methodological considerations.**

All studies in this thesis used a cross-sectional design, which did not allow for inferences of causality and directionality in the associations identified. In Chapter 2, causal inferences regarding the relationship between the AVH-related distress and the hypothesised distress factors could not be drawn, and interpretation of results was based on previous adult findings. In Chapter 3, the issue of temporality between AVH and social relating variables, as well as the role of schemas and co-occurring psychopathology could not be addressed. Finally, in Chapter 4, causal relationships between the measured constructs and clinicians' intention to assess voice-hearing could not be further examined.

Another methodological consideration related to Chapter 3 is the lack of one-to-one matching of young people with AVH and without AVH. Matching the two groups based on their diagnosis could have allowed for more confident inferences with regards to the unique associations between AVH and social relating, by accounting for underlying psychopathology effects. Nevertheless, there were no significant differences between the two groups in terms of service type, age, gender, self-reported disability status, non-psychotic research diagnoses and risk behaviours (current suicidality, aggression).

Furthermore, the composite scale used for capturing AVH-related distress was based on a recent factor analysis (Woodward et al., 2014 ) for the scale used (PSYRATS-AH; Haddock et al., 1999), and it included items on the amount and degree of AVH-related distress, as well as items on negative content and control over the AVH experience. Thus, the finding of the strong association between AVH-related distress and negative voice content could be, at least partly, related to the overlap of items between the two subscales, perhaps obscuring the true relationship between these two constructs.

Additionally, the assessment battery for the Vista project (Chapters 2 and 3) was quite long needing multiple research assessment appointments to be completed. Although a maximum of one-month window for the completion of the study was set, this thesis has interpreted findings as if all measures were collected at one time point. Nevertheless, measures belonging to the same conceptual category, e.g., voice-hearing measures, general psychopathology measures, and social relating measures were grouped in order to be completed within the same research assessment session. The large number of measures used for the Vista project could have also increased the risk of response fatigue jeopardising the validity of the data collected. To reduce this risk, several breaks were offered during research assessments.

In terms of adapting the project measures to young people, most of the clinical and social relating measures have been used with young people in past research. However, as the demographics questionnaire used was primarily designed for adult research, it included two multiple choice questions that offered response options that did not match young people's experiences and could have led to participant confusion. Specifically, the question asking about the participant's type of accommodation offered response options that were not appropriate for the age group examined (e.g., 'owner occupied', 'rented', etc.) but were rather addressed to their parent/legal guardian. The other question asked about participants highest educational attainment, offering the following response options: 'None', 'GCSE or equivalent', 'A level or equivalent', 'Undergraduate or equivalent' and 'Post graduate or equivalent'. Considering that participants in the Vista project (Chapters 2 and 3) were 14 to 18 years old, only the GCSE and A level qualifications could be relevant to the experiences of the sample.

Finally, in the A2V project (Chapter 4) two measures, the modified AAPPQ (MacLeod et al., 2002) and the AQ-9 (Corrigan et al., 2014), were adapted to capture clinicians' attitudes toward working with patients who hear distressing voices, and another two questionnaires were developed, the TPB and voice-hearing practice self-efficacy questionnaire. Although the internal consistency of all measures was examined, as reported in Chapter 4, further psychometric testing is needed to ensure the reliability of those measures in the context of clinicians working with voice-hearers.



#### **5.4.1.2 Participants.**

Participants in Chapter 2 and 3 were recruited from community mental health services. Thus, it is possible that young people with more severe presentations requiring inpatient care were not represented in this thesis. Additionally, considering that a large proportion of young people with distressing AVH might not be receiving care (Parry et al., 2020b), the present sample might not be representative of all subpopulations.

In addition, young people involved in the research presented in this thesis were recruited irrespective of diagnosis. This resulted to small numbers of participants within different diagnostic categories, which did not allow for the exploration of differences between diagnostic groups or accounting for the effect of diagnosis in the AVH experience (Chapter 2) or in social relating (Chapter 3). However, in terms of AVH, Cavelti et al. (2019a) have provided preliminary evidence that AVH, as rated on PSYRATS-AH, might not differ significantly between diagnostic groups in youth.

Participants were recruited from both CAMHS and EIP services due to the transdiagnostic approach followed in the Vista project. It is noteworthy that most participants in the voice-hearing and the control groups were under the care of CAMHS (about 82% and 79% respectively). This made the two groups comparable in terms of the type of service participants were receiving (Chapter 3). However, considering specifically participants in Chapter 2 which only included the voice-hearing group, young people might have had a different profile from young people commonly found in EIP services who hear voices as an expression of a frank or imminent psychotic episode. Thus, this group could be under-represented in the Vista project. Elaborating further on this note, hearing voices in young people in CAMHS, even when distressing, might not be considered a priority to address in therapy, potentially due to other concerns being more urgent or disabling in terms of young people's day-to-day functioning. Conversely, this could mean that a considerable number of young people distressed by AVH, even in the context of an emerging psychotic disorder, are treated in CAMHS. This could be supported by the fact that about 88% of young people in the voice-hearing group reached the threshold for a psychotic disorder research diagnosis, with the majority fitting under the 'Psychosis Non-Otherwise Specified' diagnostic

category due to persistent AVH. These young people might be representing a group with a complex clinical presentation that does not clearly match the entry criteria for EIP services but are still in need of support with distressing AVH.

Furthermore, there was a gender imbalance within both study groups, with 74% in both groups identifying as females. A reason for this imbalance could be due to the sample being recruited from community mental health services, as young females are more likely to seek help when distressed by a mental health difficulty (Biddle, Gunnell, Sharp, & Donovan, 2004).

An additional explanation for the gender imbalance within the voice-hearing group could be that young people in the present research had a clinical profile similar to that found in Cavelti et al. (2019a), who noted that young people with AVH and a diagnosis of Borderline Personality Disorder (BPD) are more likely to be female compared to young people with a diagnosis of a schizophrenia spectrum disorder and AVH. This is in accordance with gender differences observed in clinical settings (Amminger et al., 2006; Silberschmidt, Zanarini, & Schulz, 2015). Nevertheless, the study in Chapter 2 did not assess for the presence of BPD characteristics in order to clarify whether the gender imbalance could be at least partially explained based on these characteristics. Another explanation could be that although there might be no difference in the occurrence of AVH depending on gender, female adolescents might be more distressed by their AVH or are more likely to report their distress compared to males (Kompus et al., 2015).

Finally, it is important to take into consideration that most participants in the Vista project identified as White British and were born in the UK. Thus, any results of the present research might not be relevant to populations of young people with different ethnic backgrounds.

#### **5.4.1.3 Statistical power.**

Formal *a priori* power analysis was conducted for Chapter 2. A sample of 35 young people with AVH was deemed sufficient for bivariate correlational analyses to

identify medium to large correlation coefficients ( $r \geq .46$ ), according to power calculations on the formula by Hulley et al. (2013). This power calculation was based on the fact that most relationships identified in the adult literature in the cognitive-interpersonal model of AVH are of medium or large effect sizes (Chadwick et al., 2000; Cole et al., 2017; Hayward et al., 2008; Peters et al., 2012). Whilst sample recruitment was adequate, the accuracy of parameter estimates used for the power analysis might have been inaccurate due to being derived from adults. Thus, statistically non-significant findings in Chapter 2 might have been due to the analysis having an increased probability of Type II errors and low statistical power. The same limitation applies to Chapter 3 as the sample size for psychiatric controls was based on the number of young people with AVH, with no a priori power analysis.

Additionally, both Vista project studies (Chapters 2 and 3) tested multiple exploratory hypotheses due to the multiple areas of research focus which increased the risk for detecting false-positive results. Moreover, correction for multiple comparisons in Chapter 3 further reduced the statistical power of the analysis and thus, any negative results should also be considered with caution. Interpretations of findings for both studies are based on the general trends shown in the project data and aim to provide preliminary evidence that should be further validated in future research.

Finally, the small sample size in Chapter 2 did not allow for testing a moderating or mediating role for variables of the cognitive interpersonal model of AVH that were controlled for in partial correlations. For example, controlling for persecutory beliefs about voices rendered the relationship between variables of relating to voices (voice dominance, voice intrusiveness) and resistive responding to voices and AVH-related distress non-existent. However, a mediation or moderation model could not be tested.

#### **5.4.2 Strengths**

Chapter 2 was the first research study to date to test hypotheses from the cognitive interpersonal model of AVH focusing on a clinical population of adolescents, irrespective of diagnosis. The present findings have contributed toward the very limited literature on the applicability of adult psychological AVH models to youth (Cavelti et

al., 2020; Cavelti et al., 2019b) and has extended qualitative findings on the importance of inter-relating with voices and others on distress (Parry & Varese, 2020; Parry et al., 2020).

In terms of the methods used, AVH were assessed with clinical interviews, ensuring AVH presence to the level of complexity and frequency needed for this study and minimising any validity issues that might arise when only using self-report questionnaires (Kelleher et al., 2011). Moreover, the use of AVH measures commonly employed in adult studies allowed for a direct comparison between the findings of this thesis and adult findings. In Chapter 3, the use of a multi-dimensional definition of social relating capturing negative relating styles, social support, connectedness, and perceptions of social rank allowed the exploration of associations between AVH and a comprehensive and nuanced array of facets of social relating. Additionally, controlling for the effect of functioning as measured by time spent in structured activity, allowed for identifying differences on social relating between young people with AVH and psychiatric controls that were not obscured by social disability levels, reflecting differences closer to perceptions of social relating.

Finally, Chapter 4 was a national study that included a large sample of secondary mental health and primary care clinicians covering a large number of NHS trusts and regions of the UK. The study in Chapter 4 was the first to employ a theoretical framework to understand the influences on clinician's intention to assess distressing AVH in young people and one of the few studies to explore staff views on this subject overall. Additionally, it involved frontline clinical staff of all major clinical disciplines. Previous studies have focused mostly on mental health acute wards and smaller samples, usually of nurses (Coffey & Hewitt, 2008; McMullan et al., 2018). An additional strength of this study was the use of both direct, i.e., attitudes, perceived behavioural control, subjective norms, and indirect measures of TPB, i.e., specific behavioural, normative and control beliefs, of CAMHS and EIP clinicians in relation to their intention to assess AVH. This method can aid in better identification of broader determinants (direct measures) but also specific beliefs (indirect measures) that could be targeted for behaviour change efforts (Frances et al., 2004).

## **5.5 Clinical implications**

The findings of this thesis have several clinical implications for community care and intervention development for distressing AVH in youth.

### **5.5.1 AVH Screening**

Current findings supported that AVH in young people who experience mental health difficulties is an index for more severe psychopathology and social relating problems (Chapter 3) and if they pre-date AVH, AVH onset could exacerbate these experiences (Parry et al., 2020; Yamasaki et al., 2018). Considering that PE, including AVH, are considered risk markers for persistence of psychosocial problems in adolescence (Bouhaddani et al., 2019), yet such experiences are rarely spontaneously disclosed by young people to mental health professionals (Kelleher et al., 2014; Mertin & Hartwig, 2004). Screening for AVH could allow for early identification of a vulnerable patient group in need of early intervention and support, and therefore, screening for AVH at entry to services is recommended. Encouraging results from Chapter 4 demonstrated that, compared to discussing AVH or providing information about AVH, asking young people if they hear voices was the voice-related practice rated with the highest confidence among youth clinicians in EIP and CAMHS.

### **5.5.2 AVH Assessment**

The identification of AVH in youth warrants clinicians' attention and it should be followed by a detailed exploration of the experience (which defined as "assessment" in Chapter 4) in a normalising and empathic environment (Parry et al., 2020). Assessment could help examine the levels of AVH-related distress and AVH impact on functioning, whether AVH are complex in nature or if they are described as benign experiences (Dominguez & Garralda, 2016). Moreover, assessing AVH could help reveal whether young people's experiences happen in the context of other possible psychopathology and/or social, emotional, or behavioural problems that might increase the risk for later psychosis (Laurens & Cullen, 2016). Additionally, as suggested in Chapter 2, finding out information about young people's cognitive appraisals of voice

intent and power, any evidence (e.g., negative content, loudness) or mechanisms employed (e.g., schemas) for this interpretation and any potential links between AVH and young people's interpersonal experiences (e.g., difficult past experiences) could help determine the levels of AVH severity. Therefore, information gathered via the assessment of AVH would aid clinical decision making on offering young people appropriate support.

Furthermore, in this thesis, participants with AVH reported a wide range of diagnoses as well as differing AVH location (e.g., inside, outside the head) and most of them reported some level of distress (Chapter 2). This suggests that, when AVH are disclosed, they should not be overlooked or dismissed as “pseudo- hallucinations” (Cavelti et al., 2020) based on such characteristics and they should be assessed and taken seriously regardless of diagnosis.

### ***5.5.3 Enhancing AVH-related practice***

Considering the modest clinician confidence in providing useful information to young people with distressing AVH, suggested solutions that could improve care could be to offer clinicians workshops on literacy training on AVH in youth, its psychosocial correlates, and options of available young people's support. Specifically, education interventions, such as lecture-type sessions, role-plays, and young people's personal testimonials, might be beneficial in improving clinicians' knowledge, attitudes, and behaviour in relation to voice-hearing practice (Reddyhough et al., 2021; Thornicroft et al., 2016). In order for these to be effective, recent evidence suggests that education interventions need to (1) convey information using a continuum approach to mental health illness, suggesting that mental health symptoms lie on a continuum with normal experience (Johns et al., 2014) and to (2) provide recovery-oriented hope-promoting information, emphasising support and treatment options where appropriate (Morgan et al., 2018). Another component that could be added to such an intervention is the use of voice-hearing simulation as a recent meta-analysis has found promising results for its use in healthcare professionals, helping increase their level of empathy and their confidence in their ability to engage in conversations with service users about their AVH experiences (Bradshaw et al., 2021).

This training suggestion might be most beneficial in primary care clinicians as this was the staff group with the lowest positive attitudes toward working with young people with AVH and low confidence in providing young people with useful information on AVH (Chapter 4).

Having access to materials and resources (e.g., psychoeducation leaflets) that are tailored to the developmental stage of young people could help translate knowledge into clinical practice (Cochrane et al., 2007) and enhance engagement with this patient group (Jones et al., 2017). For example, this could be achieved in a project that brings together young people with lived experience of hearing voices and of using mental health services (e.g., members of Youth Participation groups that exist in local NHS Trusts), clinicians and clinical researchers, who can collaboratively create these resources in order to be accessible, user-friendly and up to date with recent research findings and recommendations.

In this thesis, CAMHS clinicians endorsed that having access to structured tools on assessing AVH would enhance their intention to do so. Thus, it would be beneficial to ensure the accessibility and availability of such tools in young people's services, to help with detailed assessment of AVH and assist in keeping the conversation with young people going (Bogen-Johnston et al., 2020). Other researchers have also highlighted the need for comprehensive but easy-to-use tools for the assessment of AVH in young people in routine clinical settings e.g., SOCRATES assessment that also covers other PE commonly co-occurring the AVH (Kelleher, 2016).

Although this thesis demonstrated that youth clinicians' intention to assess distressing AVH was high, to increase the likelihood this translates into routine clinical practice, it would be beneficial to ensure that work culture encourages discussions about AVH with young patients. This derives from findings on the importance of subjective norms on intention to assess AVH, especially in terms of perceptions of approval/disapproval of other specialist mental health professionals (Chapter 4). Thus, encouraging this group of clinicians to assess AVH in routine clinical practice could set the example for their colleagues to do so, especially newly-qualified ones that are still seeking to adapt to workplace culture (Cleary et al., 2011; Wright et al., 2011). Open

communication about discussing AVH with young patients and dissemination of knowledge about using AVH assessment tools in clinician forums and team meetings could help endorse this practice.

#### ***5.5.4 Psychological interventions for AVH***

This thesis has highlighted that most young people receiving care from mental health services experience distress due to their AVH, which is consistent with other studies with help-seeking youth (Majer et al., 2014, 2017) and indicates a need for support. Findings from Chapter 2 and 3 offer insight into potential psychological therapy targets, emphasising the importance of depressive, anxiety, and PE symptomatology and with social relating issues that extend to relationships with voices.

Supporting previous feasibility and clinical utility studies evaluating CBT-informed interventions for young people with distressing AVH (Jolley et al., 2018; Majer et al., 2020), this thesis provides further evidence for the potential benefit of cognitive behavioural work in reducing AVH-related distress. Specifically, future interventions might benefit from aiming to challenge beliefs about voice intent and power and guide young people to adopt more adaptive responses to AVH, instead of resisting the experience. Supporting this recommendation, a study with young people who received group CBT for distressing AVH showed that reducing the strength of beliefs about voice power has helped patients to gain a sense of control over the voices, which was a crucial factor in distress reduction (Newton et al., 2007). Based on the strong association between negative voice content and distress, a suggestion would be to incorporate work on the voice content sense-making, using a non-stigmatising approach, as it could enhance reduction of AVH-related distress (Parry et al., 2020).

Additionally, these findings support the importance of a relating focus in psychological interventions for this group. Targeting negative relating to voices (e.g., voice dominance, hearer distance, hearer dependence) as well as to social others might be beneficial, as these two dimensions of relating could be influencing each other. Young people relating dependently with their voices related more distantly or even aggressively with social others. Thus, therapy could help young people reconnect with



the social world, supporting them to build and maintain meaningful social relationships while reducing their dependence on voices, that might be serving relational needs that are otherwise not being met in their social lives (e.g., companionship, emotional support). Conversely, young people who keep an uncommunicative, suspicious distance from their voices, were related to social others from a position of fear of separation (Chapters 2 and 3). In this case, therapy could support young people to relate more securely with social others and encourage them to approach their voices. This could allow young people to challenge beliefs about voice dominance and to draw links between voices and other interpersonal experiences, which could further reduce distress (Parry & Varese, 2020). For this purpose, Relating Therapy that has been so far developed and tested with adults (Hayward et al., 2017) is an obvious candidate for reducing AVH-related distress in youth, as it focuses on shifting negative relational patterns between hearers and voices, taking into account other difficult social relationships.

In this thesis, young people with AVH showed greater levels of anxiety and depression suggesting that negative affect could also be considered as a parallel therapy target. Previous literature has suggested the bi-directional relationship between negative emotions and AVH (So et al., 2019; Sullivan et al., 2014; Zavos et al., 2016) and thus activities that ameliorate negative affect could be provide additional benefit in AVH therapy (Carter et al., 1996). Furthermore, although the present findings did not find a direct association between negative self and other schemas and AVH-related distress, young voice-hearers scored very high on these two types of beliefs. Taking into account that schemas are likely to be more malleable in youth compared to adults, and that they guide evaluations of social others and oneself, schemas are an important parallel focus of psychological interventions for this group. Previous youth literature has emphasised, moreover, that reducing negative self and other beliefs could promote resilience to future adverse experiences and distress (Animilis et al., 2015; Noone et al., 2015).

## **5.6 Future research directions**

The research conducted in this thesis has provided preliminary evidence on factors that influence levels of AVH-related distress in youth. Future research should

aim to investigate further the dynamic and potentially interacting relationships between negative interpersonal schemas, relating to voices, appraisals of voices and distress. Future research could further extend the model to incorporate additional potential explanatory factors in AVH distress, for example measures of familiarity of the voice and ability to provide explanations for the agent behind the voices (Parry & Varese, 2020). Future investigations aiming to establish the key factors of AVH-related distress should also aim to use a large sample and a longitudinal design that would allow for adequately powered mediation and moderation analysis to allow causal inference, such as regarding the role of persecutory beliefs in the association between relating and responding to voices and AVH-related distress.

Although this research identified that young people with AVH experience more social relating difficulties, it remains unclear as to the causal nature of these associations and what mechanisms may explain their effects. Thus, future research should examine which factors predispose young people to experience social relating difficulties before and after the onset of AVH, including the role of interpersonal schemas and general distress and psychopathology. Additionally, future research should also investigate how social relating difficulties can influence the appraisals and the experience of AVH, including negative relating to voices (e.g., dependence). On this topic, future studies could benefit from using both subjective measures of social relating, such as the ones used in this thesis, and objective measures of socialising and social withdrawal.

Furthermore, in this thesis, only 8 out of 34 voice-hearers had received some kind of psychological intervention related to AVH and almost all of them were distressed by this experience. Building on findings by Kapur et al. (2014) describing the frustration of young people and parents when they sought support for AVH in CAMHS, future qualitative research with young people and youth clinicians could investigate the barriers and facilitators in the provision of clinical support. Such investigations could uncover any gaps in clinical practice that could be addressed to improve young people's experience of care. Considering the lack of formally recommended psychological interventions for distressing AVH, it could also be worth exploring what are the

commonly used practices in offering support to young people in current routine practice and their effectiveness and acceptability.

## **5.7 Conclusions**

This thesis demonstrates the applicability of the adult cognitive-interpersonal model of AVH in young people. The findings of this thesis emphasise the importance of beliefs about voices, relating to voices and hearers' responses to voices in maintaining AVH-related distress in young people. Additionally, findings suggest that negative relating to voices seems to be associated with negative relating to social others, but in a seemingly opposite direction in terms of proximity. Results from this thesis also suggest that, in clinical populations of young people, AVH constitute a marker of more severe general psychopathology and social relating difficulties; the latter characterised by feelings of inferiority, social disconnect, lower perceived peer support, and more negative, less-than-competent relating. Considering the implications of these findings, disclosure of distressing AVH to clinicians should be followed up appropriately with a detailed exploration of the young people's experiences in order to identify and offer appropriate care. Youth clinicians report high intention to assess distressing AVH following patient disclosure of the experience. Perceived social pressure, and more specifically, beliefs about the approval/disapproval of other mental health clinicians of them assessing AVH were found to be an important predictor of intention in both EIP and CAMHS services, suggesting that work culture has a key role influencing whether clinicians assess AVH. Additional findings indicated that youth clinicians had modest levels of confidence in providing useful information on AVH to young people requiring support, implying that there is a need for improving care in this regard.

Overall, the findings of this thesis encourage a greater focus of AVH youth interventions on targeting beliefs about the persecutory nature of voices, negative relating to voices as well as behavioural responses to the experience to reduce distress. Considering that relating to voices and relating to social others could be influencing each other, a relational focus of interventions was recommended in order to shift negative relating patterns in both relational dimensions. Finally, to improve young people's care when they disclose distressing AVH and promote the implementation of

assessment of AVH in routine clinical practice, access to age-appropriate material and resources on AVH, such as psychoeducation material, structured AVH assessment tools and open communication within clinical teams about discussing AVH with young patients could help as a professionally approved practice. Future research should seek to further understand the causal nature of associations found in this thesis between psychological factors in the AVH model in youth to provide a stronger evidence-base for the development of psychological interventions for this patient group.

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## **7. Appendices**

## 7.1 Appendix A. Supplementary Material for Chapter 1

### Literature Search Strategy in PubMed

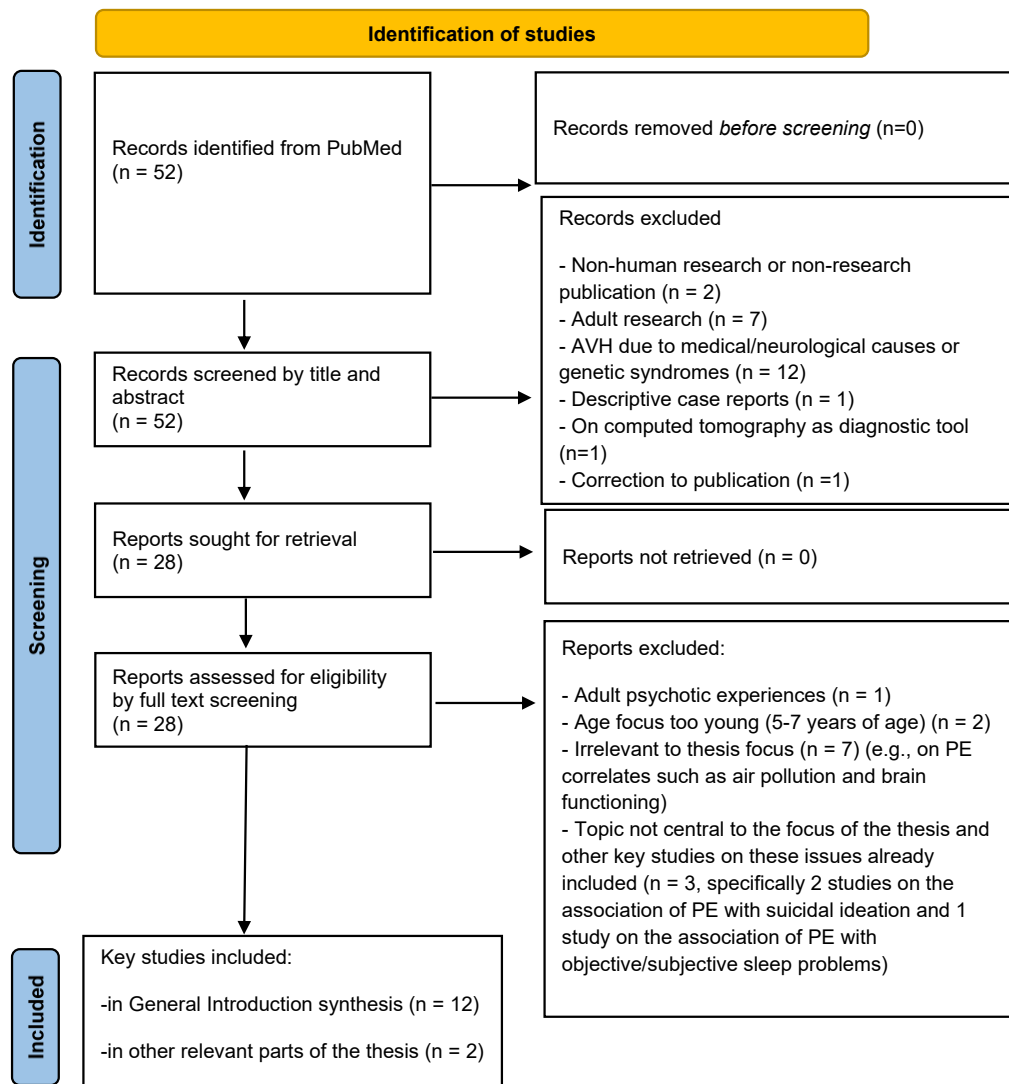
The search strategy used to identify studies on AVH in youth and its clinical and social relating correlates since the 13<sup>th</sup> of July 2017 was the following:

```
((("2017/07/13"[Date - Publication] : "2020/09/01"[Date - Publication])) AND
((child*[Title/Abstract] pediatric[Title/Abstract] OR paediatric[Title/Abstract] OR
adolescen*[Title/Abstract]))) AND (("hearing voices"[Title/Abstract] OR "voice-
hearing"[Title/Abstract] OR "voice-hearing"[Title/Abstract]) OR
((auditory[Title/Abstract] OR verbal[Title/Abstract]) AND
(hallucinat*[Title/Abstract])))
```

The following flowchart (Figure 1) indicates how many records were found and how many were included in the main text of the thesis.

**Figure 1.** PRISMA Flowchart for identifying key recent studies for the narrative review of Chapter1.

**PRISMA 2020 flow diagram**



Adapted From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71. For more information, visit: <http://www.prisma-statement.org/>

**Table 1.** *Summary of key studies linking PE or AVH with clinical and/or social relating factor in text order.*

Study	Design	Sample size (N)	Sample characteristics	Experience studied
Davies et al. (2018)	Birth cohort study	3799	<p>Data from the Avon Longitudinal Study of Parents and Children (ALSPAC), population-based, longitudinal birth cohort based in Avon (England, UK).</p> <p><b>Data-collection time points</b> At 12,16,18,20 years of age</p> <p>% of females in the sample: 51.90</p>	PE
Healy et al. (2018)	Prospective cohort study, comparing participants with and without childhood PE	56 (18 cases, 38 controls)	<p>Data from the Adolescent Brain Development study, a prospective cohort study of Irish young people, recruited from schools in the Dublin region.</p> <p><b>Three data-collection time point</b> For the case group, mean age at Time 1, <math>M = 11.67</math>; at Time 2, <math>M = 15.83</math>; at Time 3, <math>M = 18.81</math> and for the control group, mean age at Time 1, <math>M = 11.68</math>; at Time 2, <math>M = 15.82</math>; at Time 3, <math>M = 18.79</math>.</p> <p>% of females in the sample: 33.3% of cases and 57.9% of controls.</p>	PE
Hielscher et al. (2018)	Cross-sectional survey	1998 (269 with auditory hallucinatory experiences, 1729 without auditory hallucinatory)	<p>Data from the Young Minds Matter survey, a national study of mental health and wellbeing of children and adolescents aged 14–17 years in Australia. Survey data are considered nationally representative.</p> <p>Mean age of participants with auditory hallucinations, <math>M = 15.39</math> (<math>SD = .08</math>), 56.5 % female</p>	Auditory hallucinatory experiences

		experiences	Mean age of participants without auditory hallucinations, $M = 15.53$ ( $SD = .04$ ), 47.2% female	
Trotta et al. (2019)	Prospective birth twin cohort study comparing those with and without childhood PE	2232 (125 participants with PE at age 12)	<p>Data from the Environmental Risk Longitudinal Twin Study, a nationally representative birth cohort of twins born in 1994–1995 in England and Wales.</p> <p><b>Data-collection time points</b> Time 1 = 12 years of age, Time 2 = 18 years of age.</p> <p>No info on participants' gender.</p>	PE
Isaksson et al. (2020)	Large-scale prospective adolescent cohort	1445	<p>Data from the SALVe cohort, a large-scale prospective study on risk and protective factors for emotional and behavioural problems. Community sample of all adolescents born in the Swedish county of Västmanland in 1997 and 1999.</p> <p><b>Data-collection time points</b> Baseline with mean age, <math>M = 14.38</math> years (<math>SD = 1.04</math>) and at 3 years with mean age, <math>M = 17.31</math> years (<math>SD = 1.04</math> ).</p> <p>% of females in the sample: 57.8%</p>	PE
Pan et al. (2018)	Prospective community cohort	1712	<p>Data from the Brazilian High-Risk Cohort, a large multi-site school-based study that screened 9937 students from public schools of two large metropolitan areas in Brazil.</p> <p><b>Data-collection time points</b> Participants' age range was 6–12 years of age at Time 1. T2 was 3 years later.</p> <p>No info on participants' gender.</p>	PE

Kelleher et al. (2014)	Clinical case– clinical control study	108 (52 with PE, 26 with AVH)	<p>Young people, newly referred to the Child and adolescent mental health out-patient service in the Republic of Ireland, with at least one current Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV) psychiatric disorder.</p> <p>Young people with psychotic experience were compared with young people in the same clinic who did not have psychotic experiences.</p> <p>Participants' age range: 12-16 years</p> <p>No info on participants' gender.</p>	PE and AVH
Yamasaki et al. (2018)	Prospective community, school-based study	887	<p>Data from a longitudinal survey of mental health status of students, conducted between 2009 and 2013 in a combined junior and senior high school (ages 12–18) in Tokyo, Japan.</p> <p><b>Data collection time points</b> At baseline (Time 0), median age = 14 (range 12-17 years of age, <math>SD = 1.7</math>) and at a one-year follow up (Time 1). % of females in the sample: 49.80</p>	PE
Solmi et al. (2018)	Birth cohort study	6361	<p>Data from the ALSPAC birth cohort.</p> <p><b>Data collection time points</b> Baseline at age 13 years and follow up at age 18. % of females in the sample: 51</p>	PE
Healy et al. (2019)	Meta-analysis of observational studies	29517	Data from 13 non-help-seeking community samples, 5 cross-sectional and 8 longitudinal studies, focusing on childhood and adolescent PE (exposure) and mental health disorder (outcome).	PE

			Samples were included if the majority of participants were aged 18 years or younger at the first enquiry of PE.	
Kelleher et al. (2013)	Prospective community, school-based cohort study	1112	<p>Data were collected from school-based adolescents in 17 randomly selected schools in the counties of Cork and Kerry in Ireland.</p> <p><b>Data collection time points</b> Baseline, at 3 and 12 months.</p> <p>Sample age range 13-16 years, <math>M = 13.47</math>. % of females in the sample: 45</p>	PE (mainly AVH)
Cederlöf et al. (2016)	Prospective twin cohort study	9242	<p>Data from the Child and Adolescent Twin Study in Sweden, an ongoing longitudinal study targeting all twins born in Sweden since 1992. This study is considered a nationally representative cohort.</p> <p><b>Data collection time points</b> At ages 15 and 18 years.</p> <p>% of females in the sample: 57.4</p>	PE and AVH
Hielscher et al. (2019)	Cross-sectional survey	1998	<p>An Australian nationally representative sample of adolescents recruited voluntarily using area-based random sampling.</p> <p>Sample mean age, <math>M = 15.5</math> (<math>SE = .03</math>; range = 14–17 years)</p> <p>% of females in the sample: 48.5</p>	Auditory PE
Hielscher et al.	Prospective	1669	Data from an Australian prospective longitudinal cohort of 1669 adolescents (12–	Auditory PE

(2020)	longitudinal, community cohort of adolescents		<p>17 years) from 41 secondary schools, with 1-year follow-up.</p> <p>Data from a subsample who endorsed baseline suicidal ideation (<math>n = 216</math>) were analysed.</p> <p>Sample mean age, <math>M = 13.9</math> (<math>SE = .02</math>).</p> <p>% of females in the sample: 72.1</p>	
Dhossche et al. (2002)	Population-based, longitudinal study	914	<p>Data from a random sample of 2600 children, aged 4 to 16, from the Dutch province of Zuid Holland, drawn in 1983 using municipal birth registers.</p> <p>Of the 2447 subjects reached, 2076 enrolled in the study and were assessed at regular intervals, i.e. in 1983 (Time 1), 1985 (Time 2), 1987 (Time 3), 1989 (Time 4), 1991 (Time 5) and 1997 (Time 6).</p> <p>For this study, data at Time 4 were used, with sample age range 11–18 (<math>M = 14.1</math>, <math>SD = 2.1</math>).</p> <p>% of females in the sample: 52.95</p>	AVH and visual hallucinations
Havers et al. (2019)	Longitudinal twin study	1448 twin pairs	<p>Data from the Longitudinal Experiences and Perceptions study which is part of the Twins Early Development Study with data from twins born during 1994 to 1996 in England and Wales across their childhood.</p> <p>Data duration was approximately 9 months.</p> <p><b>Data collection time points</b>  Time 1 with sample mean age, <math>M = 16.32</math> (<math>SD = .68</math>) and Time 2 with sample mean age, <math>M = 17.06</math>, (<math>SD = .88</math>)</p>	Hallucinations



			<p>% of females in the sample at Time 1: 54.5</p> <p>% of females in the sample at Time 2: 58.1</p>	
De Loore et al. (2011)	Population-based, longitudinal study	1780	<p>Data were derived from a general health screening of adolescents living in the Maastricht area and attending the second grade of secondary school at Time0 (age 13/14 years) and who were seen again approximately 2 years later at Tim 1 whilst attending the fourth grade (age 15/16 years).</p> <p>Baseline, Time 0, mean age, <math>M = 13.5</math> (<math>SD = .6</math>)</p> <p>Time 1, mean age, <math>M = 15.1</math> (<math>SD = .8</math>)</p> <p>% of females in the sample at baseline: 54.49</p>	AVH
MacKie et al. (2011)	Community, school-based, longitudinal study	409	<p>Data from a larger study investigating a personality-targeted intervention for adolescents which recruited participants from 12 secondary schools in London. In total, 2630 adolescents were invited to participate in the initial surveying phase of the study.</p> <p>Only data from participants who scored high in four personality risk factors were included in this study. Four data collection time points, each 6 months apart.</p> <p>Mean sample age, <math>M = 14.58</math></p> <p>% of females in the sample: 62.7</p>	PE
Connell et al. (2016)	Prospective birth cohort study	766 (445 with hallucinations, 321 without hallucinations)	Data from the Mater-University of Queensland Study of Pregnancy, a prospective birth cohort study of mothers and their offspring who received antenatal care at a major public hospital in Brisbane, Australia, between 1981 and 1984.	AVH and VH

			<p>Age of participants when data were collected for the presence of hallucinations: Time 1, participants age 14 years Time 2, participants age 21 years</p> <p>Mean age of participants with hallucinations at 14 years alone or at 14 years and at 21 years of age at the time of the study, <math>M = 31.6</math> (<math>SD = .88</math>), 43.3% female</p> <p>Mean age of participants without hallucinations at 14 years nor at 21 years, at the time of the study, <math>M = 31.1</math> (<math>SD = .95</math>), 57.8% female</p>	
Downs et al. (2013)	Prospective, community-based longitudinal study	8099	<p>Baseline data were collected between 2005 and 2010 in 73 primary schools within Greater London, with an average follow-up period of 23 months.</p> <p>Two data collection time points.</p> <p>Mean age at baseline, <math>M = 10.4</math> (<math>SD = .8</math>) Mean age at follow-up, <math>M = 12.2</math> years (<math>SD = 1.6</math>)</p> <p>% of females in the sample: 50</p>	PE
Rubio et al. (2012)	Meta-analysis of longitudinal childhood and adolescent studies that followed the course of hallucinations over time	9737	<p>Data from 6 epidemiological/community setting studies (9573 participants) and 5 clinical studies (164 participants).</p> <p>Mean age of participants in community studies, <math>M = 12.18</math> % of females in community studies: 52.38</p> <p>Mean age of participants in clinical studies, <math>M = 11.62</math> % of females in clinical studies: 43.1</p>	Hallucinations

Escher et al. (2002)	Longitudinal, observational study	80	<p>Children were recruited from the community, paediatric health services and child and adolescent psychiatric services, of which about 50% were not receiving mental health care.</p> <p><b>Data collection time points</b> Baseline and at 1-year intervals over a period of 3 years.</p> <p>Participants mean age at baseline, <math>M = 12.9</math>, (<math>SD = 3.1</math>)</p> <p>% of females in the sample: 53.80</p>	AVH
Simon et al. (2009)	Prospective, longitudinal study of help- seeking sample	84 (48 with subclinical hallucinations, 36 without subclinical hallucinations)	<p>Participants were help-seeking young people who were recruited from consecutive referrals to the Bruderholz outpatient clinic, in North Western Switzerland, for the assessment of early psychosis between May 1st 2004 and December 31st 2007 and were identified as at high clinical risk for psychosis.</p> <p>One-year follow-up of stability of subclinical hallucinations.</p> <p>Mean age of participants, <math>M = 17.8</math> (range: 14- 20 years).</p> <p>% of females in the sample: 40.50</p>	Hallucination- like phenomena
Kalman, et al. (2019)	Scoping review of studies conducted on cohorts of general child/adolescent populations	Sample sizes of articles included (6 articles, pertaining to 5 cohort populations) ranged from 887	<p>Data of cohort on general child/adolescent populations of <math>\geq 300</math> individuals, that provided data on PE for at least 2 time points, had available follow-up data for <math>\geq 50\%</math> of those assessed for PE at baseline and targeted for follow-up examination, and reported the differences between individuals with PE that persisted or remitted during the study period.</p> <p>Age range of participants in the studies included was from 11.1 to 14 years for</p>	PE

		to 7572 for baseline assessments.	baseline assessments.  No info on participants' gender.	
Ames et al. (2014)	Clinical, cross-sectional, observational study	40	<p>Clinically referred group of children and young people, recruited as part of a larger study from the waiting list of a South London Child and Adolescent Mental Health Service (CAMHS).</p> <p>All children on the waiting list of a community Child and Adolescent Mental Health Service in south-east London aged between 8 and 14 years were invited to participate.</p> <p>Sample mean age, <math>M = 11.5</math> (<math>SD = 2</math> years and 2 months) % of female participants in the sample: 27.5</p>	PE
Ruffell et al. (2016)	Clinical, cross-sectional, observational study	72	<p>Participants were recruited during the first 24 months (July 2011 through July 2013) of a larger study from the waiting list of a South London Child and Adolescent Mental Health Service (CAMHS). The CAMHS team accepted referrals of young people with a broad spectrum of emotional and behavioural problems, which often did not meet criteria for formal diagnosis of a mental health condition.</p> <p>Sample mean age, <math>M = 11.5</math> (<math>SD = 1.19</math>) % of female participants in the sample: 33</p>	PE
Noone et al. (2015)	Clinical, cross-sectional, observational study	67	Participants were recruited as part of the Coping with Unusual Experiences Study from the waiting list of community Child and Adolescent Mental Health Services (CAMHS) in three South East London boroughs.	PE and AVH

			<p>The CAMHS teams accepted referrals of young people with a broad spectrum of emotional and behavioural problems, which often did not meet criteria for formal diagnosis of a mental health condition.</p> <p>Most participants endorsed at least one unusual experience (<math>n = 55</math>, 82%), and three-quarters of those with unusual experiences reported associated distress or adverse life impact (<math>n = 42</math>, 63% of the total sample).</p> <p>Sample mean age, <math>M = 11.5</math> (<math>SD = 1.19</math>)</p> <p>% of female participants in the sample: 35.82</p>	
Anilmis et al. (2015)	Clinical, cross-sectional, observational study	94	<p>Participants were recruited as part of the Coping with Unusual Experiences Study from the waiting list of community Child and Adolescent Mental Health Services (CAMHS) in three South East London boroughs.</p> <p>The CAMHS teams accepted referrals of young people with a broad spectrum of emotional and behavioural problems, which often did not meet criteria for formal diagnosis of a mental health condition.</p> <p>Sample mean age, <math>M = 11.2</math> (<math>SD = 1.9</math>)</p> <p>% of female participants in the sample: 40.43</p>	PE
Cavelti et al. (2019b)	Clinical, cross-sectional, observational study	43	<p>Help-seeking youth aged 15–25 years, with AVH present at least three times a week for more than an hour per occasion or daily for any duration per occasion, who were diagnosed with either Borderline Personality Disorder (BPD) (<math>n = 23</math>) or schizophrenia spectrum disorder (SZ) (<math>n = 20</math>).</p> <p>Participants were recruited from the Orygen Youth Health, a state government-</p>	AVH

			<p>funded specialist mental health service for 15–25-year-olds living in north-western and western metropolitan Melbourne, Australia.</p> <p>BPD group mean age, <math>M = 18.13</math> (<math>SD = 2.3</math>), 95.7% female  SZ group mean age, <math>M = 20</math> (<math>SD = 3.15</math>), 50 % female</p>	
Cavelti et al. (2020)	Clinical, cross-sectional, observational study	66	<p>Same participants and recruitment process as in Cavelti et al. (2019b) mentioned above.</p> <p>An additional 23 young people with BPD without AVH were recruited for this study.</p> <p>BPD without AVH mean age, <math>M = 20.13</math> (<math>SD = 2.49</math>), 95.7 % female</p>	AVH
Parry & Varese (2020)	Cross-sectional, general population, online survey	68	<p>Participants who self-identified as having direct experience of voice-hearing, aged 13–18 years old, international sample (7 countries)</p> <p>Sample mean age, <math>M = 14.91</math> (<math>SD = 2.77</math>)</p> <p>% of females in the sample: 61</p>	AVH
Parry et al. (2020)	Cross-sectional, general population, online survey	74	<p>Participants who self-identified as having direct experience of voice-hearing, aged 13–18 years old, international sample (11 countries).</p> <p>Sample mean age, <math>M = 15.06</math> (<math>SD = 2.83</math>)</p> <p>% of females in the sample: 61</p>	AVH
Gronholm et al. (2016)	Cross-sectional,	29	Participants were recruited with purposive sampling.	PE

	qualitative interviews		<p>A subsample of a prospective longitudinal community cohort (<math>n = 407</math>) of children recruited via population screening conducted in primary schools in Greater London, United Kingdom, when aged 9 to 11 years, over-representing families from deprived, ethnically diverse inner-city areas. Participants should have met the following two criteria to participate in the study: (a) at least one child-reported PE at baseline and at follow-up data collection (on average 2 years later); (b) internalizing or externalizing problems in the clinical (abnormal) range (approximately top 10% on population norms) as measured by child-reported emotional symptoms, and/or caregiver-reported conduct problems, hyperactivity-inattention, and/or peer relationship problems, and at clinical or borderline range (approximately top 20% on population norms) at follow-up.</p> <p>Study sample size was guided by thematic saturation.</p> <p>Sample mean age, <math>M = 15.7</math> years (<math>SD = 1.6</math>, range: 12.2–18.6 years)</p> <p>% of females in the sample: 65.5</p>	
Anglin et al. (2014)	Cross-sectional, spontaneous vignette study	49	<p>A convenience sample of undergraduate college students enrolled in Psychology courses.</p> <p>Sample mean age, <math>M = 19.65</math> (<math>SD = 2.93</math>)</p> <p>% of females in the sample: 53</p>	Stigma related to at-risk for psychosis status
Yang et al. (2015)	Clinical, cross-sectional, observational study	38	<p>Participants were help-seeking outpatients at the psychosis-risk Centre of Prevention and Evaluation (COPE) in the New York State Psychiatric Institute and met criteria for at least one of three psychosis-risk syndromes.</p> <p>&gt;85% had been diagnosed with a non-psychotic Axis I disorder, typically anxiety</p>	Stigma related to at-risk for psychosis status

			<p>and depression, prior to enrolment and 13.9% had received no mental health diagnosis.</p> <p>Sample mean age, <math>M = 22</math>. (<math>SD = 3.1</math>)</p> <p>% of females in the sample: 36.8</p>	
Crush et al. (2018)	Prospective, twin, birth cohort study	2232	<p>Data from the Environmental Risk (E-Risk) Longitudinal Twin Study, a nationally-representative birth cohort of 2232 British twin children born in England and Wales in 1994–1995.</p> <p><b>Data collection time points</b> 12 and 18 years of age (18 years of age for data collection on PE)</p> <p>% of females in the sample: 51</p>	PE
Cornblatt et al. (2003)	Clinical, observational, longitudinal study	62	<p>Treatment-seeking adolescents from an independent treatment facility in New York focusing on the prodromal stage of schizophrenia.</p> <p><b>Data collection time points</b> Baseline and 1-year follow-up</p> <p>Sample mean age, <math>M = 16.44</math> (<math>SD = 2.29</math>)</p> <p>% of females in the sample: 29</p>	At-risk for psychosis status (PE)
Pruessner et al. (2011)	Clinical, observational, cross-sectional	92	<p>Data from three groups: patients with a first episode of non-affective or affective psychosis (<math>n = 32</math>), individuals at ultra-high risk for psychosis (<math>n = 30</math>) and healthy controls (<math>n = 30</math>) recruited from the Prevention and Early Intervention Program for</p>	PE



	study		<p>Psychoses in Montreal.</p> <p>First episode psychosis group, mean age, <math>M = 22.72</math> (<math>SD = 3.34</math>), % 43.8 female</p> <p>Ultra-high risk for psychosis group, mean age, <math>M = 20.33</math> (<math>SD = 3.24</math>), % 46.7 female</p> <p>Control group, mean age, <math>M = 22.47</math> (<math>SD = 3.79</math>), % 50 female</p>	
Robustelli et al. (2017)	Population-based, observational, cross-sectional study	85	<p>Data from 44 individuals at ultra-high risk for psychosis and 41 healthy controls recruited to the Adolescent Development and Preventative Treatment research program, using advertisement in the community (e.g., newspaper advertisements) and mental health services (e.g., college counselling centres, community-mental health centres).</p> <p>Ultra-high risk for psychosis group, mean age, <math>M = 19.17</math> (<math>SD = 1.73</math>), % 41 female</p> <p>Control group, mean age, <math>M = 19.20</math> (<math>SD = 2.56</math>), % 63 female</p>	At-risk for psychosis status (PE)
Dodell-Feder et al. (2020)	Population-based, cross-sectional, observational study	2512	<p>International sample of individuals from the general population, who visited TestMyBrain.org (18–65 years of age).</p> <p>Sample mean age, <math>M = 33.4</math> (<math>SD = 13.1</math>)</p> <p>% of females in the sample: 59.2</p>	PE
Schimmelmann et al. (2015)	Population-based, cross-sectional,	689	<p>Data collected from 535 adults and 154 children/adolescents. The sample was stratified sampling by sex (1:1) was used to randomly select potential participants aged 8-17 years (in the Bi-national Evaluation of At-Risk Symptoms in Children</p>	Perceptual PE

	observational study		<p>and Adolescents, BEARS-Kid study) or 16-40 years (in the Bern Epidemiology At-Risk, BEAR study) from approximately 384,000 persons of these age groups included in the obligatory population register of Canton Bern, Switzerland. Where allowed by the subsample size, each child/adolescent (aged 8-17 years) was randomly matched by gender and highest educational level of parents to each of the four adult age groups (18-19, 20-24, 25-29, and 30-40 years).</p> <p>Sample median age = 23.3 (age range 18.5 -29.5)</p> <p>% of females in the sample: 57</p>	
Løberg et al. (2019)	Population-based, cross sectional, web-based questionnaire study	10346	<p>Data from a population-based Norwegian cohort study, the Bergen Child study of 16 -19-year-olds. The sample included all adolescents attending high school in 2012 and has been found to be representative of Norwegian high school youth.</p> <p>Participants were split into three groups: those without AVH, those with non-distressing AVH or those with distressing AVH.</p> <p>Sample mean age, <math>M = 17.7</math> (<math>SD = 1.60</math>)</p> <p>% of females in the sample: 53.5</p>	AVH
Hameed et al. (2018)	Birth cohort study	6790	<p>Data from the Avon Longitudinal Study of Parents and Children (ALSPAC), population-based, longitudinal birth cohort based in Avon (England, UK).</p> <p>Participants reporting PE as 'not present' (<math>N = 5862</math>) versus participants with 'suspected' (<math>N = 544</math>) or 'definitely present' PE (<math>N = 384</math>) at 12 years of age.</p> <p>Sample mean age, <math>M = 12.9</math> (age range 12.5 – 13.3 years)</p>	PE

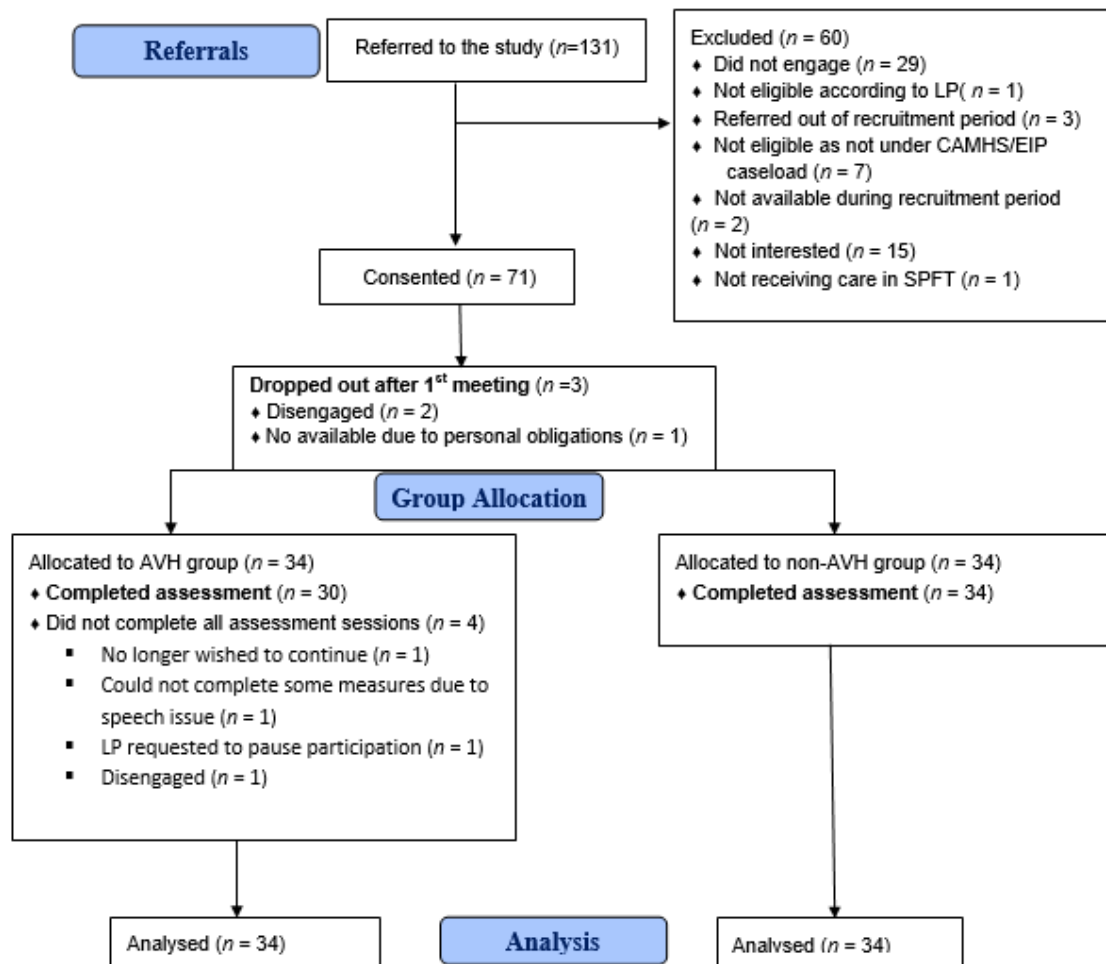
			<p>% of females in participants PE not present: 50.4</p> <p>% of females in participants suspected or definite psychotic experiences: 54.2</p>	
Sullivan et al. (2013)	Birth cohort study	3592	<p>Data from the Avon Longitudinal Study of Parents and Children (ALSPAC), population-based, longitudinal birth cohort based in Avon (England, UK).</p> <p>Data collection time point for PE: age 12.</p> <p>% of females in the sample at age 12: 52.8</p>	PE
Asher et al. (2013)	Birth cohort study	6356	<p>Data from the Avon Longitudinal Study of Parents and Children (ALSPAC), population-based, longitudinal birth cohort based in Avon (England, UK).</p> <p>Baseline sample was the 6356 singleton children who attended a semi-structured interview assessing PE. The study population for this analysis comprises the 5250 children who also had social functioning data collected at a mean age of 13.2 years.</p> <p><b>Data collection time points</b></p> <p>Mean age for PE assessment, <math>M = 12.9</math></p> <p>Mean age for social functioning, <math>M = 13.9</math></p>	PE
Bouhaddani et al. (2019)	Longitudinal community-based study, 12 month follow up	1512	<p>Data from the MasterMind project, a longitudinal school-based screening study of adolescent mental health in the Netherlands. The 13 participating schools were in various parts of the Netherlands, but most were based in urban agglomerations.</p> <p>Baseline data came from a total number of 2148 adolescents and 1-year follow-up data from a total number of 1512 adolescents.</p> <p>Sample mean age, <math>M = 12.64</math> (<math>SD = .65</math>)</p>	PE and hallucinatory experiences

			% of females in the sample: 54.4	
Bartels-Velthuis et al. (2016)	Case-control, community, longitudinal, observational study	694	<p>Data from a Dutch case-control community sample of 7- and 8-year-old children.</p> <p>The study was a cross-sectional, two-staged population-based survey of children aged 7 and 8 years attending primary school in the province of Groningen (about 550 000 inhabitants), in the Netherlands, during the school year 2002/2003 and it was incorporated in a routine paediatric community health service screening at schools.</p> <p><b>Data collection time points</b> Baseline, 5-year (Time 1) and 11-year (Time 2) follow-up assessments.</p> <p>Sample mean age at 11-year follow up, <math>M = 18.95</math> (<math>SD = .48</math>)</p> <p>% of females in the sample: 61.95</p>	AVH
Kelleher, Keeley, et al. (2012)	Four cross-sectional, population-based studies (2 school-based surveys and 2 in-depth clinical interview studies)	<p>Survey studies: 2243</p> <p>Interview studies: 423</p>	<p>Survey study 1 was an early adolescence study (participants 11–13 years old) and recruited from 16 schools in Dublin, Ireland, and surrounding areas which took part in the Adolescent Brain Development study. <math>N = 1131</math> consented to take part.</p> <p>Survey study 2 was a mid-adolescence study (participants 13-16 years old) and recruited from 17 secondary schools in Cork and Kerry, Ireland. <math>N = 1602</math> consented to take part.</p> <p>Interview study 1 was an early adolescence study and included data from 212 participants, drawn from the Adolescent Brain Development study described above (survey study 1).</p>	AVH

			<p>Interview study 2 was a mid-adolescence study, the Challenging Times study, which was established to investigate the prevalence of psychiatric disorders and suicidal behaviour among Irish adolescents aged 13–15 years. The study took place in north Dublin and recruited participants from eight mainstream schools.</p> <p>Overall sample age range: 11- 16 years. No information on participants' gender.</p>	
<p><i>Note.</i> <i>N</i> = Number of participants; % = Percentage; <i>M</i> = mean; <i>SD</i> = standard deviation of the mean; <i>SE</i> = standard error of the mean; PE = psychotic experiences; AVH = auditory verbal hallucinations; VH = visual hallucinations.</p>				

## 7.2 Appendix B. Supplementary material for Chapter 2

**Figure 1.** *Vista Recruitment Flow Diagram*



**Vista Recruitment Flow Diagram description**

71 participants consented to take part in the Vista case-control and voice-hearing studies. 4 participants did not continue with the study after the first meeting with the researcher. Data from these 4 participants were not included in any subsequent analysis.

From the remaining 68 participants, 34 participants met the criteria for the voice-hearing (case) group and 34 were allocated to the control group.

From the 34 in the voice-hearing group, 4 participants did not complete the whole Vista assessment. All 4 participants met with the researcher twice and completed an average of 3.73 hours of assessment time completing a big part of the assessment measures.

Reasons for missing data from the 4 cases that did not complete the full assessment were the following: issues with speech ( $n = 1$ ), no longer wished to continue ( $n = 1$ ), lead practitioner requested to pause participation following concerns about risk ( $n = 1$ ) and then participant disengaged or disengaged following a holiday period ( $n = 1$ ).

Reasons for other missing values in the data were not recorded.

### 7.3 Appendix C. Research Ethics Committee (REC) Approval Letter for Chapters 2



**Health Research  
Authority**

**London - Brighton & Sussex Research Ethics Committee**

Health Research Authority  
Ground Floor, Skipton House  
80 London Road  
London  
SE1 6LH

Telephone: 02071048129

**Please note:** This is the favourable opinion of the REC only and does not allow you to start your study at NHS sites in England until you receive HRA Approval

30 January 2018

Miss Aikaterini Rammou  
Pevensey 1, 1C5  
School of Psychology,  
University of Sussex  
BN1 9RH

Dear Miss Rammou

<b>Study title:</b>	<b>Vista- Voice-hearing in young people: distress factors and social relating</b>
<b>REC reference:</b>	<b>17/LO/2078</b>
<b>Protocol number:</b>	<b>025 RAM</b>
<b>IRAS project ID:</b>	<b>236382</b>

Thank you for your letter of 11 January 2018, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to make a request to postpone publication, please contact [hra.studyregistration@nhs.net](mailto:hra.studyregistration@nhs.net) outlining the reasons for your request.



and 3.

### **Confirmation of ethical opinion**

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

### **Conditions of the favourable opinion**

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission must be obtained from each host organisation prior to the start of the study at the site concerned.

*Management permission should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).*

*Guidance on applying for NHS permission for research is available in the Integrated Research Application System, [www.hra.nhs.uk](http://www.hra.nhs.uk) or at <http://www.rdforum.nhs.uk>.*

*Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.*

*For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.*

*Sponsors are not required to notify the Committee of management permissions from host organisations*

### Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database within 6 weeks of recruitment of the first participant (for medical device studies, within the timeline determined by the current registration and publication trees).

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to request a deferral for study registration within the required timeframe, they should contact [hra.studyregistration@nhs.net](mailto:hra.studyregistration@nhs.net). The expectation is that all clinical trials will

be registered, however, in exceptional circumstances non registration may be permissible with prior agreement from the HRA. Guidance on where to register is provided on the HRA website.

**It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).**

#### **Ethical review of research sites**

##### **NHS sites**

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

#### **Approved documents**

The final list of documents reviewed and approved by the Committee is as follows:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Copies of advertisement materials for research participants [Leaflet with Useful resources for Participants]	1	15 October 2017
Copies of advertisement materials for research participants [Advert-Flyer for Vista]	2	18 December 2017
Copies of advertisement materials for research participants [Poster-151017]	2	18 December 2017
Copies of advertisement materials for research participants [Advert-Flyer for Vista]	2	18 December 2017
Copies of advertisement materials for research participants [Poster-151017]	2	18 December 2017
Covering letter on headed paper [Covering Letter in response to REC Provisional Opinion Letter 181217]	1	11 January 2018
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [University of Sussex -Conditions of Sponsorship Agreement, November 2017]	1	13 November 2017
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only)		
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only)		
GP/consultant information sheets or letters [Letter to Care team informing of participation Part 1,2]	1	15 October 2017
GP/consultant information sheets or letters [Letter to Care team informing of participation Part 3]	1	15 October 2017
GP/consultant information sheets or letters [Vista - Clinician Study Referral Form]	1	15 October 2017
GP/consultant information sheets or letters [Advert -Letter to EIP and CAMHS to inform them of Vista]	1	15 October 2017
GP/consultant information sheets or letters [Clinical Team Info Sheet - Part 1,2,3]	1	18 October 2017
Interview schedules or topic guides for participants [Semi-Structured Interview Schedule - Part 3]	2	10 November 2017
IRAS Application Form [IRAS_Form_22112017]		22 November 2017
Letter from funder [ ESRC Letter of 3 year PhD Studentship -	1	30 April 2016

Funding]		
Letter from sponsor [University of Sussex- Vista Sponsorship Approval Letter]	1	13 November 2017
Letters of invitation to participant [Invitation Letter to Participant]	2	10 November 2017
Non-validated questionnaire [R&D Demographics form - Equality Monitoring (no research data will be collected)]	1	31 July 2017
Non-validated questionnaire [Before we start- Booklet first page]	1	15 October 2017
Non-validated questionnaire [Manchester Voices Inventory for Children ]	1	07 February 2017
Non-validated questionnaire [About You- Demographics Questionnaire]	1	15 October 2017
Other [Consent form for Person with parental responsibility Part 1,2]	1	18 October 2017
Other [Consent form for Person with parental responsibility Part 3]	1	18 October 2017
Other [Participant Debriefing Letter/Form- Part 1,2]	1	15 October 2017
Other [Participant Debriefing Letter/Form- Part 3]	1	15 October 2017
Other [Relative Debriefing Letter/Form- Part 1,2]	1	15 October 2017
Other [Relative Debriefing Letter/Form- Part 3]	1	15 October 2017
Other [Eligibility Form for the Voice-hearing group (completed by Researcher)]	1	18 October 2017
Other [ Chief Investigator- NHS SPFT Research Honorary Contract]	1	06 March 2017
Other [Information Sheet for Person with parental responsibility Part 1,2]	3	20 December 2017
Other [Information Sheet for Person with parental responsibility Part 3]	3	20 December 2017
Other [PISs feedback form no 1 from 14 year-old]	1	19 December 2017
Other [PISs feedback form no 2 from 14 year-old]	1	19 December 2017
Other [Email correspondence with colleague- PISs Feedback from 1x 12 and 1x 15 year old ]	1	18 December 2017
Other [Email correspondence with teacher- PISs Overall Feedback from 4x year 9 students]	1	19 October 2017
Other [4 x Year 9 students Feedback PIS Part 1 & 2 - Confusing parts are highlighted]	1	19 December 2017
Other [4 x Year 9 students Feedback PIS Part 3- Confusing parts are highlighted]	1	19 December 2017
Other [Information Sheet for Person with parental responsibility Part 1,2]	3	20 December 2017
Other [Information Sheet for Person with parental responsibility Part 3]	3	20 December 2017
Participant consent form [Participant Consent form Part 1,2]	1	18 October 2017
Participant consent form [Participant Consent form Part 3]	1	18 October 2017
Participant information sheet (PIS) [Participant Information Sheet for young people Part 1,2]	3	20 December 2017
Participant information sheet (PIS) [Participant Information Sheet for young people Part 3]	3	20 December 2017
Participant information sheet (PIS) [Participant Information Sheet for young people Part 1,2]	3	20 December 2017
Participant information sheet (PIS) [Participant Information Sheet for young people Part 3]	3	20 December 2017

Referee's report or other scientific critique report [Email evidence - PPI Feedback on Vista Protocol from NHS R&D department]	1	18 October 2017
Referee's report or other scientific critique report [Anonymous NHS R&D Peer Review no2]	1	16 October 2017
Referee's report or other scientific critique report [Anonymous NHS R&D Peer Review no1 ]	1	13 October 2017
Research protocol or project proposal [Vista Research Protocol]	5	21 December 2017
Research protocol or project proposal [Vista Research Protocol]	5	21 December 2017
Summary CV for Chief Investigator (CI) [Aikaterini Rammou-Summary CV]	1	13 November 2017
Summary CV for student [ Aikaterini Rammou- Summary CV]	1	13 November 2017
Summary CV for supervisor (student research) [Dr Clio Berry IRAS CV]	1	13 November 2017
Summary CV for supervisor (student research) [Dr Mark Hayward-IRAS CV]	1	14 November 2017
Summary CV for supervisor (student research) [Professor Fowler - CV ]	1	13 November 2017
Summary, synopsis or diagram (flowchart) of protocol in non technical language [Non-technical language Summary of the Vista Protocol- Leaflet]	1	10 November 2017
Validated questionnaire [SCID for DSM-IV Psychosis Modules B, C]		
Validated questionnaire [Comprehensive Assessment of At-Risk Mental States (CAARMS) including CGAS and GAF scale (Yung et al., 2006)]		
Validated questionnaire [MINI INTERNATIONAL NEUROPSYCHIATRIC INTERVIEW Version 7.0.1]		
Validated questionnaire [Shortened Person's Relating to Others Questionnaire (PROQ3; Birtchnell, Hammond, Horn, De Jong, & Kalaitzaki, 2013)]		
Validated questionnaire [Social Comparison Scale (SCS: Allan & Gilbert, 1995)]		
Validated questionnaire [The Beck Depression Inventory-II (Beck, Steer & Brown, 1996)]		
Validated questionnaire [The Beck Anxiety Inventory (Beck & Steer, 1993)]		
Validated questionnaire [Wechsler Memory Scale – Logical memory I (WMS, Wechsler, 1997)]		
Validated questionnaire [Controlled Word Association Test (Benton& Hamsher, 1976)]		
Validated questionnaire [Premorbid Adjustment Scale (Cannon-Spoor, Potkin & Jed Wyatt, 1982)]		
Validated questionnaire [Social Connectedness Scale -Revised (Lee & Robbins, 1995)]		
Validated questionnaire [Social identity mapping technique (Cruwys et al., 2016)]		
Validated questionnaire [Support and Strain Scales (Walen & Lachman, 2000)]		
Validated questionnaire [Time Use Survey Interview and Scoresheet (TUS; Short, 2006; see Fowler et al., 2009)]		
Validated questionnaire [Brief Core Schema Scale (as adapted by Noone et al., 2015)]		

Validated questionnaire [Childhood Trauma Questionnaire – Short Form (Bernstein et al., 2003)]		
Validated questionnaire [Psychotic Symptom Rating Scales -Auditory Hallucinations (Haddock et al., 1996) (with AVHRS questions; Jenner & Van de Willige, 2002)]		
Validated questionnaire [Beliefs About Voices Questionnaire – Revised (Chadwick et al., 2000)]		
Validated questionnaire [The Voice and You (VAY) (Hayward et al., 2008)]		
Validated questionnaire [Psychosis Attachment Measure (Berry et al., 2006)]		

### Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

### After ethical review

#### Reporting requirements

The attached document “*After ethical review – guidance for researchers*” gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

### User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website:

<http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/>

### HRA Training

We are pleased to welcome researchers and R&D staff at our training days – see details at

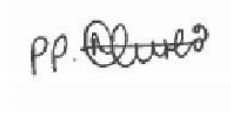
<http://www.hra.nhs.uk/hra-training/>

17/LO/2078

Please quote this number on all correspondence

With the Committee's best wishes for the success of this project.

Yours sincerely

A handwritten signature in black ink, appearing to read 'pp. Walton'.

**Dr Simon Walton**  
**Chair**

Email: NRESCCommittee.SECOast-BrightonandSussex@nhs.net

*Enclosures:* "After ethical review – guidance for  
researchers"

*Copy to:* Professor Antony Walsh  
Ms Taffy Bakasa, Sussex Partnership NHS Foundation Trust



## 7.4 Appendix D. NHS HRA Approval Letter for Chapters 2 and 3



### Health Research Authority

Miss Aikaterini  
Rammou  
Pevensey 1, 1C5  
School of  
Psychology,  
University of  
Sussex  
BN1 9RH

Email:  
[hra.approval@nhs.net](mailto:hra.approval@nhs.net)

01 February 2018

Dear Miss Rammou

<b>Study title:</b>	<b>Vista- Voice-hearing in young people: distress factors and social relating</b>
<b>IRAS project ID:</b>	<b>236382</b>
<b>Protocol number:</b>	<b>025 RAM</b>
<b>REC reference:</b>	<b>17/LO/2078</b>
<b>Sponsor</b>	<b>University of Sussex</b>

I am pleased to confirm that **HRA Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications noted in this letter.

#### Participation of NHS Organisations in England

The sponsor should now provide a copy of this letter to all participating NHS organisations in England.

*Appendix B* provides important information for sponsors and participating NHS organisations in England for arranging and confirming capacity and capability.

**Please read *Appendix B* carefully**, in particular the following sections:

- *Participating NHS organisations in England* – this clarifies the types of participating organisations in the study and whether or not all organisations will be undertaking the same activities
- *Confirmation of capacity and capability* - this confirms whether or not each type of participating NHS organisation in England is expected to give formal confirmation of capacity and capability. Where formal confirmation is not expected, the section also provides details on the time limit given to participating organisations to opt out of the study, or request additional time, before their participation is assumed.
- *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* - this provides detail on the form of agreement to be used in the study to confirm capacity and capability, where applicable.

Further information on funding, HR processes, and compliance with HRA criteria and standards is also provided.





IRAS project ID	236382
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It is critical that you involve both the research management function (e.g. R&D office) supporting each organisation and the local research team (where there is one) in setting up your study. Contact details and further information about working with the research management function for each organisation can be accessed from the [HRA website](#).

### Appendices

The HRA Approval letter contains the following appendices:

- A – List of documents reviewed during HRA assessment
- B – Summary of HRA assessment

### After HRA Approval

The document “*After Ethical Review – guidance for sponsors and investigators*”, issued with your REC favourable opinion, gives detailed guidance on reporting expectations for studies, including:

- Registration of research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics, and is updated in the light of changes in reporting expectations or procedures.

In addition to the guidance in the above, please note the following:

- HRA Approval applies for the duration of your REC favourable opinion, unless otherwise notified in writing by the HRA.
- Substantial amendments should be submitted directly to the Research Ethics Committee, as detailed in the *After Ethical Review* document. Non-substantial amendments should be submitted for review by the HRA using the form provided on the [HRA website](#), and emailed to [hra.amendments@nhs.net](mailto:hra.amendments@nhs.net).
- The HRA will categorise amendments (substantial and non-substantial) and issue confirmation of continued HRA Approval. Further details can be found on the [HRA website](#).

### Scope

HRA Approval provides an approval for research involving patients or staff in NHS organisations in England.

If your study involves NHS organisations in other countries in the UK, please contact the relevant national coordinating functions for support and advice. Further information can be found through [IRAS](#).

If there are participating non-NHS organisations, local agreement should be obtained in accordance with the procedures of the local participating non-NHS organisation.

### User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application

IRAS project ID	236382
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procedure. If you wish to make your views known please use the feedback form available on the [HRA website](#).

### HRA Training

We are pleased to welcome researchers and research management staff at our training days – see details on the [HRA website](#).

Your IRAS project ID is **236382**. Please quote this on all correspondence.

Yours sincerely

Isobel Lyle | Senior Assessor  
**Health Research Authority**  
HRA, Room 1, Jarrow Business Centre, Rolling Mill Rd, Jarrow, NE32 3D  
T: 0207 972 2496  
[Hra.approval@nhs.net](mailto:Hra.approval@nhs.net) or [Isobel.lyle@nhs.net](mailto:Isobel.lyle@nhs.net)  
[www.hra.nhs.uk](http://www.hra.nhs.uk)

Sign up to receive our newsletter [HRA Latest](#)

Copy to: *Dr Antony Walsh, Sponsor contact, University of Sussex*  
*Ms Taffy Bakasa, R&D contact, Sussex Partnership NHS Foundation Trust*

## 7.5 Appendix E. Supplementary Material for Chapter 3

**Table 1.** Between-group differences in social relating variables in control ( $N = 34$ ) vs. case ( $N = 34$ ) groups.

Outcome variable	Voice-hearing group				Control group				$U(z) / t(df)$	$r/d$	$p$	BCa 95% of Mean Dif [LL, UL]
	$N$	Mean	$SD$	$Mdn$	$N$	Mean	$SD$	$Mdn$				
Upper neutral (UN)	33	6.09	.74	5	33	5.85	3.30	6	532 (-.16)	-.02	.872	-
Upper close (UC)	33	7.27	4.83	7	33	6.12	4.42	5	619 (.96)	.12	.338	-
Neutral close (NC)	33	9.06	4.55	9	33	7.55	4.05	7	641 (1.24)	.15	.215	-
Lower close (LC)	33	11.97	3.97	14	33	9.42	3.57	10	789 (3.16)	.39	<b>.002</b>	-
Lower neutral (LN)	33	6.64	4.34	6	33	6.03	3.67	4	593.5 (.633)	.08	.527	-
Lower distant (LD)	33	7.52	3.78	7	32	6.19	3.76	6	-1.42 (63)	-.35	.161	[-3.08, .46]
Neutral distant (ND)	33	10.18	4.26	12	32	8.16	3.48	8.5	711 (2.41)	.30	<b>.016</b>	-
Upper distant (UD)	33	7.09	4.63	6	31	7.19	3.41	7	.101 (62)	.02	.920	[-1.87, 2.20]
Overall PROQ-3	33	65.82	17	67	30	56.43	15.85	54	668.50 (2.39)	.30	<b>.017</b>	-
Social comparison subscale of Belongingness	32	10.81	5.40	9	34	12.59	5.46	12	439 (-1.35)		.177	-
Sum of Social Comparison Scale	32	39.03	18.51	34	34	49.32	16.31	46	2.40(64)	.59	<b>.019</b>	[1.59, 18.76]
Total Social Connectedness Scale	30	21.90	10.56	20	33	27.03	11.23	27	1.86 (61)	.47	.067	[-.18, 10.52]
Mean Family support	33	2.57	.86	2.25	34	2.85	.86	3.13	441.5 (-1.51)	-.02	.132	-
Mean Partner support	17	3.5	.62	3.83	13	3.35	.58	3.5	290.50 (1.14)	.21	.263	-
Mean Friends support	33	2.44	.91	2.25	33	2.83	.93	3.13	410 (-1.73)	-.21	.083	-
Mean Family strain	31	2.59	.77	2.5	32	2.36	.72	2.38	-1.23 (61)	-.31	.225	[-.59, .13]
Mean Friends strain	31	2.07	.73	2	33	1.97	.66	1.75	562 (.45)	.06	.653	-
Mean Partner strain	18	1.66	.51	1.58	12	2.00	.89	1.92	85 (-.981)	-.18	.346	-
Overall Support	33	2.62	.66	2.78	33	2.92	.65	2.88	1.81 (64)	.46	.074	[.02, .59]
Overall Strain	31	2.19	.46	2.25	31	2.13	.54	2.13	-.45 (60)	-.12	.652	[-.30, .18]

*Note.*  $Mdn$  = median;  $SD$  = standard deviation;  $U$  = Mann–Whitney test statistic;  $df$  = degrees of freedom;  $r$  = Mann-Whitney U test effect size,  $d$  = Cohen's  $d$ ; BCa 95% of Mean Difference is based on bootstrapping with  $N = 2000$  samples; LL= lower limit; UL= upper limit; PROQ-3= Shortened Person's Relating to Others Questionnaire; All tests were run with untransformed variables.

**Table 2.** *Between-group differences in schematic beliefs in control (N = 34) vs. case (N = 34) groups.*

Outcome variable	Voice-hearing group				Control group				U (z) / t (df)	d	p	BCa 95% of Mean Dif [LL, UL]
	N	Mean	SD	Mdn	N	Mean	SD	Mdn				
Negative Self BCSS total	32	12.97	6.45	13.5	34	7.94	5.33	7	-3.46 (64)	-.85	<b>.001</b>	[-7.75, -2.36]
Positive Self BCSS total	32	6.5	4.72	5	34	9.79	5.86	9	2.50 (64)	.62	<b>.015</b>	[-.87, 5.77]
Negative Other BCSS total	31	12.58	5.46	13	31	7.68	5.19	8	-3.62 (60)	-.92	<b>.001</b>	[-7.32, -2.35]
Positive Other BCSS total	32	8.22	3.79	9	32	10.66	5.25	10	2.13 (62)	.53	<b>.037</b>	[-.20, 4.64]

*Note.* Mdn = median; *SD* = standard deviation; *U* = Mann–Whitney test statistic; *df* = degrees of freedom, *d* = Cohen’s *d*; BCa 95% of Mean Difference is based on bootstrapping with *N* = 2000 samples; LL= lower limit; UL= upper limit; BCSS= Brief Core Schema Scales. All tests were run with untransformed variables.

**Table 3.** *Between-group differences in overall trauma, premorbid adjustment, depression and anxiety between the voice-hearing group (N = 34) and the controls (N = 34).*

Outcome variable	Voice-hearing Group				Control group				U (z) / t (df)	r/d	p	BCa 95% of Mean Dif [LL, UL]
	N	Mean	SD	Mdn	N	Mean	SD	Mdn				
Mean Overall PAS	32	.38	.14	.36	34	.26	.10	.26	-3.75 (64)	-.99	<b>&lt;.001</b>	[-.17, -.05]
Overall CTQ	28	47.6	20.21	40	30	43.4	16.75	40	460 (.62)	.08	.533	
BDI-II total	30	38.13	11.58	38	33	24.42	15.02	24	751.5 (3.53)	.44	<b>&lt;.001</b>	-
BAI total	34	33.59	14.31	35	30	17.93	13.92	14.5	795.5 (3.84)	.48	<b>&lt;.001</b>	-

*Note.* Mdn = median; *SD* = standard deviation; *U* = Mann–Whitney test statistic; *df* = degrees of freedom; *r* = Mann-Whitney *U* test effect size, *d* = Cohen’s *d*; BCa 95% of Mean Difference is based on bootstrapping with *N* = 2000 samples; LL= lower limit; UL= upper limit; PAS = Premorbid Adjustment Scale; CTQ = short-form Childhood Trauma Questionnaire; BDI- II = Beck Depression Inventory-II, BAI = Beck Anxiety Inventory. All tests were run with untransformed variables.

**Table 4.** ANCOVA results for social relating variables comparing the voice-hearing group ( $N = 34$ ) vs the controls ( $N = 34$ ), adjusting for each individual covariate separately.

Outcome variable	ANCOVA adjusting for Age				ANCOVA adjusting for Neurocognitive performance				ANCOVA adjusting for TUS SA			
	$F (df_1, df_2)$	Partial $\eta^2$	Adj $R^2$	$p$	$F (df_1, df_2)$	Partial $\eta^2$	Adj $R^2$	$p$	$F (df_1, df_2)$	Partial $\eta^2$	Adj $R^2$	$p$
Upper neutral (UN)	0.0009 (1,63)	0.000014	-.032	.977	.236 (1,62)	.004	.029	.629	0.000015	.000	-.032	.985
Upper close (UC)	.702 (1, 63)	.011	.015	.405	1.085 (1,62)	.017	-.013	.302	1.294 (1,63)	.020	.007	.260
Neutral close (NC)	1.58 (1,63)	.024	.031	.214	1.59 (1,62)	.025	-.006	.212	2.57 (1,63)	.039	.036	.114
Lower close (LC)	7.90 (1,63)	.111	.086	.007	6.62 (1,62)	.097	.070	.012	8.76 (1,63)	.122	.120	.004
Lower neutral (LN)	.565 (1,63)	.009	-.005	.455	.039 (1,62)	.001	.061	.845	.373 (1,63)	.006	-.026	.544
Lower distant (LD)	2.18 (1,62)	.034	.004	.145	1.37 (1,61)	.022	.025	.246	2.26 (1,62)	.035	.015	.138
Neutral distant (ND)	6.11 (1,62)	.090	.063	.016	5.07 (1,61)	.077	.051	.028	5.20 (1,62)	.077	.065	.026
Upper distant (UD)	.036 (1,61)	.001	-.025	.850	.011 (1,60)	0.0002	-.032	.916	.032 (1,61)	.001	-.024	.860
Overall PROQ-3 <sup>a</sup>	4.98 (1,60)	.077	.047	.029	-	-	-	-	5.13 (1,60)	.079	.048	.027
Social comparison subscale of Belongingness <sup>b</sup>	-	-	-	-	1.43 (1,62)	.023	-.009	.236	1.72 (1,63)	.027	-.004	.194
Sum of Social Comparison Scale	5.70 (1,63)	.083	.054	.020	4.41 (1,62)	.066	.046	.040	5.44 (1, 63)	.079	.054	.023
Total Social Connectedness Scale <sup>a</sup>	6.72 (1,60)	.101	.148	.012	-	-	.-	-	3.31 (1,60)	.052	.023	.074
Mean Family support	3.17 (1,64)	.047	.045	.080	3.07 (1,63)	.046	.046	.085	3.12 (1,64)	.046	.035	.082
Mean Partner support	1.30 (1,27)	.046	-.003	.263	1.34 (1,27)	.047	-.023	.258	.59 (1,27)	.021	.068	.450
Mean Friends support	6.33 (1,63)	.091	.196	.014	2.95 (1,62)	.045	.015	.091	2.70 (1,63)	.041	.022	.105
Mean Family strain	2.13 (1,60)	.034	.025	.150	2.23 (1,59)	.036	.013	.141	1.82 (1,60)	.030	.011	.182
Mean Friends strain	2.15 (1,60)	.035	.030	.148	2.06 (1,59)	.034	.007	.156	1.72 (1, 60)	.028	.014	.195
Mean Partner strain	1.26 (1,27)	.045	-.002	.271	1.07 (1,27)	.038	-.027	.309	1.07 (1,27)	.038	.011	.310
Overall Support <sup>b</sup>	-	-	-	-	3.26 (1,62)	.50	.025	.076	3.16 (1,63)	.048	.019	.080

Overall Strain .70 (1,59) .012 .057 .408 .18 (1,58) .003 -.030 .671 .37 (1,59) .006 .005 .548

*Note.* <sup>a</sup>Neurocognitive performance did not meet ANCOVA assumptions and was excluded from the final ANCOVA; <sup>b</sup> Age did not meet ANCOVA assumptions and was excluded from the final ANCOVA;  $df_1$  =degrees of freedom for the effect of the model;  $df_2$  = degrees of freedom for the residual; Partial  $\eta^2$  = partial eta-squared; Adj  $R^2$  = Adjusted R-squared; SQRT= Square root ; PROQ-3= Shortened Person's Relating to Others Questionnaire; BCSS= Brief Core Schema Scales. Values presented for the UN and ND PROQ-3 subscales, Mean Family support, Mean Partner support, Mean Friends support, Mean Friends strain and Mean Partner strain are based on the transformed variables.

**Table 5.** ANCOVA results for schematic beliefs comparing the voice-hearing group ( $N = 34$ ) vs the controls ( $N = 34$ ), adjusting for each individual covariate separately.

Outcome variable	ANCOVA adjusting for Age				ANCOVA adjusting for Neurocognitive performance				ANCOVA adjusting for TUS SA			
	$F (df_1, df_2)$	Partial $\eta^2$	Adj $R^2$	$p$	$F (df_1, df_2)$	Partial $\eta^2$	Adj $R^2$	$p$	$F (df_1, df_2)$	Partial $\eta^2$	Adj $R^2$	$p$
Negative Self BCSS total	11.70(1,63)	.157	.131	.001	11.56 (1,62)	.157	.132	.001	13.05 (1, 63)	.172	.153	.001
Positive Self BCSS total	6.82 (1,63)	.098	.074	.011	4.42 (1,62)	.067	.066	.040	5.77 (1,63)	.084	.064	.019
Negative Other BCSS total	11.84 (1,59)	.167	.154	.001	11.00(1,58)	.159	.148	.002	12.49(1,59)	.175	.161	.001
Positive Other BCSS <sup>a</sup>	-	-	-	-	5.43 (1,60)	.083	.052	.023	4.08 (1,61)	.063	.041	.048

*Note.* <sup>a</sup> Age did not meet ANCOVA assumptions and was excluded from the final ANCOVA;  $df_1$  =degrees of freedom for the effect of the model;  $df_2$  = degrees of freedom for the residual; Partial  $\eta^2$  = partial eta-squared; Adj  $R^2$  = Adjusted R-squared; BCSS= Brief Core Schema Scales.

**Table 6.** ANCOVA results for overall trauma, premorbid adjustment, depression and anxiety comparing the voice-hearing group ( $N = 34$ ) vs the controls ( $N = 34$ ), adjusting for each covariate separately.

Outcome variable	ANCOVA adjusting for Age				ANCOVA adjusting for Neurocognitive performance			
	$F(df_1, df_2)$	Partial $\eta^2$	Adj $R^2$	$p$	$F(df_1, df_2)$	Partial $\eta^2$	Adj $R^2$	$p$
Mean Overall PAS	7.4 (1,63)	.19	.17	<b>&lt;.001</b>	-	-	-	-
Overall CTQ				.273				
	1.23 (1,55)	.022	.08		-	-	-	-
BDI-II total	17.80 (1,60)	.23	.21	<.001	15.23	.21	.19	<.001
BAI total <sup>a</sup>	19.63 (1,61)	.24	.23	<.001	-	-	-	-

*Note.* <sup>a</sup> Neurocognitive performance did not meet ANCOVA assumptions and was excluded from the final ANCOVA;  $df_1$  = degrees of freedom for the effect of the model;  $df_2$  = degrees of freedom for the residual; Partial  $\eta^2$  = partial eta-squared; Adj  $R^2$  = Adjusted R-squared; SQRT= Square root ; PAS= Premorbid Adjustment Scale; CTQ= short-form Childhood Trauma Questionnaire ; BDI- II = Beck Depression Inventory-II, BAI = Beck Anxiety Inventory. Values presented for Overall CTW and BAI total are based on the transformed variables. ANCOVAs for Mean Overall PAS and Overall CTQ were adjusted only for Age.



## 7.6 Appendix F. NHS HRA HRA and Health and Care Research Wales (HCRW)



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Email: [hra.approval@nhs.net](mailto:hra.approval@nhs.net)

12 February 2019

Dear Dr Hayward

**HRA and Health and Care  
Research Wales (HCRW)  
Approval Letter**

<b>Study title:</b>	<b>Attitudes to Voices: A survey exploring the factors associated with clinicians' perspectives on hearing voices</b>
<b>IRAS project ID:</b>	<b>257355</b>
<b>Sponsor</b>	<b>University of Sussex</b>

I am pleased to confirm that [HRA and Health and Care Research Wales \(HCRW\) Approval](#) has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further relating to this application.

**How should I continue to work with participating NHS organisations in England and Wales?**

You should now provide a copy of this letter to all participating NHS organisations in England and Wales, as well as any documentation that has been updated as a result of the assessment .

Participating NHS organisations in England and Wales **will not** be required to formally confirm capacity and capability before you may commence research activity at site. As such, you may commence the research at each organisation **immediately** following sponsor provision to the site of the local information pack, so long as:

- You have contacted participating NHS organisations (see below for details)
- The NHS organisation has not provided a reason as to why they cannot participate
- The NHS organisation has not requested additional time to confirm.

You may start the research prior to the above deadline if the site positively confirms that the research may proceed. If not already done so, you should now provide the [local information pack](#) for your study to your participating NHS organisations. A current list of R&D contacts is accessible at the [NHS RD Forum website](#) and these contacts **MUST** be used for this purpose. After entering your IRAS ID you will be

Approval Letter for Chapter 4

IRAS project ID	257355
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able to access a password protected document (password: **Redhouse1**). The password is updated on a monthly basis so please obtain the relevant contact information as soon as possible ; please do not hesitate to contact me should you encounter any issues.

Commencing research activities at any NHS organisation before providing them with the full local information pack and allowing them the agreed duration to opt-out, or to request additional time (unless you have received from their R&D department notification that you may commence), is a breach of the terms of HRA and HCRW Approval. Further information is provided in the “ *summary of assessment*” section towards the end of this document.

It is important that you involve both the research management function (e.g. R&D office) supporting each organisation and the local research team (where there is one) in setting up your study . Contact details of the research management function for each organisation can be accessed [here](#).

#### **How should I work with participating NHS/HSC organisations in Northern Ireland and Scotland?**

HRA and HCRW Approval does not apply to NHS/HSC organisations within the devolved administrations of Northern Ireland and Scotland.

If you indicated in your IRAS form that you do have participating organisations in either of these devolved administrations, the final document set and the study wide governance report (including this letter) has been sent to the coordinating centre of each participating nation. You should work with the relevant national coordinating functions to ensure any nation specific checks are complete, and with each site so that they are able to give management permission for the study to begin.

Please see [IRAS Help](#) for information on working with NHS/HSC organisations in Northern Ireland and Scotland.

#### **How should I work with participating non-NHS organisations?**

HRA and HCRW Approval does not apply to non-NHS organisations. You should work with your non-NHS organisations to [obtain local agreement](#) in accordance with their procedures.

#### **What are my notification responsibilities during the study?**

The attached document “*After HRA Approval – guidance for sponsors and investigators*” gives detailed guidance on reporting expectations for studies with HRA and HCRW Approval, including:

- Registration of Research
- Notifying amendments
- Notifying the end of the study

The [HRA website](#) also provides guidance on these topics and is updated in the light of changes in reporting expectations or procedures.

#### **I am a participating NHS organisation in England or Wales. What should I do once I receive this letter?**

You should work with the applicant and sponsor to complete any outstanding arrangements so you are able to confirm capacity and capability in line with the information provided in this letter.

The sponsor contact for this application is as follows:

Name: Dr Anthony Walsh

Email: [Researchsponsorship@sussex.ac.uk](mailto:Researchsponsorship@sussex.ac.uk)

**Who should I contact for further information?**

Please do not hesitate to contact me for assistance with this application. My contact details are below.

Your IRAS project ID is **257355**. Please quote this on all correspondence.

Yours sincerely

**Gemma Oakes**  
**Assessor**

Email: [hra.approval@nhs.net](mailto:hra.approval@nhs.net)

Copy to: *Mr Anthony Walsh, Sussex University [Sponsor  
Contact] [Researchsponsorship@sussex.ac.uk](mailto:Researchsponsorship@sussex.ac.uk)*  
*Ms Taffy Bakasa, Sussex Partnership NHS Foundation Trust [Lead NHS R&D  
Contact]  
[researchgovernance@sussexpartnership.nhs.uk](mailto:researchgovernance@sussexpartnership.nhs.uk)*

7.7 **Appendix G.** Supplementary Material for Chapter 4**Table 1.** *Example items for the TPB direct measures*

Construct	Number of items	Example item	Response scale
Behavioural intention	3	<i>When a patient discloses hearing voices to me, I intend to assess their voice-hearing experiences from now on.</i>	Very strongly disagree to Very strongly agree (7-point Likert scale)
Attitudes	7	<i>When a patient discloses hearing voices to me, assessing their voice-hearing experiences would be...</i>	Very harmful to Very beneficial (7-point bipolar scale)
Perceived norms	5	<i>When a patient discloses hearing voices to me, most people who are important to me professionally would approve of my assessing their voice-hearing experiences.</i>	Very strongly disagree to Very strongly agree (7-point Likert scale)
Perceived behavioural control	6	<i>When a young person discloses hearing distressing voices to me, I am confident that I will assess their voice-hearing experiences.</i>	Very strongly disagree to Very strongly agree (7-point Likert scale)

### **Supplementary Method 1. Development of the indirect TPB belief measures**

To develop the indirect TPB measures, an elicitation phase took place to identify commonly held beliefs about assessing distressing voice-hearing among CAMHS and EIP clinicians. During this phase  $N = 25$  CAMHS and EIP clinicians completed a short self-report questionnaire with open-ended questions aiming: 1) to identify the content of beliefs about the behaviour under examination (advantages and disadvantages of performing the behaviour); 2) to identify groups and categories of individuals ('reference groups') who are likely to apply social pressure (approve or disapprove) with respect to the behaviour and; 3) to identify the content of control beliefs (enablers and barriers) about the behaviour. These indirect measures are presumed to determine the more global reactions of the direct measures and are central to TPB as they provide the cognitive and affective foundations for attitudes, subjective norms, and PBC (Ajzen, 1991). Through content analysis of their responses, the behavioural beliefs, the groups that apply social pressure and the control beliefs most often listed were selected and converted into a set of statements. Two independent researchers proceeded with content analysis of the responses into themes and labelled the themes extracted. Both researchers carried out these steps independently to increase the validity of the analysis. The extracted themes were listed from the most frequently expressed to the least frequently expressed and 75% of all beliefs/statements were included, considering they provide adequate coverage of the pool of beliefs of the target population (Francis et al., 2004). For each belief items, an outcome evaluation item was created.

The questionnaire went through face validity testing with 5 CAMHS and EIP clinicians and then it was piloted with 14 CAMHS and EIP clinicians. Indirect items that did not have any variance in their response score were removed. Direct items that did not have any variance or had significant skewness ( $SE > 1.96$ ) were removed. Cronbach's alpha for all direct items was calculated and items were removed if their removal improved scale reliability.

**Table 2.** *The indirect TPB belief items included in the TPB questionnaire section of the survey addressed to CAMHS and EIP clinicians.*

Type of Belief	Beliefs
Behavioural Beliefs	<p><b>When a young person discloses hearing distressing voices to me assessing their voice-hearing experiences...</b></p> <p>would help with constructing a detailed formulation of what is happening for the young person.</p> <p>would put engagement with the young person at risk.</p> <p>would help identify the right support or treatment if needed.</p> <p>would help promote good engagement between me and the young person</p> <p>would lead to over-focusing on voices and incomplete exploration of other critical areas of a young person's presentation.</p> <p>would aid diagnosing.</p> <p>would be reassuring and validating for the young person</p> <p>would make the young person feel distressed (e.g., anxious, fearful).</p> <p>would help with assessing the risk to self/others that is related to voices.</p> <p>would lead to mistakenly labelling the young person with a mental health disorder such as psychosis</p> <p>would help evaluate the impact of voices on the young person's functioning</p> <p>would help evaluate the impact of voices on the young person's emotions (e.g., distress).</p>
Normative beliefs	<p><b>When a young person discloses hearing distressing voices to me...</b></p> <p>the young person thinks I should assess their voice-hearing experiences</p> <p>Specialist mental health practitioners (e.g., psychologists, psychiatrists) think I should assess the young person's voice-hearing experiences</p> <p>individuals in the young person's social system (e.g., family, friends) think I should assess the young person's voice-hearing experiences.</p> <p>other colleagues in my clinical team would assess the young person's voice-hearing experiences.</p> <p>clinicians in the same profession as me would assess the young person's voice-hearing experiences</p>
Control beliefs	<p><b>In my routine clinical practice...</b></p> <p>I have limited time to assess young people's experiences.</p> <p>I can find a suitable space to assess young people's experiences.</p> <p>young people who hear distressing voices are very unwell to engage in an assessment of their voice-hearing experiences.</p>

Type of Belief	Beliefs
	<p>I have good engagement with young people who hear distressing voices.</p> <p>young people present with practical issues (e.g., lack of permanent address, current life stressors) that seem more immediate than their voice-hearing experiences.</p> <p>young people who disclose hearing distressing voices to me are unwilling to discuss their voice-hearing experiences with me.</p> <p>young people who hear distressing voices present with high-risk issues.</p> <p>voice-hearing assessment tools (e.g., assessment measures, questionnaires) are available to me.</p> <p>people in the social system of young people (e.g., carers, friends) are accepting of the young person's voice-hearing experiences.</p> <p>I have the opportunity to consult my team on how to proceed with my cases.</p> <p>young people who hear distressing voices do not have the ability to answer assessment questions relating to their voice-hearing experiences.</p> <p>I have access to adequate collateral information (e.g., family history, young person's culture, values) about the young people I am working with.</p> <p>I have had training or knowledge in assessing voice-hearing in young people</p>

**Table 3.** *Example questionnaire items for the TPB indirect measures*

Belief strength	Number of items	Example item	Impact of beliefs	Number of items	Example item
Attitudes	12	When a young person discloses hearing distressing voices to me... assessing their voice-hearing experiences would put engagement with the young person at risk.	Outcome evaluation	5	Putting engagement with a young person at risk is...
		Response scale: Extremely unlikely- Extremely likely(7-point Likert scale)			Response scale: Extremely bad- Extremely good (bipolar scale -3 to +3)
Perceived norms	5	When a young person discloses hearing distressing voices to me, specialist mental health practitioners (e.g., psychologists, psychiatrists) think I should assess the young person's voice-hearing experiences.	Motivation to comply	5	In general, when it comes to my clinical practice, I want to do what specialist mental health practitioners (e.g., psychologists, psychiatrists) think I should do
		Response scale: Extremely unlikely- Extremely likely (7-point Likert scale)			Response scale: Very strongly disagree to Very strongly agree (bipolar scale -3 to +3)
Perceived behavioural control	13	In my routine clinical practice, I have limited time to assess young people's experiences.	Perceived power of beliefs	13	When a young person discloses hearing distressing voices to me, having limited time would make it difficult for me to assess their voice-hearing experiences. (reverse-scored item)
		Response scale: Extremely unlikely- Extremely likely (7-point Likert scale)			Response scale: Very strongly disagree (+3) to Very strongly agree (-3)



### **Supplementary Analysis 1. Data assumptions check and results**

For aim 1, data assumptions check for the MANOVAs were conducted. To check for multivariate normality, univariate normality of the dependent variables was investigated using visual representation of the data and Shapiro-Wilk test. Shapiro-Wilk tests showed significant issues with normality for all variables ( $ps < .001$ ) and thus, the variables were transformed. AQ-9 was log transformed, m-AAPPQ TC and RS were reversed and square rooted. Transformations to the rest of dependent variables did not fix normality issues and thus the variables were used in their original form.

Multivariate outliers were identified using Mahalanobis distance with critical value of 7.81 ( $df = 3$ ) and of 9.49 ( $df = 4$ ) at significance level  $p = .05$  for the two MANOVA models, respectively. The MANOVAs were run with and without the outliers to detect any effect they had on the results ( $N = 152$  for the first MANOVA and  $N = 66$  for the second MANOVA model). Multicollinearity check of the dependent variables showed no issues, with all Pearson's correlation coefficients being less than .90 and over .10, within all clinician groups and in the total sample.

Data assumptions for aims 2 and 3 underlying linear and logistic regression models were tested (Field, 2017) within each clinician group and in the overall sample. These tests included examination and visual inspection of the data for multicollinearity, multivariate normality, linearity, independence of residuals and homoskedasticity for the model variables. Potential outliers, highly influential or leverage points were identified using a combination of criteria (Field, 2017): any case with an absolute standardised residual value and deviance value for the logistic regressions over 3, a centred leverage value outside  $((k+1)/n) * 3$  ( $n$  = sample size,  $k$  = number of predictors) , Cook's distance value over 1 (Cook & Weisberg, 1982)(Cook & Weisberg, 1982)and standardised  $DFBeta$  value for any of the predictor variables over an absolute value of 1. For each regression model, analyses were run with and without potential outliers to establish their effect on the models.

For hierarchical and logistic regression analyses, assumption checking revealed no significant multicollinearity, i.e., no predictors were correlated at .90 level. Multicollinearity diagnostics produced variance inflation factors (VIF) that did not exceed a value of 10 and tolerance estimates did not fall below .10 (Field, 2017). Independence of residuals was checked using the Durbin-Watson test and all estimates were close to a value of 2 indicating no significant issues.

## Supplementary Analysis 2. Missing data percentages

In the whole sample ( $N = 1751$ ), regarding the stigma AQ-9 scale, all three modified AAPPQ scales (therapeutic commitment, role security, empathy), TPB attitudes, subjective norms, perceived behavioural control and intention scales, non-completers were younger, had less years of experience in their current professional role compared to completers ( $ps < .005$ ). The type of service had a significant relationship with the completion of stigma AQ-9 scale, all three modified AAPPQ scales, TPB attitudes, perceived behavioural control and intention ( $ps < .005$ ). For the stigma AQ-9 scale, the three modified AAPPQ scales and TPB intention scale, there were less completers in CAMHS compared to the other clinician groups and more completers in primary care clinicians who completed the adult patient version compared the other clinician groups. For the TPB attitudes and perceived behavioural control scales, there were more completers in primary care clinicians who completed the adult patient version of the survey ( $ps < .005$ ). White British clinicians and clinicians who had experience working with 10 or more voice-hearers (compared to have worked with none to 9 voice-hearers) were more likely to have completed the voice-hearing practice self-efficacy scale on providing useful information ( $ps < .005$ ).

Within the Adult Mental health clinician group, there were more White British clinicians who completed the TPB subjective norm, TPB perceived behavioural control scales and the voice-hearing practice self-efficacy scale on providing useful information to voice-hearers. Healthcare assistants were more likely to be non-completers of the TPB subjective norms scale compared to all other professions and clinicians who had experience working with 10 or more voice-hearers were more likely to have completed the voice-hearing practice self- efficacy scale on providing useful information compared to clinicians who had worked with none to 9 voice-hearers).

Within the EIP clinician group, non-completers of the stigma AQ-9, modified AAPPQ therapeutic commitment, role security, empathy and TPB intention scales had less years of experience working in mental health services ( $ps < .005$ ). Non-completers of the modified AAPPQ therapeutic commitment, role security, empathy and TPB Intention scales were more likely to be younger compared to completers. Non-completers of the

three self-efficacy scales (to ask as patient if they hear voices, to discuss voice-hearing and to provide useful information) had less years of experience in their current role compared to completers ( $ps < .001$ ).

Within the CAMHS clinician group, clinicians with experience working with 10 or more voice-hearers compared to those who had worked with none to 9 voice-hearers were more likely to have completed the TPB attitudes and subjective norm scales. Nationality seemed to have a significant relationship with completing the three voice-hearing practice self-efficacy scales, with more British clinicians having completed the scales compared to those reporting a non-British nationality ( $ps < .005$ ).

Evaluation of missing values within the primary care clinician data revealed that in the group that completed the survey about adult patients, non-completers of the three voice-hearing practice self-efficacy scales had significantly less years of experience working in mental health services compared to completers. Additionally, non-completers of the question on past training in supporting voice-hearers had less experience in their current role compared to completers ( $p < .005$ ).

Regarding the primary care clinicians who completed the young patient version of the survey, non-completers of the question on past training in supporting voice-hearers had less experience working in mental health compared to completers ( $p < .005$ ).

**Table 4.** *Missing cases and percentages in the main study variables.*

	All participants ( <i>N</i> = 1751)		Adult Mental health ( <i>N</i> = 966)		EIP ( <i>N</i> = 253)		CAMHS ( <i>N</i> = 214)		Primary Care (Adult version) ( <i>N</i> = 158)		Primary Care (Young people version) ( <i>N</i> = 160)	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Stigma AQ9 Total	354	20.2%	180	18.6%	64	25.3%	73	34.1%	14	8.9%	23	14.4%
m-AAPPQ Therapeutic Commitment	345	19.7%	177	18.3%	63	24.9%	70	32.7%	13	8.2%	22	13.8%
m-AAPPQ Empathy	341	19.5%	172	17.8%	64	25.3%	70	32.7%	13	8.2%	22	13.8%
m-APPQ Role Security	333	19.0%	166	17.2%	63	24.9%	70	32.7%	12	7.6%	22	13.8%
TPB intention	301	17.2%	148	15.3%	59	23.3%	66	30.8%	9	5.7%	19	11.9%
TPB perceived behavioural control	249	14.2%	143	14.8%	41	16.2%	40	18.7%	8	5.1%	17	10.6%
TPB attitudes	245	14.0%	141	14.6%	41	16.2%	38	17.8%	8	5.1%	17	10.6%
TPB subjective norms	196	11.2%	113	11.7%	32	12.6%	29	13.6%	8	5.1%	14	8.8%
Self-efficacy to provide useful information	102	5.8%	65	6.7%	19	7.5%	10	4.7%	2	1.3%	6	3.8%
Self-efficacy to ask patients if they hear voices	98	5.6%	60	6.2%	20	7.9%	10	4.7%	2	1.3%	6	3.8%
Self-efficacy to discuss voice-	94	5.4%	57	5.9%	19	7.5%	10	4.7%	2	1.3%	6	3.8%

	All participants ( <i>N</i> = 1751)		Adult Mental health ( <i>N</i> = 966)		EIP ( <i>N</i> = 253)		CAMHS ( <i>N</i> = 214)		Primary Care (Adult version) ( <i>N</i> = 158)		Primary Care (Young people version) ( <i>N</i> = 160)	
hearing	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Training in helping service users with distressing voice-hearing	34	1.9%	22	2.3%	6	2.4%	2	0.9%	2	1.3%	2	1.3%
Personal Experience with voice-hearing	15	0.9%	10	1.0%	3	1.2%	1	0.5%	0	-	1	0.6%

*Note.* The AAPPQ subscales and AQ-9, the descriptive statistics presented are based on the reduced scales that were used in the study analyses. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9= Attribution Questionnaire-9.

**Table 5.** *Missing cases and percentages in the indirect TPB belief items in EIP and CAMHS clinicians.*

	EIP ( <i>N</i> = 253)		CAMHS ( <i>N</i> = 214)	
	<i>N</i>	%	<i>N</i>	%
<b>Control Beliefs</b>				
I have had training or knowledge in assessing voice-hearing in young people	59	23.3%	66	30.8%
young people who hear distressing voices present with high-risk issues.	59	23.3%	66	30.8%
young people present with practical issues (e.g., lack of permanent address, current life stressors) that seem more immediate than their voice-hearing experiences.	58	22.9%	65	30.4%
I have access to adequate collateral information (e.g., family history, young person's culture, values) about the young people I am working with.	57	22.5%	65	30.4%
young people who hear distressing voices do not have the ability to answer assessment questions relating to their voice-hearing experiences.	57	22.5%	62	29.0%
I have the opportunity to consult my team on how to proceed with my cases.	57	22.5%	63	29.4%
people in the social system of young people (e.g., carers, friends) are accepting of the young person's voice-hearing experiences.	57	22.5%	62	29.0%
young people who hear distressing voices are very unwell to engage in an assessment of their voice-hearing experiences.	57	22.5%	64	29.9%
voice-hearing assessment tools (e.g., assessment measures, questionnaires) are available to me.	56	22.1%	62	29.0%
young people who disclose hearing distressing voices to me are unwilling to discuss their voice-hearing experiences with me.	55	21.7%	62	29.0%
I have good engagement with young people who hear distressing voices.	55	21.7%	61	28.5%
I can find a suitable space to assess young people's experiences.	55	21.7%	61	28.5%
I have limited time to assess young people's experiences.	55	21.7%	61	28.5%

	EIP ( <i>N</i> = 253)		CAMHS ( <i>N</i> = 214)	
	<i>N</i>	%	<i>N</i>	%
<b>Subjective Norm beliefs</b>				
clinicians in the same profession as me would assess the young person's voice-hearing experiences	52	20.6%	59	27.6%
other colleagues in my clinical team would assess the young person's voice-hearing experiences.	51	20.2%	58	27.1%
individuals in the young person's social system (e.g., family, friends) think I should assess the young person's voice-hearing experiences.	50	19.8%	56	26.2%
specialist mental health practitioners (e.g., psychologists, psychiatrists) think I should assess the young person's voice-hearing experiences	50	19.8%	56	26.2%
the young person thinks I should assess their voice-hearing experiences	48	19.0%	56	26.2%
<b>Behavioural beliefs</b>				
would help evaluate the impact of voices on the young person's emotions (e.g., distress).	45	17.8%	49	22.9%
would help evaluate the impact of voices on the young person's functioning	44	17.4%	49	22.9%
would lead to mistakenly labelling the young person with a mental health disorder such as psychosis	44	17.4%	52	24.3%
would help with assessing the risk to self/others that is related to voices.	44	17.4%	48	22.4%
would make the young person feel distressed (e.g., anxious, fearful).	44	17.4%	51	23.8%
would aid diagnosing.	44	17.4%	51	23.8%
would lead to over-focusing on voices and incomplete exploration of other critical areas of a young person's presentation.	44	17.4%	50	23.4%
would put engagement with the young person at risk.	44	17.4%	51	23.8%
would be reassuring and validating for the young	42	16.6%	45	21.0%

person

	EIP ( <i>N</i> = 253)		CAMHS ( <i>N</i> = 214)	
	<i>N</i>	%	<i>N</i>	%
would help promote good engagement between me and the young person	42	16.6%	42	19.6%
would help identify the right support or treatment if needed.	42	16.6%	42	19.6%
would help with constructing a detailed formulation of what is happening for the young person.	42	16.6%	42	19.6%



**Table 6.** Statistically significant between group differences for the completers and non-completers of the indirect TPB belief items in EIP clinicians ( $N = 254$ ).

Belief items		N	Completers		N	EIP Non-completers		Welch's <i>t</i> (df)	<i>p</i>
			Mean	SD		Mean	SD		
	Participant characteristic								
I have limited time to assess young people's experiences.	Age	198	40.99	10.32	55	36.27	10.84	-2.89 (83.19)	.005
	Years working in MH services	198	14.47	9.25	55	9.91	10.84	-3.32 (88.55)	.001
I can find a suitable space to assess young people's experiences.	Age	198	40.99	10.32	55	36.27	10.84	-2.89 (83.19)	.005
	Years working in MH services	198	14.47	9.25	55	9.91	10.84	-3.32 (88.55)	.001
young people who hear distressing voices are very unwell to engage in an assessment of their voice-hearing experiences.	Age	196	41.03	10.36	57	36.32	10.70	-2.95 (88.79)	.004
	Years working in MH services	196	14.48	9.26	57	10.04	8.97	-3.27 (93.47)	.001
I have good engagement with young people who hear distressing voices.	Age	198	40.99	10.32	55	36.27	10.84	-2.89 (83.19)	.005
	Years working in MH services	198	14.47	9.25	55	9.91	10.84	-3.32 (88.55)	.001
young people present with practical issues (e.g., lack of permanent address, current life stressors) that seem more immediate than their voice-hearing experiences.	Years working in MH services	195	14.45	9.27	58	10.24	9.03	-3.09 (95.53)	.003
young people who disclose hearing distressing voices to me are unwilling to discuss their voice-hearing experiences with me.	Age	198	40.99	10.32	55	36.27	10.84	-2.89 (83.19)	.005
	Years working in MH services	198	14.47	9.25	55	9.91	10.84	-3.32 (88.55)	.001
young people who hear distressing voices present with high-risk issues.	Age	194	41.05	10.36	59	36.42	10.67	-2.93 (93.70)	.004
	Years working in MH services	194	14.49	9.27	59	10.17	8.96	-3.21 (98.67)	.002

voice-hearing assessment tools (e.g., assessment measures, questionnaires) are available to me.

Years working in MH services	197	14.44	9.26	56	10.12	9.03	-3.14 (90.54)	.002
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people in the social system of young people (e.g., carers, friends) are accepting of the young person's voice-hearing experiences.

Age	196	41.03	10.36	57	36.32	10.70	-2.95 (88.79)	.004
Years working in MH services	196	14.48	9.26	57	10.04	8.97	-3.27 (93.47)	.001

I have the opportunity to consult my team on how to proceed with my cases.

Age	196	41.03	10.36	57	36.32	10.70	-2.95 (88.79)	.004
Years working in MH services	196	14.48	9.26	57	10.04	8.97	-3.27 (93.47)	.001

young people who hear distressing voices do not have the ability to answer assessment questions relating to their voice-hearing experiences.

Age	196	41.03	10.36	57	36.32	10.70	-2.95 (88.79)	.004
Years working in MH services	196	14.48	9.26	57	10.04	8.97	-3.27 (93.47)	.001

I have access to adequate collateral information (e.g., family history, young person's culture, values) about the young people I am working with.

Age	196	41.03	10.36	57	36.32	10.70	-2.95 (88.79)	.004
Years working in MH services	196	14.48	9.26	57	10.04	8.97	-3.27 (93.47)	.001

I have had training or knowledge in assessing voice-hearing in young people

Age	194	41.05	10.36	59	36.42	10.67	-2.93 (93.70)	.004
Years working in MH services	194	14.49	9.27	59	10.17	8.96	-3.21 (98.67)	.002

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*Note.* MH = mental health; *SD* = standard deviation; *df* = degrees of freedom. Significance values are presented uncorrected for multiple comparisons. Bonferroni corrected p-value for the t-tests is .005.

**Table 7.** Descriptive statistics on all variables of interest by clinician group, including both young people and adult versions of the A2V survey ( $N = 1751$ ).

Variable	Adult Mental health ( $N = 996$ )			EIP ( $N = 253$ )			CAMHS ( $N = 214$ )			Primary Care (Adult patient version) ( $N = 158$ )			Primary Care (Young people version) ( $N = 160$ )			All participants ( $N = 1751$ )		
	$N$	$M$ (Min- Max)	$SD$	$N$	$M$ (Min- Max)	$SD$	$N$	$M$ (Min- Max)	$SD$	$N$	$M$ (Min- Max)	$SD$	$N$	$M$ (Min- Max)	$SD$	$N$	$M$ (Min- Max)	$SD$
Self-efficacy to ask patients if they hear voices	906	91.00 (0-100)	16.38	233	95.67 (20-100)	9.69	204	89.77 (14-100)	17.37	156	73.57 (0-100)	30.15	154	70.72 (0-100)	29.86	1653	87.97 (0-100)	20.64
Self-efficacy to discuss voice-hearing	909	88.03 (4-100)	17.55	234	93.63 (10-100)	11.48	204	84.67 (11-100)	20.94	156	64.87 (0-100)	31.59	154	62.86 (0-100)	30.13	1657	83.89 (0-100)	22.73
Self-efficacy to provide useful information	901	69.38 (0-100)	26.74	234	81.57 (20-100)	19.52	204	63.54 (0-100)	26.61	156	32.69 (0-100)	26.43	154	35.71 (0-100)	27.98	1649	63.77 (0-100)	29.95
Self-efficacy to refer	-	-	-	-	-	-	-	-	-	156	73.74 (0-100)	30.32	154	70.98 (0-100)	33.11	310	72.37 (0-100)	31.71
TPB attitudes	825	5.43 (1.86-7)	.93	212	5.79 (1.57-7)	.85	176	5.35 (2.14-7)	.89	150	4.72 (1-6.86)	1.16	143	4.55 (1-6.71)	1.12	1506	5.32 (1-7)	1.02
TPB subjective norms	853	5.38 (1.2-7)	1.06	221	5.80 (2.20-7)	.92	185	5.47 (1.8-7)	1.03	150	4.66 (1.2-7)	1.37	146	4.67 (1.4-7)	1.27	1555	5.32 (1.2-7)	1.14
TPB perceived behavioural control	823	5.14 (1-7)	1.07	212	5.51 (1.17-7)	.87	174	5.03 (2-7)	1.14	150	4.49 (1-6.50)	1.24	143	4.39 (1.17-6.67)	1.16	1502	5.04 (1-7)	1.13
TPB intention	818	5.76 (1-7)	1.23	194	6.33 (2.33-7)	.91	148	6.04 (2-7)	1.05	149	5.21 (1-7)	1.46	141	5.11 (1-7)	1.66	1450	5.75 (1-7)	1.30

Variable	Adult Mental health ( <i>N</i> = 996)			EIP ( <i>N</i> = 253)			CAMHS ( <i>N</i> = 214)			Primary Care (Adult patient version) ( <i>N</i> = 158)			Primary Care (Young people version) ( <i>N</i> = 160)			All participants ( <i>N</i> = 1751)		
	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>
m-AAPPQ Therapeutic Commitment	789	5.51 (2.51-7)	.74	190	5.87 (1.93- 7)	.71	144	5.27 (2.77-7)	.74	145	4.46 (2.27- 6.03)	.70	138	4.34 (2.21- 6.71)	.78	1406	5.31 (1.93- 7)	.88
m-AAPPQ Role security	800	5.12 (1.75 -7 )	.91	189	5.54 (1.88-7)	.80	144	4.97 (2.33-7)	.91	146	4.27 (1- 6.75)	.98	138	4.04 (1.75- 6.92)	1.06	1417	4.97 (1-7)	1.01
m-AAPPQ Empathy	794	4.97 (1- 7)	1.03	189	5.33 (1.75-7)	.92	144	4.94 (2- 7)	.98	145	4.37 (2- 6.25)	.95	138	4.55 (2.5- 6.75)	.97	1410	4.92 (1-7)	1.03
AQ-9 Stigma	786	19.41 (9- 81) <i>N</i> (%)	7.68	189	19.19 (9-39) <i>N</i> (%)	6.53	141	18.87 (9-39) <i>N</i> (%)	6.31	144	24.19 (9-49) <i>N</i> (%)	8.24	137	24.36 (9-54) <i>N</i> (%)	7.49	1397	20.30 (9-81) <i>N</i> (%)	7.70
Personal Experience with voice-hearing	956			250			213			158			159			1736		
Yes		264 (27.62)			91 (36.40)			66 (30.99)			25 (15.82)			35 (22.01)			481 (27.71)	
No		692 (72.38)			159 (63.60)			147 (69.01)			133 (84.18)			124 (77.99)			1255 (72.29)	
Training in helping service users with distressing voice- hearing	944			247			212			156			158			1717		
Formal training		507 (53.71)			175 (70.85)			95 (44.81)			39 (25)			34 (21.52)			850 (49.50)	

Variable	Adult Mental health ( <i>N</i> = 996)			EIP ( <i>N</i> = 253)			CAMHS ( <i>N</i> = 214)			Primary Care (Adult patient version) ( <i>N</i> = 158)			Primary Care (Young people version) ( <i>N</i> = 160)			All participants ( <i>N</i> = 1751)		
	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>
No formal training/Considerable clinical experience		365 (38.67)			65 (26.32)			71 (33.49)			47 (30.13)			38 (24.05)			586 (34.13)	
No formal training/No or limited clinical experience		72 (7.63)			7 (2.83)			46 (21.70)			70 (44.87)			86 (54.43)			281 (16.37)	
Professional experience working with voice-hearers	966			253			149			158			160			1751		
No experience		14 (1.45)			1 (.40)			8 (3.74)			22 (13.92)			29 (18.13)			74 (4.23)	
1-2 service users		37 (3.83)			2 (.79)			25 (11.68)			18 (11.39)			17 (10.63)			99 (5.65)	
3-4 service users		44 (4.55)			14 (5.53)			16 (7.48)			16 (10.13)			18 (11.25)			108 (6.17)	
5-9 service users		96 (9.94)			23 (9.09)			16 (7.48)			26 (16.46)			23 (14.37)			184 (10.51)	
10+ service users		775 (80.23)			213 (84.19)			149 (69.63)			76 (48.10)			73 (45.63)			1286 (73.44)	
Frequency of contact with voice-hearers in	938			230			196			127			99			1590		

clinical practice

Less than once a month	123 (13.11)	79 (34.35)	74 (37.76)	109 (68.99)	90 (90.91)	475 (29.87)
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Variable	Adult Mental health ( <i>N</i> = 996)			EIP ( <i>N</i> = 253)			CAMHS ( <i>N</i> = 214)			Primary Care (Adult patient version) ( <i>N</i> = 158)			Primary Care (Young people version) ( <i>N</i> = 160)			All participants ( <i>N</i> = 1751)		
	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>
1-3 times a month	190	(20.26)		70	(30.34)		57	(29.08)		13	(10.24)		6	(6.96)		336	(21.13)	
Once a week	145	(15.46)		35	(15.22)		35	(17.86)		0			2	(2.02)		217	(13.65)	
A few times a week	240	(25.59)		34	(14.78)		15	(7.65)		4	(3.15)		1	(1.01)		294	(18.49)	
Everyday	181	(19.30)		11	(4.78)		12	(6.12)		1	(.79)		0			205	(12.89)	
More than once a day	59	(6.29)		1	(.43)		3	(1.53)		0			0			63	(3.96)	

Note. The AAPPQ subscales and AQ-9, the descriptive statistics presented are based on the full scales before item removal to improve their internal consistency. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

**Table 8.** Descriptive statistics for additional clinically relevant variables by clinician group ( $N = 1751$ )

Variable	Adult Mental health ( $N = 996$ )			EIP ( $N = 253$ )			CAMHS ( $N = 214$ )			Primary Care (Adult patient version) ( $N = 158$ )			Primary Care (Young people version) ( $N = 160$ )			All participants ( $N = 1751$ )		
	$N$	$M$ (Min- Max)	$SD$	$N$	$M$ (Min- Max)	$SD$	$N$	$M$ (Min- Max)	$SD$	$N$	$M$ (Min- Max)	$SD$	$N$	$M$ (Min- Max)	$SD$	$N$	$M$ (Min- Max)	$SD$
m-AAPPQ Difficulty working with voice-hearers	793	4.77 (0- 10) <b><math>N</math>(Valid %)</b>	2.36	190	4.48 (0- 10) <b><math>N</math> (Valid %)</b>	2.45	144	4.81 (0-10) <b><math>N</math> (Valid %)</b>	2.25	145	5.57 (0- 10) <b><math>N</math> (Valid %)</b>	2.09	138	6.31 (0-10) <b><math>N</math> (Valid %)</b>	2.19	1410	4.97 (0-10) <b><math>N</math> (Valid %)</b>	2.37
Perceived need for training to support voice-hearers	913			234			205			156			154			1662		
Yes		610 (66.81)			145 (61.97)			154 (75.12)			99 (63.46)			92 (59.74)			1100 (66.19)	
No		138 (15.12)			34 (14.53)			21 (10.24)			25 (16.03)			23 (14.94)			241 (14.50)	
Not sure		165 (18.07)			55 (23.50)			30 (14.63)			32 (20.51)			39 (25.32)			321 (19.31)	

Variable	Adult Mental health ( <i>N</i> = 996)			EIP ( <i>N</i> = 253)			CAMHS ( <i>N</i> = 214)			Primary Care (Adult patient version) ( <i>N</i> = 158)			Primary Care (Young people version) ( <i>N</i> = 160)			All participants ( <i>N</i> = 1751)		
	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>
	<b><i>N</i>(Valid %)</b>			<b><i>N</i> (Valid %)</b>			<b><i>N</i> (Valid %)</b>			<b><i>N</i> (Valid %)</b>			<b><i>N</i> (Valid %)</b>			<b><i>N</i> (Valid %)</b>		
Perceived need for training to assess voice-hearing	911			234			204			156			154			1659		
Yes		459 (50.38)			110 (47.01)			127 (62.25)			77 (49.36)			80 (51.95)			853 (51.42)	
No		278 (30.52)			76 (32.48)			44 (21.57)			40 (25.64)			30 (19.48)			468 (28.21)	
Not sure		174 (19.10)			48 (20.51)			33 (16.18)			39 (25)			44 (28.57)			338 (20.37)	
Willingness to receive training in supporting voice-hearers	911			234			205			156			154			1660		
Yes		878 (96.38)			226 (96.58)			198 (96.59)			137 (87.82)			129 (83.77)			1568 (94.46)	
No		10 (1.10)			2 (.85)			2 (.98)			8 (5.13)			6 (3.90)			28 (1.690)	
Not sure		23 (2.52)			6 (2.56)			5 (2.44)			11 (7.05)			19 (12.34)			64 (3.86)	



Variable	Adult Mental health ( <i>N</i> = 996)			EIP ( <i>N</i> = 253)			CAMHS ( <i>N</i> = 214)			Primary Care (Adult patient version) ( <i>N</i> = 158)			Primary Care (Young people version) ( <i>N</i> = 160)			All participants ( <i>N</i> = 1751)		
	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>	<i>N</i>	<i>M</i> (Min- Max)	<i>SD</i>
Willingness to receive training in assessing voice- hearing	911			234			204			156			154			1659		
Yes		832 (91.33)			219 (93.59)			192 (94.12)			130 (83.33)			130 (84.42)			1503 (90.60)	
No		40 (4.39)			7 (2.99)			4 (1.96)			8 (5.13)			8 (5.19)			67 (4.04)	
Not sure		39 (4.28)			8 (3.42)			8 (3.92)			18 (11.54)			16 (10.39)			89 (5.36)	

*Note.* m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire.

**Table 9.** Correlation Matrix for age, experience working in mental health services and study variables presenting Pearson's correlation coefficients for the whole sample (N = 1751).

[illegible]

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
8. m-AAPPQ	.06 <sup>*</sup>	.46 <sup>***</sup>	.73 <sup>***</sup>	.55 <sup>***</sup>	.72 <sup>***</sup>	.54 <sup>***</sup>	.83 <sup>***</sup>	-								
Role Security	<i>N</i> = 1418	<i>N</i> = 1416	<i>N</i> = 1416	<i>N</i> = 1415	<i>N</i> = 1418	<i>N</i> = 1417	<i>N</i> = 1405									
9. m-AAPPQ	.15 <sup>***</sup>	.31 <sup>***</sup>	.39 <sup>***</sup>	.26 <sup>***</sup>	.38 <sup>***</sup>	.25 <sup>***</sup>	.52 <sup>***</sup>	.49 <sup>***</sup>	-							
Empathy	<i>N</i> = 1410	<i>N</i> = 1408	<i>N</i> = 1409	<i>N</i> = 1407	<i>N</i> = 1410	<i>N</i> = 1410	<i>N</i> = 1404	<i>N</i> = 1409								
10. AQ-9 Stigma	.04	-.15 <sup>***</sup>	-.23 <sup>***</sup>	-.15 <sup>***</sup>	-.22 <sup>***</sup>	-.16 <sup>***</sup>	-.37 <sup>***</sup>	-.25 <sup>***</sup>	-.20 <sup>***</sup>	-						
	<i>N</i> = 1397	<i>N</i> = 1395	<i>N</i> = 1396	<i>N</i> = 1394	<i>N</i> = 1397	<i>N</i> =1397	<i>N</i> = 1391	<i>N</i> = 1396	<i>N</i> = 1396							
11. Self-efficacy	-.05 <sup>*</sup>	.28 <sup>***</sup>	.56 <sup>***</sup>	.44 <sup>***</sup>	.56 <sup>***</sup>	.48 <sup>***</sup>	.52 <sup>***</sup>	.54 <sup>***</sup>	.24 <sup>***</sup>	-.23 <sup>***</sup>	-					
to ask patients if they hear voices.	<i>N</i> = 1653	<i>N</i> = 1651	<i>N</i> = 1501	<i>N</i> =1548	<i>N</i> = 1497	<i>N</i> = 1445	<i>N</i> = 1401	<i>N</i> = 1413	<i>N</i> = 1405	<i>N</i> = 1392						
12. Self-efficacy	-.003	.37 <sup>***</sup>	.67 <sup>***</sup>	.51 <sup>***</sup>	.64 <sup>***</sup>	.54 <sup>***</sup>	.61 <sup>***</sup>	.66 <sup>***</sup>	.31 <sup>***</sup>	-.26 <sup>***</sup>	.82 <sup>***</sup>	-				
to discuss voice- hearing experiences	<i>N</i> = 1657	<i>N</i> = 1655	<i>N</i> = 1503	<i>N</i> = 1551	<i>N</i> = 1499	<i>N</i> = 1447	<i>N</i> = 1403	<i>N</i> = 1415	<i>N</i> = 1407	<i>N</i> = 1394	<i>N</i> = 1651					
13. Self-efficacy	.04	.40 <sup>***</sup>	.53 <sup>***</sup>	.38 <sup>***</sup>	.50 <sup>***</sup>	.37 <sup>***</sup>	.61 <sup>***</sup>	.67 <sup>***</sup>	.32 <sup>***</sup>	-.22 <sup>***</sup>	.46 <sup>***</sup>	.56 <sup>***</sup>				
to provide useful information	<i>N</i> = 1649	<i>N</i> = 1647	<i>N</i> = 1496	<i>N</i> = 1544	<i>N</i> = 1492	<i>N</i> = 1440	<i>N</i> = 1397	<i>N</i> = 1408	<i>N</i> = 1400	<i>N</i> = 1387	<i>N</i> = 1643	<i>N</i> = 1647				

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
14. Worked with 10 or more voice- hearers	.09*** <i>N</i> = 1751	.37*** <i>N</i> = 1749	.43*** <i>N</i> = 1506	.28*** <i>N</i> = 1555	.42*** <i>N</i> = 1502	.31*** <i>N</i> = 1450	.46*** <i>N</i> = 1406	.49*** <i>N</i> = 1418	.21*** <i>N</i> = 1410	-.19*** <i>N</i> = 1397	.42*** <i>N</i> = 1653	.49*** <i>N</i> = 1657	.39*** <i>N</i> = 1649			
15. Personal experience with voice-hearing	.02 <i>N</i> = 1736	.09*** <i>N</i> = 1734	.07** <i>N</i> = 1506	-.001 <i>N</i> = 1555	.04 <i>N</i> = 1502	.01 <i>N</i> = 1450	.12*** <i>N</i> = 1406	.09*** <i>N</i> = 1418	.19*** <i>N</i> = 1410	-.07** <i>N</i> = 1397	.05* <i>N</i> = 1653	.07** <i>N</i> = 1657	.11*** <i>N</i> = 1649	.04 <i>N</i> = 1736		
16. Formal training on voice- hearing	.09*** <i>N</i> = 1717	.34*** <i>N</i> = 1715	.35*** <i>N</i> = 1503	.25*** <i>N</i> = 1552	.35*** <i>N</i> = 1499	.25*** <i>N</i> = 1447	.39*** <i>N</i> = 1404	.46*** <i>N</i> = 1416	.24*** <i>N</i> = 1408	-.13 <i>N</i> = 1395	.26*** <i>N</i> = 1649	.32*** <i>N</i> = 1653	.40*** <i>N</i> = 1645	.28*** <i>N</i> = 1717	.13*** <i>N</i> = 1717	
17. No formal training but considerable experience on voice-hearing	-.10*** <i>N</i> = 1717	-.07** <i>N</i> = 1715	-.02 <i>N</i> = 1503	-.01 <i>N</i> = 1552	-.05 <i>N</i> = 1499	-.01 <i>N</i> = 1447	-.003 <i>N</i> = 1404	-.02 <i>N</i> = 1416	-.06* <i>N</i> = 1408	-.004 <i>N</i> = 1395	.07** <i>N</i> = 1649	.07** <i>N</i> = 1653	-.04 <i>N</i> = 1645	.10*** <i>N</i> = 1717	-.09*** <i>N</i> = 1717	-.71 <i>N</i> = 1717

*Note.* The m-AAPPQ sub-scale means and AQ-9 scale total variables used were the reduced versions after dropping items to improve their internal consistency.

Associations between the dummy variables (14-17) and continuous variables were estimated with point-biserial correlations. Associations between the dummy variables were calculated using Phi coefficients. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . (2-tailed)

**Table 10.** *Correlation Matrix for age, experience working in mental health services and study variables presenting Pearson's correlation coefficients for the Adult Mental health clinician group (N = 966).*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Age	-															
2. Experience Working in MH	.76*** N = 964	-														
3. TPB Attitudes	.19*** N = 825	.33*** N = 823	-													
4. TPB Subjective norms	.01 N = 853	.13*** N = 851	.61*** N = 822	-												
5. TPB Perceived behavioural control	.18*** N = 823	.33*** N = 821	.80*** N = 822	.64*** N = 820	-											
6. TPB intention	.02 N = 818	.16*** N = 816	.65*** N = 818	.59*** N = 815	.66*** N = 818	-										
7. m-APPQ Therapeutic Commitment	.05 N = 789	.20*** N = 787	.63*** N = 789	.39*** N = 787	.56*** N = 789	.43*** N = 789	-									
8. m-AAPPQ Role Security	.19*** N = 800	.33*** N = 798	.68*** N = 799	.47*** N = 797	.68*** N = 800	.46*** N = 799	.76*** N = 789	-								

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
9. m-AAPPQ Empathy	.26*** <i>N</i> = 794	.27*** <i>N</i> = 792	.31*** <i>N</i> = 794	.19*** <i>N</i> = 791	.30*** <i>N</i> = 794	.13*** <i>N</i> = 794	.45*** <i>N</i> = 789	.42*** <i>N</i> = 794	-							
10. AQ-9 Stigma	-.02 <i>N</i> = 786	-.08* <i>N</i> = 784	-.13*** <i>N</i> = 786	-.10** <i>N</i> = 783	-.14*** <i>N</i> = 786	-.08* <i>N</i> = 786	-.28*** <i>N</i> = 781	-.16*** <i>N</i> = 786	-.15*** <i>N</i> = 786	-						
11. Self-efficacy to ask patients if they hear voices.	.05 <i>N</i> = 906	.16*** <i>N</i> = 904	.44*** <i>N</i> = 821	.30*** <i>N</i> = 847	.44*** <i>N</i> = 819	.31*** <i>N</i> = 814	.43*** <i>N</i> = 785	.44*** <i>N</i> = 796	.14*** <i>N</i> = 790	-.22*** <i>N</i> = 782	-					
12. Self-efficacy to discuss voice-hearing experiences	.11*** <i>N</i> = 909	.27*** <i>N</i> = 907	.59*** <i>N</i> = 822	.38*** <i>N</i> = 849	.55*** <i>N</i> = 820	.41*** <i>N</i> = 815	.55*** <i>N</i> = 786	.58*** <i>N</i> = 797	.24*** <i>N</i> = 791	-.24*** <i>N</i> = 783	.80*** <i>N</i> = 904	-				
13. Self-efficacy to provide useful information	.15*** <i>N</i> = 901	.23*** <i>N</i> = 899	.44*** <i>N</i> = 815	.29*** <i>N</i> = 842	.43*** <i>N</i> = 813	.28*** <i>N</i> = 808	.48*** <i>N</i> = 780	.57*** <i>N</i> = 790	.22*** <i>N</i> = 784	-.15*** <i>N</i> = 776	.38*** <i>N</i> = 896	.49*** <i>N</i> = 899	-			
14. Worked with 10 or more voice-hearers	.16*** <i>N</i> = 966	.30*** <i>N</i> = 964	.34*** <i>N</i> = 825	.20*** <i>N</i> = 853	.35*** <i>N</i> = 823	.22*** <i>N</i> = 818	.37*** <i>N</i> = 789	.42*** <i>N</i> = 800	.13*** <i>N</i> = 794	-.13*** <i>N</i> = 786	.34*** <i>N</i> = 906	.39*** <i>N</i> = 909	.29*** <i>N</i> = 901	-		
15. Personal experience with voice-hearing	.03 <i>N</i> = 956	.05 <i>N</i> = 954	.05 <i>N</i> = 825	-.03 <i>N</i> = 853	.03 <i>N</i> = 823	-.02 <i>N</i> = 818	.09* <i>N</i> = 789	.09* <i>N</i> = 800	.22*** <i>N</i> = 794	-.07 <i>N</i> = 786	.01 <i>N</i> = 906	.02 <i>N</i> = 909	.06 <i>N</i> = 901	-.03 <i>N</i> = 956	-	

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
16. Formal training on voice-hearing	.15***	.21***	.26***	.17***	.27***	.16***	.26***	.38***	.17***	-.08*	.15***	.21***	.29***	.15	.09**	-
	<i>N</i> = 944	<i>N</i> = 942	<i>N</i> = 823	<i>N</i> = 851	<i>N</i> = 821	<i>N</i> = 816	<i>N</i> = 787	<i>N</i> = 798	<i>N</i> = 792	<i>N</i> = 784	<i>N</i> = 904	<i>N</i> = 907	<i>N</i> = 899	<i>N</i> = 944	<i>N</i> = 944	
17. No formal training but considerable experience on voice-hearing	-.11**	-.11**	-.10**	-.07	-.11**	-.06	-.07*	-.13***	-.09*	.05	-.004	-.02	-.13***	.06	-.11**	-.86***
	<i>N</i> = 944	<i>N</i> = 942	<i>N</i> = 823	<i>N</i> = 851	<i>N</i> = 821	<i>N</i> = 816	<i>N</i> = 787	<i>N</i> = 798	<i>N</i> = 792	<i>N</i> = 784	<i>N</i> = 904	<i>N</i> = 907	<i>N</i> = 899	<i>N</i> = 944	<i>N</i> = 944	<i>N</i> = 944

*Note.* The m-AAPPQ sub-scale means and AQ-9 scale total variables used were the reduced versions after dropping items to improve their internal consistency. Associations between the dummy variables (14-17) and continuous variables were estimated with point-biserial correlations. Associations between the dummy variables were calculated using Phi coefficients. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . (2-tailed)

**Table 11.** Correlation Matrix for age, experience working in mental health services and study variables presenting Pearson's correlation coefficients for the Young people Mental health clinician group (N = 467).

[illegible]



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
9. m-AAPPQ Empathy	.25*** <i>N</i> = 333	.27*** <i>N</i> = 333	.44*** <i>N</i> = 332	.28*** <i>N</i> = 333	.44*** <i>N</i> = 333	.34*** <i>N</i> = 333	.56*** <i>N</i> = 332	.54*** <i>N</i> = 332								
10. AQ-9 Stigma	.03 <i>N</i> = 330	-.01 <i>N</i> = 330	-.20*** <i>N</i> = 329	-.09 <i>N</i> = 330	-.22*** <i>N</i> = 330	-.09 <i>N</i> = 330	-.25*** <i>N</i> = 329	-.15** <i>N</i> = 329	-.15** <i>N</i> = 329							
11. Self-efficacy to ask patients if they hear voices.	.15** <i>N</i> = 437	.26*** <i>N</i> = 437	.50*** <i>N</i> = 387	.41*** <i>N</i> = 405	.56*** <i>N</i> = 385	.43*** <i>N</i> = 341	.47*** <i>N</i> = 333	.49*** <i>N</i> = 333	.30*** <i>N</i> = 332	-.08 <i>N</i> = 329						
12. Self-efficacy to discuss voice-hearing experiences	.22*** <i>N</i> = 438	.31*** <i>N</i> = 438	.63*** <i>N</i> = 388	.44*** <i>N</i> = 406	.61*** <i>N</i> = 386	.49*** <i>N</i> = 342	.52*** <i>N</i> = 334	.61*** <i>N</i> = 334	.29*** <i>N</i> = 333	-.10 <i>N</i> = 330	.72*** <i>N</i> = 437					
13. Self-efficacy to provide useful information	.28*** <i>N</i> = 438	.33*** <i>N</i> = 438	.46*** <i>N</i> = 388	.26*** <i>N</i> = 406	.45*** <i>N</i> = 386	.33*** <i>N</i> = 342	.49*** <i>N</i> = 334	.62*** <i>N</i> = 334	.35*** <i>N</i> = 333	-.08 <i>N</i> = 330	.30*** <i>N</i> = 437	.46*** <i>N</i> = 438				
14. Worked with 10 or more voice-hearers	.24*** <i>N</i> = 467	.35*** <i>N</i> = 467	.40*** <i>N</i> = 388	.16** <i>N</i> = 406	.39*** <i>N</i> = 386	.23*** <i>N</i> = 342	.37*** <i>N</i> = 334	.44*** <i>N</i> = 334	.21*** <i>N</i> = 333	-.07 <i>N</i> = 330	.35*** <i>N</i> = 437	.50*** <i>N</i> = 438	.36*** <i>N</i> = 438			
15. Personal experience with voice-hearing	.07 <i>N</i> = 463	.07 <i>N</i> = 463	.04 <i>N</i> = 388	-.05 <i>N</i> = 406	-.01 <i>N</i> = 386	.02 <i>N</i> = 342	.08 <i>N</i> = 334	.02 <i>N</i> = 334	.08 <i>N</i> = 33	-.01 <i>N</i> = 330	.40 <i>N</i> = 437	.06 <i>N</i> = 438	.11* <i>N</i> = 438	.11* <i>N</i> = 463		
16. Formal training on voice-hearing	.27*** <i>N</i> = 459	.40 <i>N</i> = 459	.32*** <i>N</i> = 388	.11* <i>N</i> = 406	.35*** <i>N</i> = 386	.21*** <i>N</i> = 342	.39*** <i>N</i> = 334	.45*** <i>N</i> = 334	.26*** <i>N</i> = 333	-.02 <i>N</i> = 330	.21*** <i>N</i> = 437	.28*** <i>N</i> = 438	.41*** <i>N</i> = 438	.32*** <i>N</i> = 459	.14** <i>N</i> = 459	

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17. No formal training but considerable experience on voice-hearing	-.12**	-.19***	-.07	-.01	-.12*	-.07	-.12*	-.13*	-.07	-.04	-.01	.03	-.14**	.03	-.11*	-.78
	<i>N</i> = 459	<i>N</i> = 459	<i>N</i> = 388	<i>N</i> = 406	<i>N</i> = 386	<i>N</i> = 342	<i>N</i> = 334	<i>N</i> = 334	<i>N</i> = 333	<i>N</i> = 330	<i>N</i> = 437	<i>N</i> = 438	<i>N</i> = 438	<i>N</i> = 459	<i>N</i> = 459	<i>N</i> = 459

*Note.* The m-AAPPQ sub-scale means and AQ-9 scale total variables used were the reduced versions after dropping items to improve their internal consistency. Associations between the dummy variables (14-17) and continuous variables were estimated with point-biserial correlations. Associations between the dummy variables were calculated using Phi coefficients. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception

Questionnaire; AQ-9 = Attribution Questionnaire-9.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . (2-tailed)

**Table 12.** Correlation Matrix for study variables presenting Pearson's correlation coefficients for the Early Intervention in Psychosis clinicians ( $N = 253$ ).

[illegible]

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
9. m-AAPPQ Empathy	.18 <sup>*</sup> <i>N</i> = 189	.17 <sup>*</sup> <i>N</i> = 189	.41 <sup>***</sup> <i>N</i> = 189	.25 <sup>**</sup> <i>N</i> = 189	.39 <sup>***</sup> <i>N</i> = 189	.24 <sup>**</sup> <i>N</i> = 189	.59 <sup>***</sup> <i>N</i> = 188	.53 <sup>***</sup> <i>N</i> = 187								
10. AQ-9 Stigma	-0.02 <i>N</i> = 189	-0.05 <i>N</i> = 189	-.028 <sup>***</sup> <i>N</i> = 189	-.021 <sup>**</sup> <i>N</i> = 189	-.025 <sup>**</sup> <i>N</i> = 189	-.016 <sup>*</sup> <i>N</i> = 189	-.36 <sup>***</sup> <i>N</i> = 188	-.20 <sup>**</sup> <i>N</i> = 187	-.20 <sup>**</sup> <i>N</i> = 188							
11. Self-efficacy to ask patients if they hear voices.	0.12 <i>N</i> = 233	.20 <sup>**</sup> <i>N</i> = 233	.50 <sup>***</sup> <i>N</i> = 211	.38 <sup>***</sup> <i>N</i> = 220	.50 <sup>***</sup> <i>N</i> = 211	.37 <sup>***</sup> <i>N</i> = 193	.30 <sup>***</sup> <i>N</i> = 189	.40 <sup>***</sup> <i>N</i> = 188	.26 <sup>**</sup> <i>N</i> = 188	-.016 <sup>*</sup> <i>N</i> = 188						
12. Self-efficacy to discuss voice- hearing experiences	.18 <sup>**</sup> <i>N</i> = 234	.23 <sup>**</sup> <i>N</i> = 234	.58 <sup>***</sup> <i>N</i> = 212	.41 <sup>**</sup> <i>N</i> = 221	.51 <sup>***</sup> <i>N</i> = 212	.40 <sup>***</sup> <i>N</i> = 194	.50 <sup>***</sup> <i>N</i> = 190	.47 <sup>***</sup> <i>N</i> = 189	.26 <sup>***</sup> <i>N</i> = 189	-.021 <sup>**</sup> <i>N</i> = 189	.66 <sup>***</sup> <i>N</i> = 233					
13. Self-efficacy to provide useful information	.26 <sup>***</sup> <i>N</i> = 234	.24 <sup>***</sup> <i>N</i> = 234	.39 <sup>***</sup> <i>N</i> = 212	.16 <sup>***</sup> <i>N</i> = 221	.32 <sup>***</sup> <i>N</i> = 212	.22 <sup>**</sup> <i>N</i> = 194	.36 <sup>***</sup> <i>N</i> = 190	.44 <sup>***</sup> <i>N</i> = 189	.32 <sup>***</sup> <i>N</i> = 189	-.018 <sup>*</sup> <i>N</i> = 189	.31 <sup>***</sup> <i>N</i> = 233	.44 <sup>***</sup> <i>N</i> = 234				
14. Worked with 10 or more voice- hearers	.22 <sup>***</sup> <i>N</i> = 253	.27 <sup>***</sup> <i>N</i> = 253	.25 <sup>***</sup> <i>N</i> = 212	.07 <i>N</i> = 221	.29 <sup>***</sup> <i>N</i> = 212	.07 <i>N</i> = 194	.18 <sup>*</sup> <i>N</i> = 190	.22 <sup>**</sup> <i>N</i> = 190	.06 <i>N</i> = 189	-.04 <i>N</i> = 189	.29 <sup>***</sup> <i>N</i> = 233	.30 <sup>***</sup> <i>N</i> = 234	.21 <sup>**</sup> <i>N</i> = 234	-		
15. Personal experience with voice-hearing	.16 <sup>*</sup> <i>N</i> = 250	.12 <i>N</i> = 250	-.02 <i>N</i> = 212	-.04 <i>N</i> = 221	-.07 <i>N</i> = 212	.05 <i>N</i> = 194	.02 <i>N</i> = 190	.02 <i>N</i> = 190	.06 <i>N</i> = 189	-.01 <i>N</i> = 189	-.03 <i>N</i> = 233	.06 <i>N</i> = 234	.04 <i>N</i> = 234	.08 <i>N</i> = 250		

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
16. Formal training on voice-hearing	.35***	.42***	.20**	.11	.25***	.15*	.24**	.31***	.15*	-.01	.20**	.24***	.24***	.21**	.11	-
	<i>N</i> = 246	<i>N</i> = 247	<i>N</i> = 212	<i>N</i> = 221	<i>N</i> = 212	<i>N</i> = 194	<i>N</i> = 190	<i>N</i> = 190	<i>N</i> = 189	<i>N</i> = 189	<i>N</i> = 233	<i>N</i> = 234	<i>N</i> = 234	<i>N</i> = 247	<i>N</i> = 247	
17. No formal training but considerable experience on voice-hearing	-.29***	-.35***	-.11	-.06	-.18**	-.13	-.15*	-.22	-.10	-.01	-.07	-.10	-.16*	-.15	-.10	-.93***
	<i>N</i> = 247	<i>N</i> = 247	<i>N</i> = 212	<i>N</i> = 221	<i>N</i> = 212	<i>N</i> = 194	<i>N</i> = 190	<i>N</i> = 190	<i>N</i> = 189	<i>N</i> = 189	<i>N</i> = 233	<i>N</i> = 234	<i>N</i> = 234	<i>N</i> = 247	<i>N</i> = 247	<i>N</i> = 247

Note. The m-AAPPQ sub-scale means and AQ-9 scale total variables used were the reduced versions after dropping items to improve their internal consistency. Associations between the dummy variables (14-17) and continuous variables were estimated with point-biserial correlations. Associations between the dummy variables were calculated using Phi coefficients. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . (2-tailed)

**Table 13.** *Correlation Matrix for study variables presenting Pearson's correlation coefficients for the CAMHS clinicians (N = 214).*

[illegible]

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
9. m-AAPPQ Empathy	.29*** <i>N</i> = 144	.36*** <i>N</i> = 144	.49*** <i>N</i> = 143	.29*** <i>N</i> = 144	.51*** <i>N</i> = 144	.42*** <i>N</i> = 144	.57*** <i>N</i> = 144	.51*** <i>N</i> = 144								
10. AQ-9 Stigma	-0.03 <i>N</i> = 141	-0.11 <i>N</i> = 141	-0.19* <i>N</i> = 140	-0.04 <i>N</i> = 141	-0.26*** <i>N</i> = 141	-0.08 <i>N</i> = 141	-0.22*** <i>N</i> = 141	-.21* <i>N</i> = 141	-.24*** <i>N</i> = 141							
11. Self-efficacy to ask patients if they hear voices.	.15 <i>N</i> = 204	.27*** <i>N</i> = 204	.50*** <i>N</i> = 176	.40*** <i>N</i> = 185	.56*** <i>N</i> = 174	.46*** <i>N</i> = 148	.49*** <i>N</i> = 144	.52*** <i>N</i> = 144	.33*** <i>N</i> = 144	-.12*** <i>N</i> = 141						
12. Self-efficacy to discuss voice-hearing experiences	.23*** <i>N</i> = 204	.34*** <i>N</i> = 204	.66*** <i>N</i> = 176	.44*** <i>N</i> = 185	.64*** <i>N</i> = 174	.54*** <i>N</i> = 148	.48*** <i>N</i> = 144	.63*** <i>N</i> = 144	.34*** <i>N</i> = 144	-.19* <i>N</i> = 141	.71*** <i>N</i> = 204					
13. Self-efficacy to provide useful information	.27*** <i>N</i> = 204	.34*** <i>N</i> = 204	.43*** <i>N</i> = 176	.26*** <i>N</i> = 185	.45*** <i>N</i> = 174	.36*** <i>N</i> = 148	.45*** <i>N</i> = 144	.52*** <i>N</i> = 144	.34*** <i>N</i> = 141	-.15 <i>N</i> = 204	.21*** <i>N</i> = 204	.40*** <i>N</i> = 204				
14. Worked with 10 or more voice-hearers	.24*** <i>N</i> = 214	.40*** <i>N</i> = 214	.49*** <i>N</i> = 176	.18* <i>N</i> = 185	.42*** <i>N</i> = 174	.32*** <i>N</i> = 148	.47*** <i>N</i> = 144	.54*** <i>N</i> = 144	.28*** <i>N</i> = 144	-.14 <i>N</i> = 141	.36*** <i>N</i> = 204	.57*** <i>N</i> = 204	.40*** <i>N</i> = 204	-		
15. Personal experience with voice-hearing	-.04 <i>N</i> = 213	-.02 <i>N</i> = 213	.09 <i>N</i> = 176	-.07 <i>N</i> = 185	.02 <i>N</i> = 174	-.03 <i>N</i> = 148	.14 <i>N</i> = 144	-.003 <i>N</i> = 144	.10 <i>N</i> = 144	-.03 <i>N</i> = 141	.07 <i>N</i> = 204	.05 <i>N</i> = 204	.15* <i>N</i> = 204	.13 <i>N</i> = 213	-	
16. Formal training on voice-hearing	.16* <i>N</i> = 212	.32*** <i>N</i> = 212	.34*** <i>N</i> = 176	.03 <i>N</i> = 185	.36*** <i>N</i> = 174	.21* <i>N</i> = 148	.40*** <i>N</i> = 144	.45*** <i>N</i> = 144	.28*** <i>N</i> = 144	-.10 <i>N</i> = 141	.15* <i>N</i> = 204	.23*** <i>N</i> = 204	.44*** <i>N</i> = 204	.36*** <i>N</i> = 212	.15* <i>N</i> = 212	-
17. No formal training but considerable experience on voice-hearing	.08 <i>N</i> = 212	.02 <i>N</i> = 212	.02 <i>N</i> = 176	.08 <i>N</i> = 185	-.03 <i>N</i> = 174	.04 <i>N</i> = 148	-.01 <i>N</i> = 144	.03 <i>N</i> = 144	.00 <i>N</i> = 144	-.06 <i>N</i> = 141	.06 <i>N</i> = 204	.14* <i>N</i> = 204	-.08 <i>N</i> = 204	.20*** <i>N</i> = 212	-.11 <i>N</i> = 212	.64*** <i>N</i> = 212

Note. The m-AAPPQ sub-scale means and AQ-9 scale total variables used were the reduced versions after dropping items to improve their internal consistency. Associations between the dummy variables (14-17) and continuous variables were estimated with point-biserial correlations. Associations between the dummy variables were calculated using Phi coefficients. TPB =Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . (2-tailed)



**Table 14.** Correlation Matrix for age, experience working in mental health services and study variables presenting Pearson's correlation coefficients for the Primary care clinician group who completed the adult patient version of the survey (N = 158).

[illegible]

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
9. m-AAPPQ Empathy	-.07	.13	.25**	.13	.28***	.17*	.48***	.36***								
	<i>N</i> = 145	<i>N</i> = 145	<i>N</i> = 145	<i>N</i> = 145	<i>N</i> = 145	<i>N</i> = 145	<i>N</i> = 145	<i>N</i> = 145								
10. AQ-9 Stigma	.04	-.12	-.23**	-.09	-.22**	-.15	-.46***	-.30***	-.25**							
	<i>N</i> = 144	<i>N</i> = 144	<i>N</i> = 144	<i>N</i> = 144	<i>N</i> = 144	<i>N</i> = 144	<i>N</i> = 144	<i>N</i> = 144	<i>N</i> = 144							
11. Self-efficacy to ask patients if they hear voices.	-.18*	.11	.63***	.51***	.63***	.59***	.39***	.50***	.09	-.19*						
	<i>N</i> = 156	<i>N</i> = 156	<i>N</i> = 150	<i>N</i> = 150	<i>N</i> = 150	<i>N</i> = 149	<i>N</i> = 145	146	<i>N</i> = 145	<i>N</i> = 144						
12. Self-efficacy to discuss voice-hearing experiences	-.15	.19*	.71***	.62***	.72***	.68***	.45***	.61***	.16	-.14	.81***					
	<i>N</i> = 156	<i>N</i> = 156	<i>N</i> = 150	<i>N</i> = 150	<i>N</i> = 150	<i>N</i> = 149	<i>N</i> = 145	<i>N</i> = 146	<i>N</i> = 145	<i>N</i> = 144	<i>N</i> = 156					
13. Self-efficacy to provide useful information	-.22**	.27***	.50***	.43***	.47***	.32***	.34***	.47***	.17*	-.14	.39***	.48***				
	<i>N</i> = 156	<i>N</i> = 156	<i>N</i> = 150	<i>N</i> = 150	<i>N</i> = 150	<i>N</i> = 149	<i>N</i> = 145	<i>N</i> = 146	<i>N</i> = 145	<i>N</i> = 144	<i>N</i> = 156	<i>N</i> = 156				
14. Worked with 10 or more voice-hearers	.04	.23**	.44***	.32***	.38***	.40***	.43***	.39***	.08	-.21*	.40***	.38***	.28***			
	<i>N</i> = 158	<i>N</i> = 158	<i>N</i> = 150	<i>N</i> = 150	<i>N</i> = 150	<i>N</i> = 149	<i>N</i> = 145	<i>N</i> = 146	<i>N</i> = 145	<i>N</i> = 144	<i>N</i> = 156	<i>N</i> = 156	<i>N</i> = 156			
15. Personal experience with voice-hearing	-.04	.15	-.03	-.15	-.03	-.15	.09	-.01	.17*	-.10	-.06	-.06	-.04	.03	-	
	<i>N</i> = 158	<i>N</i> = 158	<i>N</i> = 150	<i>N</i> = 150	<i>N</i> = 150	<i>N</i> = 149	<i>N</i> = 145	<i>N</i> = 146	<i>N</i> = 145	<i>N</i> = 144	<i>N</i> = 156	<i>N</i> = 156	<i>N</i> = 156	<i>N</i> = 158		
16. Formal training on voice-hearing	-.09	.41***	.43***	.34***	.40***	.32***	.35***	.34***	.17*	-.17*	.28***	.35***	.40***	.30***	.11	-
	<i>N</i> = 156	<i>N</i> = 156	<i>N</i> = 150	<i>N</i> = 150	<i>N</i> = 150	<i>N</i> = 149	<i>N</i> = 145	<i>N</i> = 146	<i>N</i> = 145	<i>N</i> = 144	<i>N</i> = 155	<i>N</i> = 155	<i>N</i> = 155	<i>N</i> = 156	<i>N</i> = 156	
17. No formal training but considerable experience on voice-	-.02	-.14	.15	.09	.12	.08	.17*	.25**	-.07	-.06	.22**	.13	.08	.25**	-.06	-.38
	<i>N</i> = 156	<i>N</i> = 156	<i>N</i> = 150	<i>N</i> = 150	<i>N</i> = 150	149	<i>N</i> = 145	<i>N</i> = 146	<i>N</i> = 145	<i>N</i> = 144	<i>N</i> = 155	<i>N</i> = 155	<i>N</i> = 155	<i>N</i> = 156	<i>N</i> = 156	<i>N</i> = 156

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hearing

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*Note.* The m-AAPPQ sub-scale means and AQ-9 scale total variables used were the reduced versions after dropping items to improve their internal consistency. Associations between the dummy variables (14-17) and continuous variables were estimated with point-biserial correlations. Associations between the dummy variables were calculated using Phi coefficients. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . (2-tailed)

**Table 15.** Correlation Matrix for age, experience working in mental health services and study variables presenting Pearson's correlation coefficients for the Primary care clinician group who completed the young people version of the survey (N = 160).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Age																
2. Experience Working in MH	.02 <i>N</i> = 160															
3. TPB Attitudes	-.17* <i>N</i> = 143	0.05 <i>N</i> = 143														
4. TPB Subjective norms	-.26** <i>N</i> = 146	0.03 <i>N</i> = 146	.71*** <i>N</i> = 143													
5. TPB Perceived behavioural control	-.201* <i>N</i> = 143	0.043 <i>N</i> = 143	.794*** <i>N</i> = 143	.730*** <i>N</i> = 143												
6. TPB intention	-.23** <i>N</i> = 141	0.03 <i>N</i> = 141	.84*** <i>N</i> = 141	.72*** <i>N</i> = 141	.81*** <i>N</i> = 141											
7. m-APPQ Therapeutic Commitment	-.19* <i>N</i> = 138	0.14 <i>N</i> = 138	.69*** <i>N</i> = 138	.55*** <i>N</i> = 138	.69*** <i>N</i> = 138	.62*** <i>N</i> = 138										

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
8. m-AAPPQ Role Security	-0.14	0.15	.65***	.59***	.74***	.60***	.81***									
	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138									
9. m-AAPPQ Empathy	-.26**	0.11	.48***	.35***	.45***	.39***	.58***	.53***								
	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138								
10. AQ-9 Stigma	0.00	0.07	-.18*	-0.05	-0.12	-.20*	-.25**	-0.09	-0.15							
	<i>N</i> = 137	<i>N</i> = 137	<i>N</i> = 137	<i>N</i> = 137	<i>N</i> = 137	<i>N</i> = 137	<i>N</i> = 137	<i>N</i> = 137	<i>N</i> = 137							
11. Self- efficacy to ask patients if they hear voices.	-0.14	0.03	.59***	.47***	.64***	.64***	.43***	.51***	.37***	-0.04						
	<i>N</i> = 154	<i>N</i> = 154	<i>N</i> = 143	<i>N</i> = 146	<i>N</i> = 143	<i>N</i> = 141	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 137						
12. Self- efficacy to discuss voice- hearing experiences	-0.06	0.07	.64***	.54***	.69***	.65***	.54***	.62***	.41***	-.12	.80***					
	<i>N</i> = 154	<i>N</i> = 154	<i>N</i> = 143	<i>N</i> = 146	<i>N</i> = 143	<i>N</i> = 141	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 137	<i>N</i> = 154					
13. Self- efficacy to provide useful information	-0.02	.20*	.36***	.28***	.40***	.33***	.48***	.55***	.25**	.01	.31***	.34***				
	<i>N</i> = 154	<i>N</i> = 154	<i>N</i> = 143	<i>N</i> = 146	<i>N</i> = 143	<i>N</i> = 141	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 137	<i>N</i> = 154	<i>N</i> = 154				
14. Worked with 10 or more voice-hearers	-.09	.17*	.34***	.33***	.42***	.35***	.35***	.42***	.28**	-.09	.39***	.48***	.25**			
	<i>N</i> = 160	<i>N</i> = 160	<i>N</i> = 143	<i>N</i> = 146	<i>N</i> = 143	<i>N</i> = 141	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 137	<i>N</i> = 154	<i>N</i> = 154	<i>N</i> = 154			

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
15. Personal experience with voice-hearing	.08	.05	.07	.08	-.05	.03	.08	.002	.03	.01	.08	.09	.05	.03		
	<i>N</i> = 159	<i>N</i> = 159	<i>N</i> = 143	<i>N</i> = 146	<i>N</i> = 143	<i>N</i> = 141	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 137	<i>N</i> = 154	<i>N</i> = 154	<i>N</i> = 154	<i>N</i> = 159		
16. Formal training on voice-hearing	-.19*	.18*	.29**	.29***	.31***	.27**	.28**	.34***	.26**	.07	.30***	.31***	.29***	.38***	.13	
	<i>N</i> = 158	<i>N</i> = 158	<i>N</i> = 142	<i>N</i> = 145	<i>N</i> = 142	<i>N</i> = 140	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 137	<i>N</i> = 153	<i>N</i> = 153	<i>N</i> = 153	<i>N</i> = 158	<i>N</i> = 158	
17. No formal training but considerable experience on voice-hearing	.08	.04	.11	.07	.14	.08	.15	.30	.15	-.06	.14	.24**	.23**	.13	.06	-.30***
	<i>N</i> = 158	<i>N</i> = 158	<i>N</i> = 142	<i>N</i> = 145	<i>N</i> = 142	<i>N</i> = 140	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 138	<i>N</i> = 137	<i>N</i> = 153	<i>N</i> = 153	<i>N</i> = 153	<i>N</i> = 158	<i>N</i> = 158	<i>N</i> = 158

*Note.* The m-AAPPQ sub-scale means and AQ-9 scale total variables used were the reduced versions after dropping items to improve their internal consistency. Associations between the dummy variables (14-17) and continuous variables were estimated with point-biserial correlations. Associations between the dummy variables were calculated using Phi coefficients. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . (2-tailed)

**Table 16.** *Non-parametric test results on the between-group differences in voice-hearing practice self-efficacy, stigma, therapeutic commitment, role security and empathy for Adult mental health vs. EIP clinicians.*

Outcome variable	Adult MH clinicians				EIP clinicians				<i>U</i> ( <i>z</i> )	<i>r</i>	<i>p</i>
	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]			
Self-efficacy to ask a patient if they hear voices	906	91.00 (16.38)	100	[89.82, 92.12]	234	95.67 (9.69)	100	[94.30, 96.97]	121,983.50 (4.15)	.12	<.001
Self-efficacy to discuss voice-hearing with a patient	909	88.03 (17.55)	95	[86.86, 89.12]	234	93.63 (11.48)	100	[92.02, 95.16]	125,633 (4.55)	.13	<.001
Self-efficacy to provide useful information about voice-hearing to a patient	901	69.38 (29.74)	75	[67.55, 71.15]	234	81.57 (19.52)	87.50	[79.11, 84]	132,722 (6.15)	.18	<.001
AQ-9 Stigma	786	1.06 (.16)	1.04	[1.05, 1.07]	189	1.06 (.16)	1.04	[1.04, 1.09]	74,727 (.13)	.004	.897
m-AAPPQ Therapeutic Commitment	789	1.55 (.25)	1.55	[1.54, 1.57]	190	1.42 (.25)	1.44	[1.38, 1.46]	52,200.50 (6.51)	.21	<.001
m-AAPPQ Role Security	800	1.70 (.30)	1.70	[1.67, 1.72]	190	1.53 (.28)	1.50	[1.49, 1.57]	52,694.50 (6.58)	.21	<.001
m-AAPPQ Empathy	794	4.51 (1.25)	4.33	[4.43, 4.60]	189	4.91 (1.13)	5	[4.75, 5.07]	88,715.50 (3.91)	.12	<.001

*Note.* The transformed AQ-9 stigma scores, m-AAPPQ Therapeutic commitment and m-AAPPQ Role security variables have been used for the models. m-AAPPQ Therapeutic commitment and m-AAPPQ Role security are reversed-scored. m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9. *M* = Mean; *SD* = standard deviation; BCa 95% of Mean based on bootstrapping with *N* = 2000 samples; LL = lower limit; UL = upper limit; *U* = Mann–Whitney *U* test statistic; *z* = absolute value of Mann-Whitney standardised test statistic.

**Table 17.** *Non-parametric test results on the between-group differences in voice-hearing practice self-efficacy, stigma, therapeutic commitment, role security and empathy for Adult mental health vs. CAMHS clinicians.*

Outcome variable	Adult MH clinicians				CAMHS clinicians				<i>U</i> ( <i>z</i> )	<i>r</i>	<i>p</i>
	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]			
Self-efficacy to ask a patient if they hear voices	906	91.00 (16.38)	100	[89.82, 92.12]	204	89.77 (17.37)	100	[87.25, 91.99]	90,013 (.64)	.02	.520
Self-efficacy to discuss voice-hearing with a patient	909	88.03 (17.55)	95	[86.86, 89.12]	204	84.67 (20.94)	93	[81.75, 87.28]	85, 686 (1.78)	.05	.075
Self-efficacy to provide useful information about voice-hearing to a patient	901	69.38 (29.74)	75	[67.55, 71.15]	204	63.54 (26.61)	66.50	[59.88, 67.46]	79,294.50 (3.07)	.09	.002
AQ-9 Stigma	786	1.06 (.16)	1.04	[1.05, 1.07]	141	1.04 (.15)	1.04	[1.02, 1.07]	52,371.50 (1.04)	.03	.297
m-AAPPQ Therapeutic Commitment	789	1.55 (.25)	1.55	[1.54, 1.57]	144	1.62 (.25)	1.63	[1.58, 1.66]	67,474.50 (3.59)	.12	<.001
m-AAPPQ Role Security	800	1.70 (.30)	1.70	[1.67, 1.72]	144	1.76 (.31)	1.77	[1.71, 1.82]	65,383.50 (2.59)	.08	.010
m-AAPPQ Empathy	794	4.51 (1.25)	4.33	[4.43, 4.60]	144	4.44 (1.22)	4.33	[4.24, 4.62]	55,052.50 (.71)	.02	.478

*Note.* The transformed AQ-9 stigma scores, m-AAPPQ Therapeutic commitment and m-AAPPQ Role security variables have been used for the models. m-AAPPQ Therapeutic commitment and m-AAPPQ Role security are reversed-scored. m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9. *M* = Mean; *SD* = standard deviation; BCa 95% of Mean based on bootstrapping with *N* = 2000 samples; LL = lower limit; UL = upper limit; *U* = Mann–Whitney U test statistic; *z* = absolute value of Mann-Whitney standardised test statistic.



**Table 18.** *Non-parametric test results on the between-group differences in voice-hearing practice self-efficacy, stigma, therapeutic commitment, role security and empathy for Adult mental health vs. Primary care clinicians who compared the adult service user version of the survey.*

Outcome variable	Adult MH clinicians				Primary care clinicians (Adult service user survey version)				<i>U</i> ( <i>z</i> )	<i>r</i>	<i>p</i>
	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]			
Self-efficacy to ask a patient if they hear voices	906	91.00 (16.38)	100	[89.82, 92.12]	156	73.57 (30.15)	86	[68.55, 78.53]	43,093 (8.45)	.26	<.001
Self-efficacy to discuss voice-hearing with a patient	909	88.03 (17.55)	95	[86.86, 89.12]	156	64.87 (31.59)	76	[60, 69.70]	36,068.50 (10.18)	.31	<.001
Self-efficacy to provide useful information about voice-hearing to a patient	901	69.38 (29.74)	75	[67.55, 71.15]	156	32.69 (26.42)	26	[28.54, 36.80]	24,257 (13.11)	.40	<.001
AQ-9 Stigma	786	1.06 (.16)	1.04	[1.05, 1.07]	144	1.16 (.17)	1.15	[1.13, 1.19]	75,900 (6.54)	.21	<.001
m-AAPPQ Therapeutic Commitment	789	1.55 (.25)	1.55	[1.54, 1.57]	145	1.88 (.19)	1.88	[1.84, 1.91]	97,306.50 (13.44)	.44	<.001
m-AAPPQ Role Security	800	1.70 (.30)	1.70	[1.67, 1.72]	146	2.02 (.28)	2	[1.98, 2.06]	91,787 (11.01)	.36	<.001
m-AAPPQ Empathy	794	4.51 (1.25)	4.33	[4.43, 4.60]	145	3.86 (1.08)	4	[3.69, 4.03]	40,390 (5.74)	.19	<.001

*Note.* The transformed AQ-9 stigma scores, m-AAPPQ Therapeutic commitment and m-AAPPQ Role security variables have been used for the models. m-AAPPQ Therapeutic commitment and m-AAPPQ Role security are reversed-scored. m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9. *M* = Mean; *SD* = standard deviation; BCa 95% of Mean based on bootstrapping with *N* = 2000 samples; LL = lower limit; UL = upper limit; *U* = Mann–Whitney U test statistic; *z* = absolute value of Mann-Whitney standardised test statistic.

**Table 19.** *Non-parametric test results on the between-group differences in voice-hearing practice self-efficacy, stigma, therapeutic commitment, role security and empathy for Adult mental health vs. Primary care clinicians who compared the young service user version of the survey.*

Outcome variable	Adult MH clinicians				Primary care clinicians (Young service user survey version)				<i>U</i> ( <i>z</i> )	<i>r</i>	<i>p</i>
	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]			
Self-efficacy to ask a patient if they hear voices	906	91.00 (16.38)	100	[89.82, 92.12]	154	70.72 (29.86)	81	[65.50, 75.60]	37,981.50 (9.79)	.30	<.001
Self-efficacy to discuss voice-hearing with a patient	909	88.03 (17.55)	95	[86.86, 89.12]	154	62.86 (30.13)	70	[57.75, 67.60]	31,243.50 (11.40)	.35	<.001
Self-efficacy to provide useful information about voice-hearing to a patient	901	69.38 (29.74)	75	[67.55, 71.15]	154	35.71 (27.98)	30	[31.42, 39.97]	27,578.50 (12.00)	.37	<.001
AQ-9 Stigma	786	1.06 (.16)	1.04	[1.05, 1.07]	137	1.17 (.17)	1.18	[1.14, 1.20]	73,396 (6.81)	.22	<.001
m-AAPPQ Therapeutic Commitment	789	1.55 (.25)	1.55	[1.54, 1.57]	138	1.91 (.22)	1.91	[1.87, 1.95]	94,154.50 (13.69)	.45	<.001
m-AAPPQ Role Security	800	1.70 (.30)	1.70	[1.67, 1.72]	138	2.08 (.29)	2.09	[2.04, 2.13]	90,486 (12.01)	.39	<.001
m-AAPPQ Empathy	794	4.51 (1.25)	4.33	[4.43, 4.60]	138	4 (1.15)	4	[3.81, 4.20]	42,038 (4.38)	.14	<.001

*Note.* The transformed AQ-9 stigma scores, m-AAPPQ Therapeutic commitment and m-AAPPQ Role security variables have been used for the models. m-AAPPQ Therapeutic commitment and m-AAPPQ Role security are reversed-scored. m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9. *M* = Mean; *SD* = standard deviation; BCa 95% of Mean based on bootstrapping with *N* = 2000 samples; LL = lower limit; UL = upper limit; *U* = Mann–Whitney U test statistic; *z* = absolute value of Mann-Whitney standardised test statistic.

**Table 20.** *Non-parametric test results on the between-group differences in voice-hearing practice self-efficacy, stigma, therapeutic commitment, role security and empathy for EIP vs. CAMHS clinicians.*

Outcome variable	EIP clinicians				CAMHS clinicians				<i>U</i> ( <i>z</i> )	<i>r</i>	<i>p</i>
	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]			
Self-efficacy to ask a patient if they hear voices	234	95.67 (9.69)	100	[94.30, 96.97]	204	89.77 (17.37)	100	[87.25, 91.99]	19,623 (3.67)	.18	<.001
Self-efficacy to discuss voice-hearing with a patient	234	93.63 (11.48)	100	[92.02, 95.16]	204	84.67 (20.94)	93	[81.75, 87.28]	17,905.50 (4.85)	.23	<.001
Self-efficacy to provide useful information about voice-hearing to a patient	234	81.57 (19.52)	87.50	[79.11, 84]	204	63.54 (26.61)	66.50	[59.88, 67.46]	14,299.50 (7.29)	.35	<.001
AQ-9 Stigma	189	1.06 (.16)	1.04	[1.04, 1.09]	141	1.04 (.15)	1.04	[1.02, 1.07]	12,587.50 (.86)	.05	.388
m-AAPPQ Therapeutic Commitment	190	1.42 (.25)	1.44	[1.38, 1.46]	144	1.62 (.25)	1.63	[1.58, 1.66]	20,085.50 (7.33)	.40	<.001
m-AAPPQ Role Security	190	1.53 (.28)	1.50	[1.49, 1.57]	144	1.76 (.31)	1.77	[1.71, 1.82]	19,550.50 (6.72)	.37	<.001
m-AAPPQ Empathy	189	4.91 (1.13)	5	[4.75, 5.07]	144	4.44 (1.22)	4.33	[4.24, 4.62]	10,514 (3.57)	.20	<.001

*Note.* The transformed AQ-9 stigma scores, m-AAPPQ Therapeutic commitment and m-AAPPQ Role security variables have been used for the models. m-AAPPQ Therapeutic commitment and m-AAPPQ Role security are reversed-scored. m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9. *M* = Mean; *SD* = standard deviation; BCa 95% of Mean based on bootstrapping with *N* = 2000 samples; LL = lower limit; UL = upper limit; *U* = Mann–Whitney U test statistic; *z* = absolute value of Mann–Whitney standardised test statistic.

**Table 21.** *Non-parametric test results on the between-group differences in voice-hearing practice self-efficacy, stigma, therapeutic commitment, role security and empathy for EIP vs. Primary care clinicians who compared the adult service user version of the survey.*

Outcome variable	EIP clinicians				PC adult clinicians				<i>U</i> ( <i>z</i> )	<i>r</i>	<i>p</i>
	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]			
Self-efficacy to ask a patient if they hear voices	234	95.67 (9.69)	100	[94.30, 96.97]	156	73.57 (30.15)	86	[68.55, 78.53]	8,660.50 (9.52)	.48	<.001
Self-efficacy to discuss voice-hearing with a patient	234	93.63 (11.48)	100	[92.02, 95.16]	156	64.87 (31.59)	76	[60, 69.70]	6,576 (11.12)	.56	<.001
Self-efficacy to provide useful information about voice-hearing to a patient	234	81.57 (19.52)	87.50	[79.11, 84]	156	32.69 (26.42)	26	[28.54, 36.80]	3,140.50 (13.19)	.70	<.001
AQ-9 Stigma	189	1.06 (.16)	1.04	[1.04, 1.09]	144	1.16 (.17)	1.15	[1.13, 1.19]	18,048 (5.11)	.28	<.001
m-AAPPQ Therapeutic Commitment	190	1.42 (.25)	1.44	[1.38, 1.46]	145	1.88 (.19)	1.88	[1.84, 1.91]	25,586.50 (13.45)	.73	<.001
m-AAPPQ Role Security	190	1.53 (.28)	1.50	[1.49, 1.57]	146	2.02 (.28)	2	[1.98, 2.06]	24,748 (12.33)	.67	<.001
m-AAPPQ Empathy	189	4.91 (1.13)	5	[4.75, 5.07]	145	3.86 (1.08)	4	[3.69, 4.03]	7,043 (7.64)	.42	<.001

*Note.* The transformed AQ-9 stigma scores, m-AAPPQ Therapeutic commitment and m-AAPPQ Role security variables have been used for the models. m-AAPPQ Therapeutic commitment and m-AAPPQ Role security are reversed-scored. m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9. *M* = Mean; *SD* = standard deviation; BCa 95% of Mean based on bootstrapping with *N* = 2000 samples; LL = lower limit; UL = upper limit; *U* = Mann–Whitney U test statistic; *z* = absolute value of Mann–Whitney standardised test statistic.

**Table 22.** Non-parametric test results on the between-group differences in voice-hearing practice self-efficacy, stigma, therapeutic commitment, role security and empathy for EIP vs. Primary care clinicians who compared the young service user version of the survey.

Outcome variable	EIP clinicians				PC young people clinicians				<i>U</i> ( <i>z</i> )	<i>r</i>	<i>p</i>
	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]			
Self-efficacy to ask a patient if they hear voices	234	95.67 (9.69)	100	[94.30, 96.97]	154	70.72 (29.86)	81	[65.50, 75.60]	7,495 (10.49)	.53	<.001
Self-efficacy to discuss voice-hearing with a patient	234	93.63 (11.48)	100	[92.02, 95.16]	154	62.86 (30.13)	70	[57.75, 67.60]	5,489.50 (12.01)	.61	<.001
Self-efficacy to provide useful information about voice-hearing to a patient	234	81.57 (19.52)	87.50	[79.11, 84]	154	35.71 (27.98)	30	[31.42, 39.97]	3,878 (13.14)	.67	<.001
AQ-9 Stigma	189	1.06 (.16)	1.04	[1.04, 1.09]	137	1.17 (.17)	1.18	[1.14, 1.20]	17,430.50 (5.35)	.30	<.001
m-AAPPQ Therapeutic Commitment	190	1.42 (.25)	1.44	[1.38, 1.46]	138	1.91 (.22)	1.91	[1.87, 1.95]	24,358 (13.27)	.73	<.001
m-AAPPQ Role Security	190	1.53 (.28)	1.50	[1.49, 1.57]	138	2.08 (.29)	2.09	[2.04, 2.13]	23,287 (12.65)	.70	<.001
m-AAPPQ Empathy	189	4.91 (1.13)	5	[4.75, 5.07]	138	4 (1.15)	4	[3.81, 4.20]	7,588.50 (6.48)	.36	<.001

*Note.* The transformed AQ-9 stigma scores, m-AAPPQ Therapeutic commitment and m-AAPPQ Role security variables have been used for the models. m-AAPPQ Therapeutic commitment and m-AAPPQ Role security are reversed-scored. m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9. *M* = Mean; *SD* = standard deviation; BCa 95% of Mean based on bootstrapping with *N* = 2000 samples; LL = lower limit; UL = upper limit; *U* = Mann–Whitney U test statistic; *z* = absolute value of Mann-Whitney standardised test statistic.

**Table 23.** Non-parametric test results on the between-group differences in voice-hearing practice self-efficacy, stigma, therapeutic commitment, role security and empathy for CAMHS vs. Primary care clinicians who compared the adult service user version of the survey.

Outcome variable	CAMHS clinicians				PC adult clinicians				<i>U</i> ( <i>z</i> )	<i>r</i>	<i>p</i>
	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]			
Self-efficacy to ask a patient if they hear voices	204	89.77 (17.37)	100	[87.25, 91.99]	156	73.57 (30.15)	86	[68.55, 78.53]	10,224 (6.09)	.32	<.001
Self-efficacy to discuss voice-hearing with a patient	204	84.67 (20.94)	93	[81.75, 87.28]	156	64.87 (31.59)	76	[60, 69.70]	9,324 (6.83)	.36	<.001
Self-efficacy to provide useful information about voice-hearing to a patient	204	63.54 (26.61)	66.50	[59.88, 67.46]	156	32.69 (26.42)	26	[28.54, 36.80]	6,652.50 (9.47)	.50	<.001
AQ-9 Stigma	141	1.04 (.15)	1.04	[1.02, 1.07]	144	1.16 (.17)	1.15	[1.13, 1.19]	14,245.50 (5.90)	.35	<.001
m-AAPPQ Therapeutic Commitment	144	1.62 (.25)	1.63	[1.58, 1.66]	145	1.88 (.19)	1.88	[1.84, 1.91]	16,705.50 (8.82)	.52	<.001
m-AAPPQ Role Security	144	1.76 (.31)	1.77	[1.71, 1.82]	146	2.02 (.28)	2	[1.98, 2.06]	15,395.50 (6.84)	.40	<.001
m-AAPPQ Empathy	144	4.44 (1.22)	4.33	[4.24, 4.62]	145	3.86 (1.08)	4	[3.69, 4.03]	7,627.50 (3.98)	.23	<.001

*Note.* The transformed AQ-9 stigma scores, m-AAPPQ Therapeutic commitment and m-AAPPQ Role security variables have been used for the models. m-AAPPQ Therapeutic commitment and m-AAPPQ Role security are reversed-scored. m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9. *M* = Mean; *SD* = standard deviation; BCa 95% of Mean based on bootstrapping with *N* = 2000 samples; LL = lower limit; UL = upper limit; *U* = Mann–Whitney U test statistic; *z* = absolute value of Mann-Whitney standardised test statistic.

**Table 24.** *Non-parametric test results on the between-group differences in voice-hearing practice self-efficacy, stigma, therapeutic commitment, role security and empathy for CAMHS vs. Primary care clinicians who compared the young service user version of the survey.*

Outcome variable	CAMHS clinicians				PC young people clinicians				<i>U</i> ( <i>z</i> )	<i>r</i>	<i>p</i>
	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]			
Self-efficacy to ask a patient if they hear voices	204	89.77 (17.37)	100	[87.25, 91.99]	154	70.72 (29.86)	81	[65.50, 75.60]	9,073.50 (7.14)	.38	<.001
Self-efficacy to discuss voice-hearing with a patient	204	84.67 (20.94)	93	[81.75, 87.28]	154	62.86 (30.13)	70	[57.75, 67.60]	8,206 (7.83)	.41	<.001
Self-efficacy to provide useful information about voice-hearing to a patient	204	63.54 (26.61)	66.50	[59.88, 67.46]	154	35.71 (27.98)	30	[31.42, 39.97]	7,539 (8.43)	.45	<.001
AQ-9 Stigma	141	1.04 (.15)	1.04	[1.02, 1.07]	137	1.17 (.17)	1.18	[1.14, 1.20]	13,732.50 (6.09)	.37	<.001
m-AAPPQ Therapeutic Commitment	144	1.62 (.25)	1.63	[1.58, 1.66]	138	1.91 (.22)	1.91	[1.87, 1.95]	16,393 (9.44)	.56	<.001
m-AAPPQ Role Security	144	1.76 (.31)	1.77	[1.71, 1.82]	138	2.08 (.29)	2.09	[2.04, 2.13]	15,424 (8.02)	.48	<.001
m-AAPPQ Empathy	144	4.44 (1.22)	4.33	[4.24, 4.62]	138	4 (1.15)	4	[3.81, 4.20]	7,928.50 (2.94)	.18	.003

*Note.* The transformed AQ-9 stigma scores, m-AAPPQ Therapeutic commitment and m-AAPPQ Role security variables have been used for the models. m-AAPPQ Therapeutic commitment and m-AAPPQ Role security are reversed-scored. m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9. *M* = Mean; *SD* = standard deviation; BCa 95% of Mean based on bootstrapping with *N* = 2000 samples; LL = lower limit; UL = upper limit; *U* = Mann–Whitney *U* test statistic; *z* = absolute value of Mann-Whitney standardised test statistic.

**Table 25.** *Non-parametric test results on the between-group differences in voice-hearing practice self-efficacy, stigma, therapeutic commitment, role security and empathy for the two primary care clinician groups.*

Outcome variable	PC adult clinicians				PC young people clinicians				<i>U</i> ( <i>z</i> )	<i>r</i>	<i>p</i>
	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]	<i>N</i>	<i>M</i> ( <i>SD</i> )	Median	BCa 95% CIs of Mean [LL, UL]			
Self-efficacy to ask a patient if they hear voices	156	73.57 (30.15)	86	[68.55, 78.53]	154	70.72 (29.86)	81	[65.50, 75.60]	11,162.50 (1.09)	.06	.277
Self-efficacy to discuss voice-hearing with a patient	156	64.87 (31.59)	76	[60, 69.70]	154	62.86 (30.13)	70	[57.75, 67.60]	11,241.50 (.98)	.06	.328
Self-efficacy to provide useful information about voice-hearing to a patient	156	32.69 (26.42)	26	[28.54, 36.80]	154	35.71 (27.98)	30	[31.42, 39.97]	12,720 (.90)	.05	.369
AQ-9 Stigma	144	1.16 (.17)	1.15	[1.13, 1.19]	137	1.17 (.17)	1.18	[1.14, 1.20]	10,140.50 (.41)	.02	.684
m-AAPPQ Therapeutic Commitment	145	1.88 (.19)	1.88	[1.84, 1.91]	138	1.91 (.22)	1.91	[1.87, 1.95]	11,183 (1.71)	.10	.087
m-AAPPQ Role Security	146	2.02 (.28)	2	[1.98, 2.06]	138	2.08 (.29)	2.09	[2.04, 2.13]	11,521.50 (2.09)	.12	.036
m-AAPPQ Empathy	145	3.86 (1.08)	4	[3.69, 4.03]	138	4 (1.15)	4	[3.81, 4.20]	10,663.50 (.96)	.06	.337

*Note.* The transformed AQ-9 stigma scores, m-AAPPQ Therapeutic commitment and m-AAPPQ Role security variables have been used for the models. m-AAPPQ Therapeutic commitment and m-AAPPQ Role security are reversed-scored. m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9. *M* = Mean; *SD* = standard deviation; BCa 95% of Mean based on bootstrapping with *N* = 2000 samples; LL = lower limit; UL = upper limit; *U* = Mann–Whitney U test statistic; *z* = absolute value of Mann–Whitney standardised test statistic.



**Table 26.** Robust linear model coefficients for predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience in Adult Mental health clinicians ( $N = 966$  ).

Variable	<i>b</i>	<i>Robust b</i>	<i>SE B</i>	<i>Robust SE B</i>	<i>t</i>	<i>t robust</i>
Constant	0.38	0.89	0.29	0.22	1.32	4.04
TPB Attitudes	0.38	0.39	0.06	0.05	6.28	8.24
TPB Subjective Norms	0.26	0.22	0.04	0.03	6.65	7.31
TPB Perceived behavioural control	0.38	0.32	0.05	0.04	7.17	7.68
m-AAPPQ – Therapeutic Commitment	0.16	0.15	0.07	0.05	2.47	2.86
m-AAPPQ – Role Security	-0.10	-0.05	0.06	0.04	-1.74	-1.16
m-AAPPQ- Empathy	-0.09	-0.07	0.03	0.02	-3.34	-3.19
AQ-9 Stigma	0.01	0.00	0.01	0.00	1.08	-0.02
<b>Worked with 10 or more voice-hearers</b>	-0.07	0.06	0.09	0.06	-0.84	1.09
<b>Personal experience with voice-hearing</b>	-0.04	-0.06	0.07	0.07	-0.54	-0.89
<b>Formal training on voice-hearing<sup>a</sup></b>	-0.04	-0.11	0.14	0.11	-0.28	-1.03
<b>No formal training but considerable experience on voice-hearing<sup>a</sup></b>	-0.01	-0.12	0.14	0.11	-0.10	-1.17

*Note.* <sup>a</sup> The reference category for training on helping voice-hearers the group without formal training nor considerable experience. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

**Table 27.** Robust linear model coefficients for predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience in CAMHS clinicians ( $N = 214$ ).

Variable	<i>b</i>	<i>Robust b</i>	<i>SE B</i>	<i>Robust SE B</i>	<i>t</i>	<i>t robust</i>
Constant	2.10	2.50	0.55	0.52	3.79	4.85
TPB Attitudes	0.29	0.11	0.12	0.12	2.35	0.88
TPB Subjective Norms	0.31	0.29	0.08	0.07	3.92	4.16
TPB Perceived behavioural control	0.22	0.32	0.10	0.10	2.20	3.22
m-AAPPQ – Therapeutic Commitment	-0.45	-0.38	0.13	0.12	-3.39	-3.10
m-AAPPQ – Role Security	0.26	0.27	0.12	0.11	2.25	2.50
m-AAPPQ- Empathy	0.13	0.07	0.06	0.06	2.20	1.26
AQ-9 Stigma	0.01	0.01	0.01	0.01	0.80	0.56
Worked with 10 or more voice-hearers	0.07	-0.02	0.18	0.12	0.40	-0.17
Personal experience with voice-hearing	-0.01	0.17	0.13	0.17	-0.11	1.00
Formal training on voice- hearing <sup>a</sup>	-0.03	0.02	0.22	0.21	-0.12	0.10
No formal training but considerable experience on voice-hearing <sup>a</sup>	-0.02	-0.01	0.21	0.20	-0.11	-0.07

*Note.* <sup>a</sup> The reference category for training on helping voice-hearers the group without formal training nor considerable experience. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

**Table 28.** Robust linear model coefficients for predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience in EIP clinicians ( $N = 253$ ).

Variable	<i>b</i>	Robust <i>b</i>	<i>SE B</i>	Robust <i>SE B</i>	<i>t</i>	<i>t</i> robust
Constant	2.09	2.92	0.52	0.44	4.06	6.57
TPB Attitudes	0.61	0.43	0.10	0.08	6.46	5.24
TPB Subjective Norms	0.14	0.13	0.06	0.06	2.22	2.32
TPB Perceived behavioural control	0.20	0.11	0.09	0.08	2.22	1.38
m-AAPPQ – Therapeutic Commitment	-0.10	-0.04	0.12	0.10	- 0.81	-0.41
m-AAPPQ – Role Security	0.04	0.12	0.10	0.09	0.41	1.40
m-AAPPQ- Empathy	-0.04	-0.03	0.05	0.04	- 0.87	-0.84
AQ-9 Stigma	0.01	0.00	0.01	0.01	0.58	-0.13
Worked with 10 or more voice-hearers	-0.29	0.28	0.13	0.08	- 2.17	3.41
Personal experience with voice-hearing	0.19	-0.03	0.10	0.13	1.93	-0.25
Formal training on voice-hearing <sup>a</sup>	-0.61	-0.62	0.29	0.29	- 2.06	-2.17
No formal training but considerable experience on voice-hearing <sup>a</sup>	-0.66	-0.71	0.29	0.29	- 2.25	-2.48

*Note.* <sup>a</sup> The reference category for training on helping voice-hearers the group without formal training nor considerable experience. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

**Table 29.** Robust linear model coefficients for predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience in Primary Care clinicians who completed the adult version of the survey ( $N = 158$ ).

Variable	<i>b</i>	<i>Robust b</i>	<i>SE B</i>	<i>Robust SE B</i>	<i>t</i>	<i>t robust</i>
Constant	-0.18	0.34	0.63	0.54	-0.29	0.64
TPB Attitudes	0.48	0.60	0.13	0.11	3.71	5.44
TPB Subjective Norms	0.22	0.30	0.09	0.08	2.56	3.81
TPB Perceived behavioural control	0.42	0.21	0.12	0.11	3.45	1.98
m-AAPPQ – Therapeutic Commitment	0.24	0.10	0.15	0.13	1.62	0.82
m-AAPPQ – Role Security	-0.22	-0.06	0.11	0.10	-1.91	-0.68
m-AAPPQ- Empathy	-0.03	-0.07	0.08	0.07	-0.41	-1.08
AQ-9 Stigma	0.01	0.00	0.01	0.01	0.50	0.06
Worked with 10 or more voice-hearers	0.16	-0.37	0.17	0.17	0.94	-2.14
Personal experience with voice-hearing	-0.39	0.09	0.20	0.14	-1.99	0.61
Formal training on voice-hearing <sup>a</sup>	-0.10	-0.31	0.22	0.19	-0.48	-1.69
No formal training but considerable experience on voice-hearing <sup>a</sup>	0.06	-0.23	0.19	0.17	0.30	-1.36

*Note.* <sup>a</sup> The reference category for training on helping voice-hearers the group without formal training nor considerable experience. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

**Table 30.** Robust linear model coefficients for predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience in Primary Care clinicians who completed the young people version of the survey ( $N = 160$ )

Variable	<i>b</i>	Robust <i>b</i>	<i>SE B</i>	Robust <i>SE B</i>	<i>t</i>	<i>t robust</i>
Constant	-0.65	-0.33	0.55	0.51	-1.19	-0.65
TPB Attitudes	0.69	0.64	0.12	0.11	5.86	5.74
TPB Subjective Norms	0.20	0.26	0.09	0.08	2.26	3.20
TPB Perceived behavioural control	0.53	0.56	0.13	0.12	4.24	4.66
m-AAPPQ – Therapeutic Commitment	0.03	0.07	0.18	0.17	0.19	0.43
m-AAPPQ – Role Security	-0.09	-0.22	0.13	0.12	-0.73	-1.77
m-AAPPQ- Empathy	-0.05	-0.08	0.08	0.07	-0.69	-1.07
AQ-9 Stigma	-0.02	-0.03	0.01	0.01	-1.46	-2.49
Worked with 10 or more voice-hearers	0.04	-0.10	0.17	0.17	0.24	-0.59
Personal experience with voice-hearing	-0.01	0.13	0.18	0.16	-0.03	0.80
Formal training on voice-hearing <sup>a</sup>	0.01	0.06	0.22	0.21	0.04	0.30
No formal training but considerable experience on voice-hearing <sup>a</sup>	-0.06	0.07	0.20	0.19	-0.30	0.34

*Note.* <sup>a</sup> The reference category for training on helping voice-hearers the group without formal training nor considerable experience. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

**Table 31.** Robust linear model coefficients for predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience in the whole sample ( $N = 1751$ ).

Variable	<i>b</i>	Robust <i>b</i>	<i>SE B</i>	Robust <i>SE B</i>	<i>t</i>	<i>t robust</i>
Constant	0.28	0.96	0.21	0.17	1.36	5.68
EIP <sup>a</sup>	0.20	0.14	0.07	0.06	2.93	2.48
CAMHS <sup>a</sup>	0.31	0.22	0.07	0.06	4.40	3.49
Primary care <sup>a</sup>	0.13	0.10	0.07	0.06	1.76	1.81
TPB Attitudes	0.46	0.43	0.04	0.04	10.88	12.29
TPB Subjective Norms	0.26	0.23	0.03	0.02	9.35	10.09
TPB Perceived behavioural control	0.35	0.30	0.04	0.03	9.06	9.30
m-AAPPQ – Therapeutic Commitment	0.07	0.03	0.05	0.04	1.42	0.82
m-AAPPQ – Role Security	-0.08	-0.02	0.04	0.03	-2.01	-0.48
m-AAPPQ- Empathy	-0.06	-0.05	0.02	0.02	-2.65	-2.88
AQ-9 Stigma	0.00	0.00	0.00	0.00	0.77	-0.44
Worked with 10 or more voice-hearers	0.00	0.05	0.06	0.04	-0.08	1.16
Personal experience with voice-hearing	-0.04	0.02	0.05	0.05	-0.74	0.39
Formal training on voice-hearing <sup>b</sup>	0.01	-0.12	0.09	0.07	0.08	-1.68
No formal training but considerable experience on voice-hearing <sup>b</sup>	0.04	-0.12	0.08	0.07	0.48	-1.83

*Note.* <sup>a</sup>The reference category for these dummy variables that represent the type of clinicians service was Adult Mental Health services; <sup>b</sup>The reference category for training on helping voice-hearers the group without formal training nor considerable experience. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

**Table 32.** Linear model of predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience in Adult Mental health clinicians without potential outliers (N = 977).

Variable	<i>b</i>	<i>SE B</i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	<i>R</i> <sup>2</sup>	Adjusted <i>d</i> <sup>a</sup> <i>R</i> <sup>2</sup>	$\Delta R$ <sub>2</sub>	<i>F</i> ( <i>df</i> )	<i>t</i>
Step 3 Model						.58	.58	.001	95.74 (11, 750), p<.001	
Constant	0.57	0.26	-	.02	(0.10, 1.12)					2.35
TPB Attitudes	0.37	0.05	.30	<.001	(0.25, 0.47)					6.52
TPB Subjective Norms	0.24	0.03	.22	<.001	(0.18, 0.31)					7.05
TPB Perceived behavioural control	0.41	0.05	.37	<.001	(0.31, 0.50)					8.19
m-AAPPQ – Therapeutic Commitment	0.13	0.06	.08	.05	(0.002, 0.24)					2.00
m-AAPPQ – Role Security	-0.07	0.05	-.06	.27	(-0.15, 0.04)					-1.11
m-AAPPQ- Empathy	-0.10	0.03	-.11	<.001	(-0.14, - 0.04)					-3.72
AQ-9 Stigma	0.00	0.01	.02	.52	(-0.01, 0.02)					0.64
Worked with 10 or more voice-hearers	-0.08	0.08	-.03	.41	(-0.23, 0.09)					-0.82
Personal experience with voice-hearing	0.02	0.06	.01	.94	(-0.12, 0.13)					0.08
Formal training on voice- hearing <sup>a</sup>	-0.04	0.13	-.02	.46	(-0.35, 0.16)					-0.73
No formal training but considerable experience on voice-hearing <sup>a</sup>	-0.04	0.13	-.02	.50	(-0.33,0.16)					-0.68

*Note.* <sup>a</sup> The reference category for training on helping voice-hearers the group without formal training nor considerable experience. TPB= Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

**Tale 33.** Linear model of predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience in CAMHS clinicians ( $N = 213$ ).

Variable	<i>b</i>	<i>SE B</i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	$R^2$	Adjusted <sup>a</sup> $R^2$	$\Delta R^2$	<i>F(df)</i>	<i>t</i>
Step 3 Model						0.63	0.6	0.001	19.84(11, 127), p<.001	
Constant	2.20	0.54		<.001	(1.09, 3.49)					4.12
TPB Attitudes	0.26	0.12	.22	.15	(-0.07, 0.48)					2.21
TPB Subjective Norms	0.27	0.08	.27	<.001	(0.14, 0.46)					3.58
TPB Perceived behavioural control	0.28	0.10	.30	.03	(0.02, 0.49)					2.87
m-AAPPQ – Therapeutic Commitment	-. 0.50	0.13	-.37	<.001	(-0.77, -0.22)					-3.92
m-AAPPQ – Role Security	0.31	0.11	.32	<.001	(0.12, 0.57)					2.79
m-AAPPQ- Empathy	0.11	0.06	.12	.06	(0.002, 0.22)					1.86
AQ-9 Stigma	0.01	0.01	.06	.41	(-0.02, 0.05)					1.02
<b>Worked with 10 or more voice- hearers</b>	0.09	0.17	.04	.40	(-0.21, 0.61)					0.51
<b>Personal experience with voice-hearing</b>	-. 0.05	0.13	-.02	.97	(-0.25, 0.22)					-0.35
<b>Formal training on voice- hearing<sup>a</sup></b>	0.00	0.21	.00	.80	(-0.51, 0.36)					-0.02
<b>No formal training but considerable experience on voice-hearing<sup>a</sup></b>	0.02	0.20	.01	.84	(-0.48, 0.35)					0.08

Note. <sup>a</sup> The reference category for training on helping voice-hearers the group without formal training nor considerable experience. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.



**Table 34.** Linear model of predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience in EIP clinicians (N = 247).

Variable	<i>b</i>	<i>SE B</i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	<i>R</i> <sup>2</sup>	Adjusted <sup>a</sup> <i>R</i> <sup>2</sup>	$\Delta R^2$	<i>F(df)</i>	<i>t</i>
Step 3 Model						0.58	0.55	0.04	21.29 (11,170)	
Constant	1.84	0.62		.001	(0.76, 3.14)					2.98
TPB Attitudes	0.57	0.09	.54	.001	(0.31, 0.76)					6.47
TPB Subjective Norms	0.10	0.06	.10	.10	(-0.03, 0.25)					1.62
TPB Perceived behavioural control	0.25	0.09	.24	.05	(0, 0.36)					2.95
m-AAPPQ – Therapeutic Commitment	- 0.17	0.12	-.14	.32	(-0.33, 0.13)					-1.45
m-AAPPQ – Role Security	0.12	0.09	.12	.29	(-0.10, 0.28)					1.28
m-AAPPQ- Empathy	- 0.05	0.04	-.06	.26	(-0.14, 0.04)					-1.02
AQ-9 Stigma	0.01	0.01	.05	.55	(-0.02, 0.03)					0.95
<b>Worked with 10 or more voice- hearers</b>	- 0.33	0.13	-.14	.13	(-0.57, 0.11)					-2.63
<b>Personal experience with voice- hearing</b>	0.25	0.09	.14	.01	(0.06, 0.40)					2.79
<b>Formal training on voice- hearing<sup>a</sup></b>	- 0.12	0.39	-.06	Not com	Not com					-0.30
<b>No formal training but considerable experience on voice- hearing<sup>a</sup></b>	- 0.19	0.39	-.10	.63	(-0.26, 0.1)					-0.48

*Note.* <sup>a</sup> The reference category for training on helping voice-hearers the group without formal training nor considerable experience. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

**Table 35.** Linear model of predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience in Primary care clinicians who completed the adult version of the survey without potential outliers ( $N = 156$ ).

Variable	<i>b</i>	<i>SE B</i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	$R^2$	Adjusted <sup>a</sup> $R^2$	$\Delta R^2$	<i>F(df)</i>	<i>t</i>
Step 3 Model						0.71	0.69	0.02	29.48 (11,130)	
Constant	- 0.05	0.61		.75	(-1.55, 1.17)					-0.079
TPB Attitudes	0.51	0.13	.41	.002	(0.19, 0.77)					4.038
TPB Subjective Norms	0.24	0.09	.23	.008	(0.09, 0.58)					2.589
TPB Perceived behavioural control	0.37	0.12	.32	.05	(0.01, 0.56)					2.972
m-AAPPQ – Therapeutic Commitment	0.24	0.14	.12	.15	(-0.08, 0.56)					1.641
m-AAPPQ – Role Security	- 0.24	0.11	-.18	.10	(-0.52, - 0.01)					-2.077
m-AAPPQ- Empathy	- 0.02	0.07	-.01	.85	(-0.19, 0.19)					-0.214
AQ-9 Stigma	0.00	0.01	.02	.75	(-0.02, 0.02)					0.300
<b>Worked with 10 or more voice- hearers</b>	0.14	0.16	.05	.22	(-0.11, 0.47)					0.870
<b>Personal experience with voice-hearing</b>	- 0.42	0.19	-.11	.11	(-0.65, 0.06)					-2.172
<b>Formal training on voice-hearing<sup>a</sup></b>	- 0.11	0.21	-.03	.47	(-0.50, 0.22)					-0.502
<b>No formal training but considerable experience on voice-hearing<sup>a</sup></b>	0.05	0.19	.02	.82	(-0.32, 0.48)					0.271

Note. <sup>a</sup> The reference category for training on helping voice-hearers the group without formal training nor considerable experience. TPB= Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

**Table 36.** Linear model of predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience in Primary care clinicians who completed the young people version of the survey (*N* = 159)

Variable	<i>b</i>	<i>SE</i> <i>B</i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	<i>R</i> <sup>2</sup>	Adjusted <sup>a</sup> <i>R</i> <sup>2</sup>	$\Delta R^2$	<i>F</i> ( <i>df</i> )	<i>t</i>
Step 3 Model						0.79	0.77	0.001	42.74 (11,124)	
Constant	- 0.32	0.53		.55	(-1.38, 0.74)					- 0.60
TPB	0.68	0.11	.46	<.001	(0.44, 0.88)					5.95
Attitudes TPB	0.22	0.08	.17	.01	(0.06,0.39)					2.65
Subjective Norms										
TPB	0.59	0.12	.41	<.001	(0.36, 0.85)					4.81
Perceived behavioural control										
m-AAPPQ – Therapeutic Commitment	- 0.05	0.17	-.03	.81	(-0.38, 0.30)					- 0.30
m-AAPPQ – Role	- 0.11	0.12	-.08	.41	(-0.35, 0.14)					- 0.85
Security										
m-AAPPQ- Empathy	- 0.08	0.08	-.06	.27	(-0.24, 0.07)					- 1.13
AQ-9 Stigma	- 0.03	0.01	-.10	.04	(-0.05, .- 0.001)					- 2.15
<b>Worked with 10 or more voice- hearers</b>	0.06	0.16	.02	.60	(-0.24, 0.41)					0.36
<b>Personal experience with voice- hearing</b>	- 0.09	0.17	-.02	.69	(-0.41, 0.27)					- 0.52
<b>Formal training on voice- hearing<sup>a</sup></b>	0.09	0.21	.02	.94	(-0.41, 0.44)					0.44
<b>No formal training but considerable experience on voice- hearing<sup>a</sup></b>	0.01	0.20	.003	.91	(-0.41, 0.37)					0.05

*Note.* <sup>a</sup> The reference category for training on helping voice-hearers the group without formal training nor considerable experience. TPB= Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

**Table 37.** Linear model of predictors of TPB intention to assess distressing voice-hearing after disclosure of the experience for all participants ( $N = 1724$ ).

Variable	<i>b</i>	<i>SE B</i>	$\beta$	<i>p</i>	95%CI for <i>b</i>	$R^2$	Adjusted <sup>a</sup> $R^2$	$\Delta R^2$	<i>F(df)</i>	<i>t</i>
Step 4						0.65	0.64	0.0002	176.74 (14, 1349)	
Constant	0.30	0.19		.11	(-0.05, 0.75)					1.57
EIP <sup>a</sup>	0.14	0.06	.04	.01	(0.04, 0.26)					2.30
CAMHS <sup>a</sup>	0.27	0.06	.07	.001	(0.16, 0.42)					4.23
Primary care <sup>a</sup>	0.12	0.07	.04	.04	(0.01, 0.24)					1.76
TPB Attitudes	0.48	0.04	.39	<.001	(0.38, 0.57)					12.33
TPB Subjective Norms	0.25	0.03	.23	<.001	(0.20, 0.32)					9.66
TPB Perceived behavioural control	0.34	0.04	.31	<.001	(0.23, 0.41)					9.73
m-AAPPQ – Therapeutic Commitment	0.06	0.05	.04	.27	(-0.04, 0.14)					1.21
m-AAPPQ – Role Security	-0.06	0.04	-.05	.36	(-0.12, 0.04)					-1.51
m-AAPPQ- Empathy	-0.05	0.02	-.05	.007	(-0.09, -0.01)					-2.73
AQ-9 Stigma	0.00	0.00	.01	.78	(-0.01, 0.01)					0.54
<b>Worked with 10 or more voice- hearers</b>	-0.04	0.06	-.02	.72	(-0.13, 0.09)					-0.78
<b>Personal experience with voice-hearing</b>	-0.01	0.05	.00	.90	(-0.10, 0.09)					-0.26
<b>Formal training on voice- hearing<sup>b</sup></b>	-0.01	0.08	.00	.37	(-0.21, 0.08)					-0.13
<b>No formal training but considerable experience on voice-hearing<sup>b</sup></b>	0.00	0.08	.00	.59	(-0.19, 0.11)					0.02

*Note.* <sup>a</sup> The reference category for these dummy variables that represent the type of clinicians service was Adult Mental Health services; <sup>b</sup> The reference category for training on helping voice-hearers was the group without formal training nor considerable experience. TPB = Theory of Planned Behaviour; m-AAPPQ = modified Alcohol and Alcohol Problems Perception Questionnaire; AQ-9 = Attribution Questionnaire-9.

**Table 38.** Between-group differences in weighted belief items comparing the no/low ( $N = 32$ ) vs. the medium/high intention ( $N = 116$ ) to assess voice-hearing groups in CAMHS clinicians.

Weighted belief item	No/Low intention group			Medium/high intention group			<i>t</i> (df)	<i>d</i>	p	BCa 95% of Mean Dif [LL, UL]
	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>				
Behavioural beliefs										
Assessing voice-hearing...										
would help with constructing a detailed formulation of what is happening for the young person.	31	18.19	2.56	116	19.66	1.87	-2.97 (38.95)	0.66	0.004	[-2.44, -.60]
would put engagement with the young person at risk.	32	-3.53	5.63	116	-3.91	4.05	.35 (40.29)	-0.08	0.73	[-1.62, 2.74]
would help identify the right support or treatment if needed.	32	17.81	2.84	116	19.11	2.19	-2.40 (41.62)	0.51	0.015	[-2.40, -.26]
would help promote good engagement between me and the young person	32	16.78	3.13	116	18.36	2.17	-2.69 (39.61)	0.59	0.018	[-2.79, -.43]
would lead to over-focusing on voices and incomplete exploration of other critical areas of a young person’s presentation.	32	-5.81	3.94	116	-5.91	4.05	.12 (50.60)	-0.03	0.923	[-1.62, 1.55]
would aid diagnosing.	32	0.84	4.87	116	2.36	7.38	-1.38 (74.57)	0.24	0.169	[-3.67, .66]
would be reassuring and validating for the young person	32	16.69	2.95	116	18.26	2.52	-2.75 (44.30)	0.57	0.011	[-2.77, -.46]
would make the young person feel distressed (e.g., anxious, fearful).	32	-6.78	4.5	116	-4.84	4.83	-2.12 (52.42)	0.42	0.045	[-3.70, -.11]

Weighted belief item	No/Low intention group			Medium/high intention group			<i>t</i> (df)	<i>d</i>	p	BCa 95% of Mean Dif [LL, UL]
	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>				
would help with assessing the risk to self/others that is related to voices.	32	11.75	1.41	116	12.59	1.29	-3.02 (46.27)	0.62	0.008	[-1.40, -.26]
would lead to mistakenly labelling the young person with a mental health disorder such as psychosis	32	-8.78	4.35	116	-6.07	3.68	-3.23 (44.01)	0.67	0.003	[-4.34, -1.08]
would help evaluate the impact of voices on the young person's functioning	32	17.44	2.58	116	18.91	2.66	-2.83 (50.73)	0.56	0.005	[-2.51, -.43]
would help evaluate the impact of voices on the young person's emotions (e.g., distress).	32	18	2.29	116	19.27	2.02	-2.84 (45.27)	0.59	0.013	[-2.14, -.41]
<b>Normative beliefs</b>										
the young person thinks I should assess their voice-hearing experiences	32	0.38	5.92	116	5.85	6.49	-4.54 (53.37)	0.88	<b>0.001</b>	[-7.96, -3.20]
specialist mental health practitioners (e.g., psychologists, psychiatrists) think I should assess the young person's voice-hearing experiences	32	-2.91	9	116	9.26	6.7	-7.12 (40.93)	1.53	<b>0.001</b>	[-15.62, 8.82]
individuals in the young person's social system (e.g., family, friends) think I should assess the young person's voice-hearing experiences.	32	3.66	5.4	116	8.94	5.88	-4.80 (53.00)	0.94	<b>0.001</b>	[-7.50, -3.13]

Weighted belief item	No/Low intention group			Medium/high intention group			<i>t</i> (df)	<i>d</i>	<i>p</i>	BCa 95% of Mean Dif [LL, UL]
	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>				
other colleagues in my clinical team would assess the young person's voice-hearing experiences.	32	6.66	5.56	116	8.29	6.33	-1.43 (55.28)	0.27	0.17	[-3.87, .87]
clinicians in the same profession as me would assess the young person's voice-hearing experiences	32	1.22	7.03	116	9.76	6.16	-6.24 (44.98)	1.29	<b>0.001</b>	[-11.46, -5.72]
<b>Control beliefs</b>										
I have limited time to assess young people's experiences.	32	-7.78	5.77	116	-4.47	5.61	-2.89 (48.33)	0.58	0.008	[-5.45, -.83]
I can find a suitable space to assess young people's experiences.	32	7.09	7.28	116	9.26	8.28	-1.44 (55.13)	0.28	0.17	[-4.99, 1.17]
young people who hear distressing voices are very unwell to engage in an assessment of their voice-hearing experiences.	32	-5.88	5.2	116	-2.97	4.14	-2.91 (42.42)	0.62	0.006	[-4.76, .95]
I have good engagement with young people who hear distressing voices.	32	10.63	4.45	116	11.91	6.02	-1.34 (65.69)	0.24	0.15	[-3.12, .60]
young people present with practical issues (e.g., lack of permanent address, current life stressors) that seem more immediate than their voice-hearing experiences.	32	-3.69	7.19	116	-1.84	6.13	-1.32 (44.20)	0.28	0.192	[-4.53, .72]
young people who disclose hearing distressing voices to me are unwilling to discuss their voice-hearing experiences with me.	32	-4.94	5.47	116	-2.7	4.03	-2.16 (40.71)	0.47	0.052	[-4.46, -.24]

Weighted belief item	No/Low intention group			Medium/high intention group			<i>t</i> (df)	<i>d</i>	p	BCa 95% of Mean Dif [LL, UL]
	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>				
young people who hear distressing voices present with high-risk issues.	32	-2.44	6.2	116	-0.26	7.41	-1.69 (57.88)	0.32	0.092	[-4.85, .20]
voice-hearing assessment tools (e.g., assessment measures, questionnaires) are available to me.	32	3.88	6.88	116	5.85	5.36	-1.51 (41.94)	0.32	0.145	[-4.82, .44]
people in the social system of young people (e.g., carers, friends) are accepting of the young person's voice-hearing experiences.	32	4.38	5.53	116	4.53	3.8	-.145 (39.39)	0.03	0.863	[-2.06, 1.89]
I have the opportunity to consult my team on how to proceed with my cases.	32	11.5	7.84	116	11.37	7.24	.084 (46.59)	-0.02	0.933	[-2.97, 3.23]
young people who hear distressing voices do not have the ability to answer assessment questions relating to their voice-hearing experiences.	32	-4.16	4.16	116	-2.73	3.86	-1.74 (46.78)	0.36	0.075	[-3.02, .08]
I have access to adequate collateral information (e.g., family history, young person's culture, values) about the young people I am working with.	32	8.84	7.24	116	8.99	5.75	-.11 (42.37)	0.02	0.92	[-3.07, 2.48]
I have had training or knowledge in assessing voice-hearing in young people	32	5.13	4.05	116	8.63	6.25	-3.81 (76.28)	0.66	<b>0.001</b>	[-5.35, -1.65]

*Note.* *SD* = standard deviation; *df* = degrees of freedom; *d* = Cohen's *d*; BCa 95% of Mean Difference and *p*-values are based on bootstrapping with *N* = 2000 samples; LL = lower limit; UL = upper limit; All tests were run with untransformed variables. Significance values are presented uncorrected for multiple comparisons. Bonferroni corrected *p*-value for the *t*-tests is .002.



**Table 39.** Between-group differences in weighted belief items comparing the no/low ( $N = 32$ ) vs. the medium/high intention ( $N = 163$ ) to assess voice-hearing groups in EIP clinicians.

	No/Low intention group			Medium/high intention group						
Weighted belief item	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>t</i> ( <i>df</i> )	<i>d</i>	<i>p</i>	BCa 95% of Mean Dif [LL, UL]
Behavioural beliefs										
Assessing voice-hearing...										
would help with constructing a detailed formulation of what is happening for the young person.	31	17.32	3.35	163	20.06	1.58	-4.46 (32.59)	1.05	0.001	[-3.95, -1.53]
would put engagement with the young person at risk.	31	-6.26	6.22	163	-3.84	4.34	-2.07 (35.76)	0.45	0.048	[-4.78, -.21]
would help identify the right support or treatment if needed.	31	16.84	3.77	163	19.47	2.01	-3.79 (33.32)	0.87	0.001	[-4.05, -1.33]
would help promote good engagement between me and the young person	31	15.77	2.89	163	18.15	2.86	-4.19 (41.94)	0.83	0.001	[-3.43, -1.19]
would lead to over-focusing on voices and incomplete exploration of other critical areas of a young person's presentation.	31	-7.29	5.46	163	-4.26	3.41	-2.98 (34.59)	0.67	0.007	[-5.05, -1.04]
would aid diagnosing.	31	-1.32	7.85	163	0.58	7.94	-1.23 (42.52)	0.24	0.211	[-4.63, 1.05]

Weighted belief item	No/Low intention group			Medium/high intention group			<i>t</i> (df)	<i>d</i>	p	BCa 95% of Mean Dif [LL, UL]
	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>				
would be reassuring and validating for the young person	31	15.87	3.39	163	17.91	2.48	-3.18 (36.34)	0.69	0.004	[-3.21, -.75]
would make the young person feel distressed (e.g., anxious, fearful).	31	-8.13	5.28	163	-6.34	5.24	-1.73 (42.05)	0.34	0.079	[-4.00, -.07]
would help with assessing the risk to self/others that is related to voices.	31	11.29	1.68	162	12.6	1.46	-4.08 (39.22)	0.83	<b>0.001</b>	[-1.91, -.65]
would lead to mistakenly labelling the young person with a mental health disorder such as psychosis.	31	-8.48	5.7	163	-5.98	3.96	-2.34 (35.70)	0.51	0.021	[-4.68, -.46]
would help evaluate the impact of voices on the young person's functioning.	31	17.32	2.76	163	19.64	1.64	-4.52 (34.13)	1.02	<b>0.001</b>	[-3.29, -1.32]
would help evaluate the impact of voices on the young person's emotions (e.g., distress).	31	17.81	2.89	163	19.66	1.57	-3.47 (33.43)	0.80	0.003	[-3.01, -.85]
<b>Normative beliefs</b>										
the young person thinks I should assess their voice-hearing experiences	31	2.81	5.23	163	5.68	6.57	-2.68 (49.89)	0.48	0.007	[-4.86, -.99]

Weighted belief item	No/Low intention group			Medium/high intention group			<i>t</i> (df)	<i>d</i>	p	BCa 95% of Mean Dif [LL, UL]
	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>				
specialist mental health practitioners (e.g., psychologists, psychiatrists) think I should assess the young person's voice-hearing experiences	31	-1.42	9.57	163	11.77	5.19	-7.47 (33.44)	1.71	<b>0.001</b>	[-16.60, -9.73]
individuals in the young person's social system (e.g., family, friends) think I should assess the young person's voice-hearing experiences.	31	4.35	5.29	163	9.09	4.76	-4.64 (39.78)	0.94	<b>0.001</b>	[-6.72, -2.60]
other colleagues in my clinical team would assess the young person's voice-hearing experiences.	31	8.65	6.37	163	10.25	6.16	-1.29 (41.38)	0.26	0.211	[-4.18, .84]
clinicians in the same profession as me would assess the young person's voice-hearing experiences	31	1.77	9.42	163	10.8	6.65	-5.09 (35.93)	1.11	<b>0.001</b>	[-12.62, -5.83]
<b>Control beliefs</b>										
I have limited time to assess young people's experiences.	31	-4.74	6.48	163	-3.59	6.26	-.91 (41.36)	0.18	0.388	[-3.68, 1.54]
I can find a suitable space to assess young people's experiences.	31	4.61	7.44	163	10.57	7.13	-4.12 (41.12)	0.82	<b>0.001</b>	[-9.08, -3.18]

Weighted belief item	No/Low intention group			Medium/high intention group			<i>t</i> (df)	<i>d</i>	p	BCa 95% of Mean Dif [LL, UL]
	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>				
young people who hear distressing voices are very unwell to engage in an assessment of their voice-hearing experiences.	31	-4.32	5.54	163	-3.07	4.03	-1.20 (36.26)	0.26	0.228	[-3.32, .71]
I have good engagement with young people who hear distressing voices.	31	10.19	7.67	163	13.51	4.82	-2.32 (34.65)	0.52	0.032	[-6.14, -.70]
young people present with practical issues (e.g., lack of permanent address, current life stressors) that seem more immediate than their voice-hearing experiences.	31	-5.19	6.72	163	-1.73	6.8	-2.63 (42.55)	0.51	0.013	[-6.23, -1.08]
young people who disclose hearing distressing voices to me are unwilling to discuss their voice-hearing experiences with me.	31	-4.45	5.2	163	-3.67	3.8	-.80 (36.36)	0.17	0.429	[-2.66, 1.29]
young people who hear distressing voices present with high-risk issues.	31	-2.61	6.81	163	0.82	6.7	-2.58 (41.80)	0.51	0.014	[-6.03, -.78]
voice-hearing assessment tools (e.g., assessment measures, questionnaires) are available to me.	31	6.65	5.15	163	9.34	7.02	-2.51 (53.74)	0.44	0.019	[-4.75, -.52]

Weighted belief item	No/Low intention group			Medium/high intention group			<i>t</i> (df)	<i>d</i>	p	BCa 95% of Mean Dif [LL, UL]
	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>				
people in the social system of young people (e.g., carers, friends) are accepting of the young person's voice-hearing experiences.	31	4.61	3.94	163	5.1	5.07	-.61 (50.99)	0.11	0.564	[-2.02, 1.19]
I have the opportunity to consult my team on how to proceed with my cases.	31	11.1	6.28	163	11.33	7.36	-.19 (47.09)	0.03	0.851	[-2.80, 2.14]
young people who hear distressing voices do not have the ability to answer assessment questions relating to their voice-hearing experiences.	31	-3.32	3.03	163	-2.52	3.93	-1.28 (51.30)	0.23	0.207	[-2.09, .36]
I have access to adequate collateral information (e.g., family history, young person's culture, values) about the young people I am working with.	31	7.16	6.07	163	8.6	6.14	-1.21 (42.49)	0.24	0.248	[-3.86, .95]
I have had training or knowledge in assessing voice-hearing in young people	31	5.71	4.93	163	11.07	6.35	-5.28 (51.01)	0.94	<b>0.001</b>	[-7.39, -3.34]

*Note.* *SD* = standard deviation; *df* = degrees of freedom; *d* = Cohen's *d*; BCa 95% of Mean Difference and *p*-values are based on bootstrapping with *N* = 2000 samples; LL = lower limit; UL = upper limit; All tests were run with untransformed variables. Significance values are presented uncorrected for multiple comparisons. Bonferroni corrected *p*-value for the *t*-tests is .002.