Voice Hearing; A Response to Traumatic Experiences or a Sign of Psychosis: A Scoping Review

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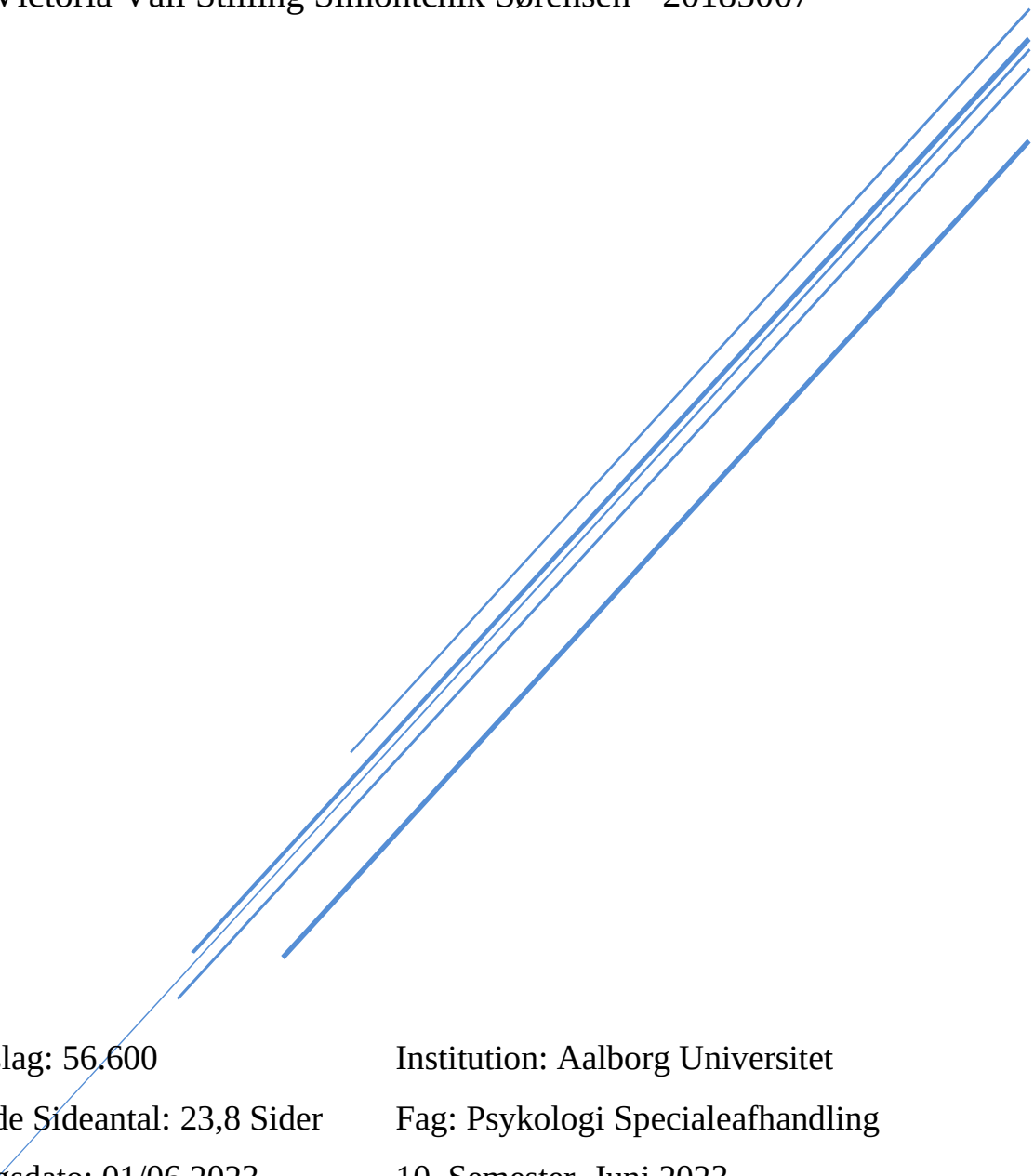

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Disposition:

The review conducted has been divided into two parts: An article and its framework. This has been done to enable the authors to write a more scientifically focused article, while the methodological consideration has been centered in the framework. The two separate parts of the assignment have their own reference list and appendix.

Article:

In the article, which comes first, the authors have focused on the findings of the gathered data. This data will be summed up and discussed with a focus on the possible implications this might have. Sections include 'Abstract', 'Background', 'Aim of study', 'Method', 'Results', 'Discussion', 'Conclusion', 'Clinical implications', 'Research implications', and 'Limitations and strengths'.

Framework:

The framework part of the assignment will go more into depth with the considerations and arguments behind the decisions made in the review. Sections included 'Why a scoping review', 'Elaboration of the research question', 'Protocol', 'Eligibility criteria', 'Search strategy', 'Data charting', 'Arrangements of results and discussion', 'Quality assessment of material' and 'Limitations and strengths. There will be a few overlaps between the two parts, but the article will always be a shortened version.

Abstract

Objective: To study whether there is an association between adulthood trauma and voice hearing (VH) and to explore if there are similarities and differences between VH in clinical and non-clinical populations.

Introduction: Previously, VH has been viewed as a normative experience but evolved to be a sign of mental illness; namely schizophrenia (SCZ). In recent years, the focus has shifted from solely biological and pathological viewpoints of VH to more psychosocial perspectives.

Methods: Scoping review conducted with a systematic search on PsycINFO, PubMed, Scopus, and CINAHL resulting in 48 studies.

Results: The majority of studies found a link between adulthood trauma and VH. The content of VH was in some cases found to be linked to traumatic events. VH appeared phenomenologically similar in SCZ, Borderline Personality Disorder, Bipolar Disorder, Depression, Eating Disorder, Dissociative Identity Disorder, Post-Traumatic Stress Disorder, and Non-Clinical Voice Hearers (NCVH). Primary differences were found to be higher severity and age of onset in SCZ. NCVH experienced less distress than clinical groups. Voices could change due to external factors or appraisal of the voices and be experienced as both positive and negative. There were found possible links between dissociation, anxiety, and VH.

Conclusion: Trauma appears correlated with VH. VH might be a coping mechanism to handle overwhelming situations. It appears phenomenologically similar in both clinical groups and NCVH and is not exclusive to SCZ. VH seems to be able to change over time.

1. Introduction

Throughout a human's lifetime, they risk being exposed to traumatic events that their minds might not be able to handle. There are several different ways an individual can respond to such overwhelming and boundary-crossing experiences (Brown, 1989). While depression and anxiety are seen as natural responses to adversity, schizophrenia (SCZ) and voice hearing (VH) are often seen as biogenetic disease states (Higgs, 2020).

VH is a phenomenon often seen in SCZ. SCZ is a mental illness characterized by disturbances in thought (delusions and confused thinking), perception (VH or other sensory hallucinations), and behavior (lack of motivation and illness insight) (Edgar, Guha & Miller, 2020; Hugdahl, 2009). The etiology remains a debated topic. Some factors appear to be neural abnormalities and different brain activity in SCZ patients (Edgar, Guha & Miller, 2020). Other etiological factors behind SCZ, e.g., involves childhood trauma (Read et al., 2005). There are also discussions regarding how environmental factors might influence biological factors and vice versa. Studies have found that up to 75% of SCZ patients experience Auditory Verbal Hallucinations (AVH) which are often seen as a core characteristic of SCZ (Ranjan et al., 2010; Lorente-Rovira et al. 2020). VH in SCZ has been described with different characteristics. The individual might experience a single voice, or multiple voices, which can speak at different times, or all at the same time. These voices can be experienced as known or unknown characters, and they can be heard in first, second, and/or third person. The voices can be experienced to have different natures, among others commanding, commenting, insulting, or encouraging (Hugdahl, 2009). Frequency and linguistic properties seem to vary, and the negative voices tend to be dominant and male, with shaming themes while positive voices are associated with greater control and positive attributes (Larøi et al., 2012).

However, VH has also been found to be prevalent in 5%-28% of the normal populations (de Leede-Smith & Barkus, 2013), as well as other disorders such as Bipolar Disorder (BD), Post-Traumatic Stress Disorder (PTSD), Borderline Personality Disorder (BPD), and Eating Disorders (ED) (Fernyhough, 2014). This seemingly similar occurrence in disorders, causes some authors to speculate a shared etiological cause, instead of VH being solely a psychotic feature (Thakur & Gupta, 2020). VH typically refers to hearing a voice in the absence of an external stimulus (Woods et al., 2014). Hallucinations are typically seen as a psychotic phenomenon where individuals experience breaks from reality (Ranjan et al., 2010). While VH

has been known to be a potential cause of distress in individuals, e.g., being commanding, threatening, or even abusive (Fernyhough, 2014), studies have also found that VH can have a positive influence and might even be adaptive to some non-clinical individuals (de Leede-Smith & Barkus, 2013; Fernyhough, 2014; Lorente-Rovira et al. 2020).

The etiology of VH is still debated with some theories focusing on biological factors such as substance use, somatic illness, or family history of illness, while others focus on psychological factors such as cognitive mechanisms or emotional regulation. Others focus on social aspects such as traumas, life events, stress, etc. (de Leede-Smith & Barkus, 2013; Kinderman, 2016; Hunter, 2018). While focuses might differ, none of the perspectives are exclusive of one another. Most researchers consider a wide range of factors integrated with one another to play a part in the development of VH. Research on trauma's correlation with VH appears to have focused primarily on the potential link between childhood trauma and VH, whereas adulthood traumas appear less studied (Read, Dillon & Lampshire, 2014). Regarding specifically childhood trauma, several studies theorize the relevance of attachment theory in the development of VH. One study found a correlation between evading-attachment style and the development of positive symptoms (Subocz, 2022). Subocz (2022) argued for a relationship between traumatic experiences in attachment styles and grey-matter differences with control groups, as well as different activity in temporal areas. He argued that attachment styles and traumatic experiences might influence an individual's epigenetics and potentially trigger VH as a result (Subocz, 2022).

Another theory regarding the etiology of VH stems from neurological studies in the field. Certain studies have found that when patients experience VH, the auditory and speech perception network in their brain is activated, especially the left side of the brain (Hugdahl, 2017). Tang and colleagues (2019) found that the VH group displayed increased specialized activity in the left temporal region relative to their control group; the area that, e.g., is involved in speech perception and auditory information processing. Their study suggests that the increased hemispheric specialization might contribute to the emergence of VH (Tang et al., 2019).

Other etiological views contemplate cognitive explanations. One specific bottom-up activity theory e.g., involves the hypothesis that auditory hallucinations involve intrusive memories. Badcock and Hugdahl (2011) argue that intrusive recollections may comprise either individual features (words, voice identity) or complete episodes (memories of abuse). They argue that this

could account for the diverse phenomenology across the continuum of hallucinated 'voices' (Badcock & Hugdahl, 2011).

The view on VH has changed throughout history. Back in the medieval and early modern periods, hearing voices and seeing visions were understood vastly differently than it is today. VH was not necessarily seen as something psychotic, but rather a normative experience (Powell & Saunders, 2021). In the last hundred years, VH has been seen differently around the world. In the Western world, it has often been seen as a symptom and hallucination; a phenomenon focused on malfunctioning brain activity. In other parts of the world such as certain South American cultures, it has been seen as individuals being spiritually gifted (May, 2013). In recent years, research has started pointing to VH as a potential result of traumatic experiences in an individual's life, however, the field is still new and in need of further examination. Often, VH is seen as part of SCZ and is more commonly indirectly studied with focus on biological factors (Read, Bentall & Fosse, 2009; Sapey, 2013; de Leede-Smith & Barkus, 2013).

VH has not previously been seen as a characteristic of any particular psychopathology. It was commonly found that VH could exist in cognitive disorders such as dementia, general paralysis, and affective mental disorders like BD. It was not particularly researched, nor treated until the turn of the 20th century (Jansson, 2018). At this turn, VH became recognized as a phenomenologically distinct symptom and experience. It was also at this time that Emil Kraeplin's division of mental illness became famous (Jansson, 2018). Today, VH remains a distinct psychiatric phenomenon, often referred to as AVH in psychiatric fields. It has become known as a psychiatric symptom linked with SCZ, but people are still debating whether it should be seen as such to this day (Jansson, 2018).

The usual treatment for VH in psychiatry has previously been a medical approach, however, in recent years, other psychological interventions have started to become more popular. Pharmacologically, psychiatry primarily uses atypical antipsychotics, which is a second generation of antipsychotics. There are six different types of atypical antipsychotics, among these is Clozapine, which has been shown to be beneficial in 30%-60% of unresponsive patients regarding VH (Pandarakalam, 2016).

Psychological interventions have also been shown to have an effect on VH. This intervention focuses on attempting to achieve control over the voices and minimize the individual's symptoms (Pandarakalam, 2016). Avatar is an intervention specifically designed for VH that focuses on communication with the voices (Pandarakalam, 2016).

The Hearing Voices Movement (HVM) works with alternative views and interventions that might be valuable for individuals with VH. It originated from Marius Romme in 1987, when the psychiatrist formed his theory on VH after having a VH patient (Baker, 1990). In 1988, the Hearing Voices Network (HVN) was formally established.

The HVM principles are as follows;

- The hearing of voices is not in itself a sign of mental illness.
- The hearing of voices is experienced by many people who lack any symptoms that would warrant a psychiatric diagnosis.
- The hearing of voices is often related to prior social-emotional problems in the percipient's life history.
- The hearing of voices can cause serious distress, although it is an experience that one can learn to cope with and become able to change one's relationship with (Bloom & Sommer, 2012, p. 387).

The HVM e.g., regards group therapy and trauma-focused treatment to be of high value when it comes to intervention against distressing voices (Higgs, 2020).

The authors of this review have previously researched the correlation between SCZ and childhood trauma. Through this study, there was found a potential link between VH and traumatic childhood experiences (Simontchik & Eilskov, 2023). With the background information and the authors' previous research in mind, the focus of this study was formed. This leads to the current interest in seeking a possible explanation for whether there is a correlation, and what a potential correlation might indicate, between VH and adult trauma.

1.1 Aim of Study

The considerations led to the following questions: Is there an association between adulthood trauma and VH? Are there similarities and differences between VH in clinical and non-clinical populations?

2. Method

The current review was conducted with the guidelines from Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR)

(PRISMA-ScR, n.d) and The Joanna Briggs Institute (JBI) (Aromataris & Munn, 2020). A scoping review was chosen to create an overview and explore the correlations between trauma and VH, as well as VH in other disorders and the general public. There was a wish to examine the nature of VH. The authors were unable to identify other scoping reviews on the topic. The search for literature was conducted on the 21st of February 2023, and followed JBI's three-step search strategy. It utilized the following databases: PsycINFO, PubMed, Scopus, and CINAHL. The search consisted of one block using the broadest keywords the authors could find, that was still relevant to the current research question. The keywords were as follows; "Voice hearing", "Voice hearer*", "Voice hallucination*", "Verbal hallucination*", and "Hearing voices". No MeSH or Therasaurus terms were judged specific enough for the search. There was no set time interval regarding the publishing of the collected literature, and none peer-reviewed work was also included. There was no primary geographic focus, but only English texts were included. The search can be found in its base form in Appendix 1.

To help the authors judge the relevance of the texts, eligibility criteria were constructed. The authors decided to separate the found literature into two different groups. One group would focus on the correlation between traumatic experiences in adulthood and VH. In this group the criteria were that the participants were 18 years or older and that they had experienced trauma in this age group as well. The participants had to have experienced VH more than once. Health complications such as somatic illnesses, dementia, drug use, and physiological trauma were excluded.

The second group of included literature was primarily focused on VH in different mental diagnoses and the general public. The focus was less on traumatic experiences, and more on experiences of VH. Participants still had to be 18 years or older, with no somatic complications.

3. Results

The common view of VH has been that it is a biological phenomenon, affecting the individual through neural transmissions in the brain (Vallath et al., 2018). Contrary to this, this study wishes to focus on what psychosocial factors might play a part in VHs etiology. Specifically, the focus will be on adulthood trauma, and how it is linked to VH. Furthermore, VH will be explored in different clinical and non-clinical groups and their similarities and differences will be presented. Lastly, the included studies' views on the nature of VH will be highlighted.

3.1 Study Selection

Through the search, 5.479 articles were located and organized via Rayyan: an intelligent systematic review program. 2.945 duplicates were removed. The texts were screened by two blinded reviewers and resulted in 44 articles being selected. The reference lists of those articles were then searched, resulting in four additional articles, leaving the review with a total of 48 articles. The flowchart can be seen in Appendix 2.

3.2 Trauma and VH

Childhood maltreatment has to this date been the primary focus when researching the link between VH and trauma (Freeman & Fowler, 2009; Baumeister et al., 2017; Zhuo et al., 2019). For this reason, the focus of this paper is on adulthood trauma. The studies on trauma and PTSD can be seen in Table 1. Seven studies (Morrison & Petersen, 2003; Anketell et al., 2010; Anketell, Dorahy & Curran, 2011; Longden et al., 2012; Vallath et al., 2018; Wearne et al., 2018; Tolmeijer et al., 2021), one opinion (Romme & Escher, 1989), one literature review (Beavan, Read & Cartwright, 2011), one systematic review (Baumeister et al., 2017) and two narrative reviews (McCarthy-Jones & Longden, 2015; Larøi et al., 2019) found a link between adult trauma and VH. One narrative review remains skeptical of the notion that there is enough evidence to confidently claim that trauma might be a necessary and causal factor in the development of VH (Pierre, 2010).

Table 1
Primary Studies in Trauma Literature

Author(s)	Origin	Study Design	Aim	Population / Sample size	Methodology	Key Findings
Morrison, A. T. & Petersen, T. (2003)	United Kingdom	Cross-Sectional Study Quantitive Questionnaire	- Hypothesis: Predisposition to AH in the general population is associated with the experience of trauma or post-traumatic symptomology.	64 Undergraduate students and warehouse operatives	MCQ RHS IVI DES Trauma Measure (Designed by authors) PSS-SR PTCI	- Association between trauma-related measures and predisposition of AH. - Frequency of PTSD symptoms and experiencing multiple traumas were found related to a predisposition to AH. - Found links between life events like loss of spouse or bereavement and emotional abuse or dissociation, to be related to predisposition to AH. - There was especially found predisposition with multiple traumas.
Longden, E., et al. (2012)	United Kingdom	Cross-Sectional Study Case Study	- Describes a clinical strategy for addressing the personal relationship between distressing life events and certain characteristics of the voice a person hears.	A 21-year-old woman Diagnosed with paranoid SCZ	Construct Interview adapted from the Maastricht Hearing Voices Interview	- VH should not be seen as part of a disease syndrome, but rather as a personal response to painful unresolved emotions. - Interviewed a woman who has experienced VH since childhood. The voices appeared in response to loneliness, kept the girl company, and played with her. As an adult, she experienced a trauma, which had one of the caring voices disappear, while the other turned angry and malicious.
Bless, J. J., et al. (2018)	Norway	Population-Based Study Case/Case Study	- Compares voice-hearers in the general population with or without adverse life events	2,533 initially screened No-adverse-trigger group = 59 Adverse-trigger group = 76	LSHS LEDS	- AVH in the adverse-trigger group was more severe than in the no-adverse-trigger group - The adverse trigger group experienced AVH with more emotional content (less neutral, more positive/negative), and poorer general mental health (and more medication) - AVH might be troublesome in itself, but an adverse trigger might be more relevant when assessing severity - Adverse-trigger and clinical AVH were, in general, older at the onset of voices.
Vallath, S., et al. (2018)	Switzerland	Cross-Sectional Study	- The relationship between negative life experiences and voice hallucinations. - Study the form and content, and how negative life experiences can increase	21 Participants - Mixed Sample	Semi-Structured Interview 30-60 minutes in length	- Hallucinations are often meaningful and relate to participants' psychological and sociocultural context, especially when considering negative life experiences. - Voices had functional properties when coping with negative
		Qualitative Interview Study	stress and vulnerability to VH.			life experiences such as allowing participants to vent or offer comfort. - Not resolving negative life experiences can cause distress and maintain the VH experience.
Wearne, D., et al. (2018)	United Kingdom	Cross-Sectional Study Qualitative Interview Experts/Case Study	- Investigate the subtypes of dissociative experiences involved in trauma-intrusive voice-hallucinations	Four hospitals, 11 psychiatrists and 69 participants with a PTSD diagnosis.	PSYRAT PSSI-5 DSPS	- The experience of trauma-intrusive voices was best predicted by experiences of dissociation, specifically derealisation or depersonalization rather than the severity of PTSD, in the individuals with PTSD. - Points to trauma-intrusive voices being mediated by dissociation rather than trauma-specific symptoms of dissociation. - The types of traumas addressed were rape, combat-related stress, chronic trauma, serious physical assault, vehicle accidents, domestic violence, and exposure to suicide.

Tolmeijer, E., et al. (2021)	Netherland	Cross-Sectional Study Quantitative Questionnaire	- Explore VH's beliefs regarding the role of trauma in their voice hearing.	125 outpatient care participants with VH	IPQ TALE TSQ	- Traumatic experiences were the most commonly endorsed cause for VH for voice-hearers. Traumas include forceful hospital admissions, witnessing threatening or shocking events while in care, attachment-disrupting events, loss of parents, bullying, sexual abuse, physical abuse, accidents, and discrimination. - The second most endorsed were psychosocial factors, while biological causes were less often endorsed - Nearly all the participants had experienced trauma, and half reported six or more PTSD symptoms.
Secondary Studies in Trauma Literature						
Romme M. A. & Escher, A. D. (1989)	Netherlands	Opinion	- Explain the phases involved when an individual starts hearing voices	N/A	N/A	- Found three phases; The startling phase, the phase of organization, and the stabilization phase. - Coping with voices has an effect on how people feel and their need for clinical intervention. Ignoring or angering voices can make them worse while accepting and setting clear boundaries towards them can make them more positive. - Seeing meaning in the voices helped individuals cope with them while viewing it as biological could harm the ability to master the voices.
						- Voices can be positive and negative. The view held about the voices affects their nature.
Larøi, F. et al., (2019)	United States	Narrative Review	- Aims to offer definitions of negative voice content. - Consider what may cause negative voice content.	N/A	N/A	- Found that negative voice content plays an important role in distress and the need for care in voice hearers. - Theorized that VH might be a form of alienation caused by traumatic events. They argue that intrusive thoughts entering into awareness might result in negative emotions manifesting in an alien manner. Negative emotional VH can manifest from incompletely processed traumatic events. - Verbalisation is shaped by the current environment, culture, and past experiences. - Negative voice content can be reinforced by the person's response to it. A dismissive or hostile attitude towards voices can reinforce their negativity.
Primary Studies in Post-Traumatic Stress Disorder Literature						
Author(s)	Origin	Study Design	Aim	Population / Sample size	Methodology	Key Findings
Anketell, C. et al. (2010)	Ireland	Cross-Sectional Study Qualitative Interview	- To ascertain the existence of VH within a Northern Irish chronic PTSD population and investigate possible mechanisms associated with VH in PTSD.	40 Chronic PTSD Participants	PDS PANSS DES WBSI	- VH in a chronic PTSD sample is not a rare phenomenon (50%). - No differences were found in thought suppression in VH groups and no VH groups, but VH groups scored higher on DES, pointing to a dissociation correlation. - 8 participants related their voices directly to a past experience of abuse and trauma, 6 reported not knowing why they heard voices and 3 were tentatively linked their VH to previous experiences of trauma.

Anketell, C., Dorahy, M. J., & Curran, D. (2011)	Ireland	Cross-Sectional Study Qualitative Interview	- To use a qualitative methodology to explore voice hearing and dissociation in chronic PTSD.	3 Chronic PTSD Participants	Interview	- Each voice-hearer could link the voice onset directly to experiences of trauma. - Two participants linked VH to discrete traumatic events. One explained the onset of voices as related to a coping strategy for cumulative abuse and isolation in childhood. - All described a predominantly negative relationship with their voices, with the voices in control. - Association between dissociation and the form of the voice.
						- Voices might emerge as a coping mechanism or as an internalized repression of experienced trauma; a trauma memory.
Secondary Studies in Post-Traumatic Stress Disorder Literature						
Pierre, J. M. (2010)	United States	Narrative Review	- To review challenges when it comes to auditory hallucinations in normal populations and other psychiatric disorders, as well as defining characteristics of hallucinations.	N/A	N/A	- VH might be affected by cultural values and norms. - Links between bereavement, abuse (especially sexual and incestual abuse), PTSD, sensory deprivation, and hallucinations. - VH and other types of hallucinations during grief should not be seen as sickly or psychotic but as something normal. - Not sufficient evidence to suggest a causal relationship between trauma and VH. The lack of proper abuse definitions and combat-related PTSD is criticized due to methodological issues or not properly vetting for SCZ patients.
McCarthy-Jones, S. & Longden, E. (2015)	Ireland / United Kingdom	Narrative Review	- To examine whether AVH in PTSD has a qualitatively similar phenomenology to AVH in SCZ. - To demonstrate that traumatic life events are associated with AVH in both PTSD and SCZ.	N/A	N/A	- PTSD AVH and SCZ AVH are phenomenologically and qualitatively similar. - Argue against labeling AVH as a psychotic symptom, as it appears in PTSD and BPD. - Correlations between trauma and AVH. The content of AVH is often related to trauma either indirectly or directly.

Post Traumatic Stress Disorder (PTSD); Auditory Hallucinations (AH); Voice Hearing (VH); Auditory Verbal Hallucinations (AVH); Schizophrenia (SCZ); Borderline Personality Disorder (BPD); Metacognition Questionnaire (MCQ); Revised Hallucination Scale (RHS); Interpretation of Voices Inventory (IVI); Dissociative Experiences Scale (DES); PTSD Symptom Scale - Self Report (PSS-SR); Post-Traumatic Cognitions Inventory (PTCI); Launay-Slade Hallucination Scale (LSHS); The Life Events and Difficulties Schedule (LEDS); Psychotic Symptoms Rating Scale (PSYRAT); PTSD Symptom Scale Interview (PSSI-5); Dissociative Subtype of PTSD Score (DSPS); Illness Perception Questionnaire (IPQ); Trauma and Life Events (TALE); Trauma Screening Questionnaire (TSQ); Posttraumatic Stress Diagnostic Scale (PDS); Positive and Negative Syndrome Scale (PANSS); White Bear Suppression Inventory (WBSI)

Different traumas have been described in studies (Morrison & Petersen, 2003; Wearne et al., 2018; Tolmeijer et al., 2021). Some studies point to culminated trauma or severity of trauma increasing the risk and severity of VH (Morrison & Petersen, 2003; Merrett, Rossell & Castle, 2016; Bless et al., 2018; Vallath et al., 2018), while others point to the severity of traumas not being directly related to the severity of VH (Wearne et al., 2018; Larøi et al., 2019). Some studies point to trauma having a correlation with the type of content the voices are expressing and can make them e.g., more negative (Romme & Escher, 1989; Anketell et al., 2010; Anketell, Dorahy & Curran, 2011; Vallath et al., 2018). Studies have also pointed to trauma having a direct mediating link with the onset of VH (Romme & Escher, 1989; Dorahy et al., 2009; Beavan, Read & Cartwright, 2011; Anketell, Dorahy & Curran, 2011).

Studies indicate VH might be a response to painful or unresolved memory, and therefore, meaningful (Romme & Escher, 1989; Anketell et al., 2010; Anketell, Dorahy & Curran, 2011; Longden et al., 2012; Vallath et al., 2018; Tolmeijer et al., 2021). Viewing voices as meaningful seems to cause less distress for the individuals, while a biological view seems to cause more distress and negative appraisal (Romme & Escher, 1989; Hill & Linden, 2012; Smith, Johns & Mitchell, 2017).

3.3 VH in Other Diagnoses

In the following sections, VH in other diagnoses than SCZ will be examined for similarities and differences. First, the results of the studies included in BPD will be addressed. Next affective disorders will be examined, primarily with a focus on depression and BD. After that, the ED texts will be presented, then DID, and then studies that involve multiple disorders will be addressed. Lastly, the overall similarities and differences of the diagnoses will be summed up and compared with each other.

3.3.1 VH in Borderline Personality Disorder

Six studies (Slotema et al., 2012; Hepworth, Ashcroft & Kingdon, 2013; Tschoeke et al., 2014; Niemantsverdriet et al., 2017; Hayward et al., 2022; Strawson et al., 2022), two narrative reviews (Beatson, 2019; Cavalti et al., 2021), and two systematic reviews (Merrett, Rossell & Castle, 2016; Beatson et al., 2019) explored VH in BPD. The overview can be seen in Table 2.

Table 2
Primary Studies in Borderline Personality Disorder

Author(s)	Origin	Study Design	Aim	Population / Sample size	Methodology	Key Findings
Slotema, C. W., et al. (2012)	Netherland	Cross-Sectional Study Qualitative Interview Case/Case/ Case/ Sub-Clinical	- Study the phenomenological characteristics and distress of AVH in BPD, and look at similarities and differences between AVH in BPD, SCZ / SCZ-affective and NCHV.	38 BPD 36 SCZ 15 Schizoaffective 66 Non-patients with VH	SCID-II PSYRATS	- AVH experienced by BPD patients was severe and lasted for a lengthy period of time (mean duration = 18 years). - The scores regarding negative content, distress, and disruption of life were high among the BPD sample. - Compared to the SCZ/SCZ-affective group, no significant differences were found regarding phenomenological characteristics or distress. - Disruption of life was scored higher in the SCZ / SCZ-affective group. - AVH in non-patients appeared less frequently and for shorter durations. Experienced less distress.
Hepworth, C. R., Ashcroft, K., & Kingdon, D. (2013)	United Kingdom	Cross-Sectional Study Qualitative Interviews	- Investigates whether an individual's experience of voices (primarily their most dominant voice), and the way the individual responds to them, differs across clinical groups. They are also investigating whether beliefs about voices might aid in assessment and intervention.	45 clinical patients diagnosed with BPD	SCID BAVQ-R	- Individuals with BPD and psychosis hold similar levels of beliefs about the malevolence and omnipotence of their most dominant voices. - BPD patients (or patients with both BPD and SCZ) experienced greater emotional resistance towards their most dominant voice than those with a SCZ diagnosis. - The voice had a greater negative effect on BPD patients. - The level of trauma was high in the entire group, but childhood sexual assault was higher in the BPD sample. - Beliefs about the benevolence of the most dominant voice were low across the groups (other voices could be benevolent).
Tschoeke, S., et al. (2014)	Germany	Cross-Sectional Study Qualitative Interview Case/Case study	- Examine phenomenological similarities and differences between BPD patients and SCZ patients with AVH. - Compares VH, positive and negative symptoms, dissociative comorbidity, and childhood trauma.	23 BPD Patients 21 SCZ patients	PANSS CTQ-SF DES FDS SCID-D	- AVH in BPD appears to be a common phenomenon and not significantly different from AVH in SCZ. - Number of voices was found similar as well. - Dialogues were slightly more common in SCZ (71%) compared to BPD (40%). - Feeling of being controlled was more common in BPD. - BPD patients reported significantly more childhood traumatization, and they had a higher dissociation score. - Negative psychotic symptoms were not found in BPD.
Niemantsverdriet, M. B. A. et al. (2017)	Netherland	Cross-Sectional Study Qualitative Interview	- What the prevalence of hallucinations was in BPD in five sensory modulates, and what their phenomenological characteristics were. - Studied if hallucinations were associated with other positive and negative symptoms of psychosis, or associated with any comorbid psychiatric disorders. - Looked at if there were any childhood adversities and adult life stressors that might predict hallucinations in BPD.	324 Telephone Interviews 98 Face-to-face Interviews All with BPD diagnosis	PSYRATS PANSS MINI PLUS 2000 CTQ-SF LSC-R	- 43% of the participants experienced hallucinations multimodally, compared to 3-6% in the general population and 75% in SCZ. - The phenomenological characteristics of their hallucinations appear severe and similar to SCZ patients. - Often co-occurring with delusional thinking, but not the negative symptoms or disorganization of SCZ. - Argue against hallucinations stemming from any particular comorbid psychiatric disorder. - Found that adult life stressors are associated with the severity of hallucinations, but it doesn't appear to be specific for BPD (but also NCVH). - Hallucinations in the context of BPD do not significantly differ from other disorders and may share a common etiology.

Hayward, M. et al. (2022)	United Kingdom	Cross-sectional study	- Sought to validate AVH in the context of borderline personality disorder (BPD). - Examined the phenomenological and cognitive behavioral mechanisms of AVH in BPD. - Wanted to study this with neuroimaging while AVH is active in BPD patients.	48 BPD Participants with VH	SCID-5-PD SCID-5 BAVQ-R BCSS BSIS CTQ-SF cbSASH PCL-5 STAI PANSS PSYRATS-AH ZAN-BPD	- The majority of participants had experienced significant childhood trauma and almost all reported emotional abuse, PTSD, and high levels of anxiety. - Scores on cbSASH suggested that the AVH was legitimate. - Distress was marginally lower compared to a large sample of psychic patients. - Found a weak connection between AVH and anxiety, suggesting a somewhat independent from affective symptoms that are characteristic of BPD.
Strawson, W. H. et al. (2022)	United Kingdom	Cross-Sectional Study	- Advance the understanding of the cognitive, subjective, and neurophysiological mechanisms underlying AVH in BPD patients.	52 BPD Patients with VH	PANSS PSYRATS-AH BNSS BSIS BAVQ-R Signal DCross-Sectional neuroimaging Task Paradigms	- Against BPD being seen as a pseudohallucination and argues that it instead is similar to other AVH groups. - Anxiety appears to increase the severity of VH. - AVH seems broadly similar to AVH in non-clinical and clinical groups across the psychosis spectrum.
Secondary Studies in Borderline Personality Disorder						
Merrett, Z., Rossell, S. L., & Castle, D. J. (2016)	Australia / New Zealand	Systematic Review	- Summarize and compare the current understanding of AVH in BPD with AVH in psychotic disorders. - Critically analyze existing studies investigating AVH and BPD. - Identify gaps in current knowledge which will help direct future research.	16 Publications	Via the following databases: Scopus PubMed MEDLINE	- Voices in BPD are similar to those reported in SCZ. - Argue that there is not enough empirical research to support the finding that BPD voices might be dissociative in nature and stem from childhood trauma or disorganized attachment. - Some evidence points to BPD voices being related to memories of trauma and can be exacerbated by daily stress and life events. - Neurobiological literature and medication of AVH in BPD are not well enough researched.
Beatson, J. A. (2019)	Australia	Narrative Review	- Investigating the phenomenology and symptomatology for AVH in BPD	N/A	N/A	- AVH in BPD often meets the criteria of first-rank symptoms. - AVH in BPD appears to be dissociative in origin and stems from childhood trauma, particularly childhood emotional abuse, and neglect. - AVH in BPD is highly triggered by stress and may have a lasting duration beginning in adolescence - AVH is shown to decrease or remit with psychotherapy, although research is scarce.

Beatson, J. A. et al. (2019)	Australia	Systematic Review	- Articulate distinguishing features relating to the phenomenology and overall clinical presentation of patients with a primary diagnosis of BPD who experience AVH to improve diagnostic accuracy.	23 articles	Via the following databases: PsycINFO Medline Embase	- They found that AVH in BPD frequently met the criteria for First Rank Symptoms. - Voices can be heard from inside and/or outside of the head, heard in second/third person, can be equal in number, frequency, and/or loudness to AVH in SCZ. - Content of AVH in BPD was uniformly more critical, negative, and distressing than in SCZ studies. - Argue that differentiation can be made in the absence of formal thought disorder, bizarre delusions, flat affect, and negative symptoms of SCZ. - AVH in BPD was found to be higher stress-related than those in SCZ. - Content that AVH in BPD is dissociative in nature, deriving from experienced childhood trauma, especially, emotional trauma, neglect, and sexual abuse. - AVH in BPD can remit after psychotherapeutic treatment, and show less responsiveness to antipsychotic medication.
Cavalti, M. et al. (2021)	Netherlands	Narrative Review	- Summarize new research to evaluate the validity of psychotic symptoms in BPD and whether or not they are stress-dependent, transient, limited to paranoia, and atypical or quasi-psychotic, or even fictitious.	N/A	N/A	- AVH occurs frequently in individuals with BPD (29-50%) and is not exclusively transient but can be prolonged. - Have similarities with AVH in SCZ and tend to intensify when the person is under stress in similar ways. - AVH occur frequently and are perceived as critical, controlling, distressing, malevolent, omnipotent, and of higher power than the person with BPD. - Delusions are common but they lack the same negative and disorganized symptoms in SCZ.

Auditory Verbal Hallucinations (AVH); Borderline Personality Disorder (BPD); Schizophrenia (SCZ); Non-Clinical Voice Hearers (NCVH); Voice Hearing (VH); Post-Traumatic Stress Disorder (PTSD); Structured Clinical Interview for DSM-IV axis II personality disorders (SCID-II); The Psychotic Symptom Rating Scales (PSYRATS); Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (SCID); Beliefs About Voices Questionnaire-Reivsed (BAVQ-R); Positive and Negative Syndrome Scale (PANSS); Childhood Trauma Questionnaire-Short Form (CTQ-SF); Dissociative Experience Scale (DES); 'Fragebogen zu Dissoziativen Symptomen (FDS); Structured Clinical Interview for DSM-IV Dissociative Disorders (SCID-D); MINI-International Neuropsychiatric Interview (MINI PLUS 2000); Life Stressor Checklist-Revised (LSC-R); Structured Clinical Interview for DSM-5 Personality Disorder (SCID-5-PD); Structured Clinical Interview for DSM-5 (SCID-5); Brief Core Schema Scale (BCSS); Brief System Impact Scale (BSIS); Computerized Binary Scale of Auditory Speech Hallucinations (cbSASH); Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5); State-Trait Anxiety Inventory (STAI); The Psychotic Symptoms Rating Scale-Auditory Hallucinations (PSYRATS-AH); Zanarini Rating Scale for Borderline Personality Disorder; Self-report Version (ZAN-BPD); Brief Negative Symptom Scale (BNSS).

Studies have found that VH is the most common form of psychotic symptom in BPD. It can occur frequently and be perceived as critical, controlling, distressing, malevolent, omnipotent, and of higher power than the person with BPD (Cavalti et al., 2021). VH in BPD appears to be highly triggered by stress and may have a lasting duration (Merrett, Rossell & Castle, 2016; Beatson, 2019; Beatson et al., 2019).

Five studies found no significant phenomenological differences between VH in BPD and SCZ (Slotema et al., 2012; Hepworth, Ashcroft & Kingdon, 2013; Tschoeke et al., 2014; Niemantsverdriet et al., 2017; Strawson et al., 2022). Similarities were found in location, frequency (Slotema et al., 2012; Tschoeke et al., 2014), severity (Slotema et al., 2012; Niemantsverdriet et al., 2017), loudness, negative content (Slotema et. al., 2012), the form of the voices (Tschoeke et al., 2014; Strawson et al., 2022), behavioral resistance, physical engagement (Hepworth, Ashcroft & Kingdon, 2013), number of voices, and the impression of whether the voice was from a familiar person or not (Tschoeke et al., 2014). The similarities in whether voices were familiar or not and the number of voices, however, were found to differ in a study by Hayward and colleagues (2022). They found that BPD often has fewer voices and that the familiarity of the voice tended to be less likely than in a psychotic group (Hayward et al., 2022).

Similar subjective distress between SCZ and BPD was found in one study (Strawson et al., 2022), however, Hepworth, Ashcroft, and Kingdon (2013), found their BPD group to have a higher amount of subjective distress than their SCZ group. Adult life stressors were found to influence VH in both SCZ and BPD (Niemantsverdriet et al., 2017).

Differences found between VH in SCZ and BPD mostly regarded disruption in individuals' lives which was reported more in SCZ (Slotema et al., 2012), and SCZ patients described more emotional engagement with the voices (Hepworth, Ashcroft & Kingdon, 2013). Childhood trauma and feelings of being controlled were more prevalent in the BPD group (Tschoeke et al., 2014). BPD reported both more negative and positive appraisals compared to SCZ patients (Hayward et al., 2021).

Regarding secondary literature, the reviews found similar evidence for phenomenological similarities (Merrett, Rossell & Castle, 2016; Beatson, 2019; Beatson et al., 2019; Cavalti et al., 2021). Some of the studies they included were included in our own review, and therefore, the results will not be gone into detail with. Contrary to some of our primary literature, secondary literature included found a higher rate of distress in BPD (Beatson, 2019; Cavalti et

al., 2021), and a higher rate of negative and distressing voice content (Beatson et al., 2019; Cavalti et al., 2021).

3.3.2 VH in Affective Disorders

Three studies (Gilbert et al., 2001; Dhakne et al., 2021; Smith et al., 2023) and two systematic reviews (Toh, Thomas & Rossell, 2015; Smith, Johns & Mitchell, 2017) explored VH in affective disorders. The overview of the material can be seen in Table 3. VH has been found to be present in 47% of BD patients (Dhakne et al., 2021), and age of onset was varying (Smith et al., 2023). It was commonly negative second-person voices. The voices could appear both outside of mood episodes and during them, and were sometimes mood-congruent (Smith et al., 2023).

Table 3
Primary Studies in Affective Disorders

Author(s)	Origin	Study Design	Aim	Population / Sample size	Methodology	Key Findings
Gilbert, P. et al. (2001)	United Kingdom	Cross-Sectional Study Qualitative Interview Case / Case	- To what extent do people who hear voices that are hostile experience the voice as a dominant and powerful other and adopt defense strategies of fight, flight but feel trapped. - To what extent depressed individuals generate critical, self-directed thoughts that are experienced as dominant. - To what extent the activation of hostile internal signals activates flight and to which extent the subordinated felt trapped.	66 SCZ voice-hearers 50 Depressed patients who did not hear voices	BDI The Power Scale (Voices) Power Scale (Critical Thoughts)	- Correlation between depression and how powerful the patients experienced attacks from voices and critical thoughts - Depressed people had higher escape motivation from their critical thoughts, than SCZ voice hearers had to their voices, as some voice-hearers felt ambivalent about escaping their voices.
Dhakne, R. S. et al. (2021)	India	Cross-Sectional Study Quantitative Questionnaire Case / Case	- To compare phenomenological variables between SCZ and BD.	140 SCZ patients 140 BD patients	CAHQ	- Significant differences in the characteristics of AVH in frequency, intensity, self-control, clarity, tone, distractibility, and distress, with SCZ patients scoring higher than BD. - Non-significant differences were observed in age of onset, duration of illness, past history of psychiatric illness, and family history of psychiatric and medical illness. - Approximately 47% of patients with BD experienced AVH.
Smith, L. M. et al. (2023)	United Kingdom / Australia	Cross-Sectional Study Qualitative	- To provide detailed descriptive phenomenology of AVH in BD. Sought the core phenomenological features of AVH in BD, relative to what is known of these experiences in SSD.	21 BD patients	MINI ASRMS QUIDS-SR YMRS BDI-II	- AVH in BD appear to be broadly similar in form and content to typical experiences in SSD. - AVH in and out of acute mood episodes. - BD patients described voices with positive, neutral, and negative tones and content, not necessarily congruent with
		Interview			MUPS	terms of valence. - A third reported their voices matching their own current mood. Voices providing running commentary or conversing were relatively common as well. - Onset was found to be commonly between 20-29 years (38.1%), but also below the age of 14 years (28.6%) and above the age of 30 years (19%). - People with BD or MDD who experience voice hearing during their mood episodes vary from 11.3% to 62.8% in BD and 5.4% to 40.6% in MDD.

Secondary Studies in Affective Disorders						
Toh, W. L., Thomas, N. & Rossell, S. L. (2015)	Australia	Systematic Review	- To provide a brief overview of the phenomena of AVHs as reported in the broader literature. - To review the current research data involving AVHs in mood disorders.	14 Articles	Via the following databases: PsychInfo Medline Web of Science	- Appears to be a lack of AVH studies for BD and MDD. - A significant number of people with BD and MDD experience AVHs during their mood episodes, varying from 11.3% to 62.8% in BD and 5.4% to 40.6% in MDD. - AVH in mood disorders appears similar to SCZ. In mood disorders, AVHs commonly co-occur with delusions, suggesting shared involvement of psychosis-related processes.
Smith, L. M., Johns, L. C. & Mitchell, R. L. C. (2017)	United Kingdom	Systematic Review	- To update and extend previous critiques of studies investigating psychotic symptoms in BD. - Examine how the characteristics of AVH and delusions, as well as their relationship with one another, might change across the acute mood episodes of BD.	32 Articles	Via the following databases: PubMed PsycINFO EMBASE CINAHL	- AH rates in BD were between 7% and 67%. - Delusions were found in 39-99% of BD patients. - Psychotic symptoms were commonly reported in acute mood states. Evidence pointed to mania having more symptoms than depressive episodes. - AVH were more likely to be mood congruent than mood incongruent. - Mostly second-person AVH, but conversing, and commentary in the third person were also frequent. - BD frequently reported certain subtypes of voices, previously thought to be specific to SCZ.

Schizophrenia (SCZ); Bipolar Disorder (BD); Auditory Verbal Hallucinations (AVH); Schizophrenic Spectrum Disorders (SSD); Major Depressive Disorder (MDD); The Beck Depression Inventory (BDI); The Characteristics of Auditory Hallucination Questionnaire (CAHQ); The Mini International Neuropsychiatric Interview (MINI); Altman Self-Rating Mania Scale (ASRMS); Quick Inventory of Depressive Symptomatology Self-Rated (QUIDS-SR); Young Mania Rating Scale (YMRS); Beck Depression Inventory (BDI-II); The Mental Health Research Institute Unusal Perception Schedule (MUPS).

Similarities appeared between affective disorders and SCZ in hostility and content (Gilbert et al., 2001; Smith et al., 2023), positive and benevolent voices (Smith et al. 2023), age of onset, duration of illness, past history of psychiatric illness, family history of psychiatric, and medical illness (Dhakne et al., 2021).

There seems to be a higher escape motivation from the voices in depressed individuals compared to SCZ patients (Gilbert et al. 2001). Furthermore, differences involved frequency, intensity, self-control, clarity, tone, distractibility, and distress, which were higher in the SCZ group (Dhakne et al., 2021).

The secondary literature included did not use the same primary studies included in the current paper but other primary literature. It was found that auditory hallucinations occur within acute mood episodes in BD and mood-congruent psychotic symptoms were more related to BD and Major Depressive Disorder (MDD) than SCZ (Toh, Thomas & Rossell, 2015; Smith, Johns & Mitchell, 2017). Similarities were found between BD and SCZ patients with VH regarding childhood abuse, third person-speaking voices, and the location of the voices (Smith, Johns & Mitchell, 2017). Differences regarded SCZ more often seeing voices as powerful which caused more distress, whilst this appeared more rarely in BD (Smith, Johns & Mitchell, 2017).

3.3.3 VH in Eating Disorders

The overview of the studies can be viewed in Table 4. One study (Noordenbos, Aliakbari & Campbell, 2014) and one systematic review (Aya, Ulusoy & Cardi, 2019) studied VH in ED patients. Both anorexic and bulimic patients can experience a critical inner voice that e.g., commands them to vomit or use laxatives (Noordenbos, Aliakbari & Campbell, 2014). 94.5% of ED patients studied experienced an audible inner critical voice, whilst 5.5% did not hear the voice clearly. A positive correlation was found between self-criticism and an inner voice, and the frequency at which the participants heard this voice (Noordenbos, Aliakbari & Campbell, 2014).

Aya, Ulusoy, and Cardi (2019) explored what the voice characteristics were for critical inner voices in ED patients. In terms of frequency and duration, the ED patient group experienced higher values than the healthy control (HC) (Aya, Ulusoy & Cardi, 2019). Furthermore, the voice was often seen as powerful, dominant, malevolent, abusive, critical, and omnipotent. ED patients experienced ambivalence regarding escape motivation from the critical inner voices (Aya, Ulusoy & Cardi, 2019).

Table 4
Primary Studies in Eating Disorder Literature

Author(s)	Origin	Study Design	Aim	Population / Sample size	Methodology	Key Findings
Noordenbos, G., Aliakbari, N. & Campbell, R. (2014)	Netherlands	Cross-Sectional Study Qualitative Questionnaire Case/Control	- Hypothesis 1: ED group will report significantly more experiences with hearing a critical inner voice, have higher self-criticism, and have lower self-esteem. - Hypothesis 2: ED group will hear more negative inner voices and the negative voices will have a positive correlation with self-criticism and low self-esteem.	74 Eating Disorder Participants 58 Healthy Control	EDE-Q RSES FSCRS PSYRATS BAVQ-R	- A critical inner voice was significantly more common among ED (94%) than healthy controls (29,3%). - The ED group had a higher frequency. Self-criticism was positively correlated with experiencing an inner voice and the frequency with which the voice was heard. - Voices often originated from an extreme way of dieting as a deliberating decision, that in the severe stages shifted from the control of their nutrition towards a voice in their head commanding them to obey
Scondary Studies in Eating Disorder Literature						
Aya, V., Ulusoy, K., & Cardi, V. (2019)	United Kingdom	Systematic Review	- To systematically review and synthesize the available literature on the ED voice experience and to identify gaps in this area of research.	13 Studies	Via the following databases: Embase PsycINFO Medline	- The ED voice is mainly perceived as powerful, dominant, malevolent, abusive, critical, and omnipotent. - ED voice's strength is positively related to the severity of the ED. It appears to change over time; in the early stages of the illness, the ED voice is perceived as a source of security, companionship, and guidance, but as it progresses, it gets more and more controlling, critical, dominant, and bullying. - ED patients often feel unable to escape, maybe reflecting the ambivalence some feel about the illness. - ED voice compared to VH in healthy participants appeared more frequently. - Phenomenological characteristics of a critical inner voice appeared to be similar between ED groups and healthy controls, suggesting socio-cultural factors may play a part in the etiology of this kind of voice.

Eating Disorder (ED); Voice Hearing (VH); Eating Disorder Examination-Questionnaire (EDE-Q); Rosenberg Self-Esteem Scale (RSES); Forms of Self-Critizing / Attacking and Self-Reassuring Scale (FSCRS); The Psychotic Symptom Rating Scales (PSYRATS); Beliefs About Voices Questionnaire-Reivsed (BAVQ-R).

3.3.4 VH in Dissociative Identity Disorders

One study was selected that researched similarities and differences between VH in DID and SCZ. The study overview can be seen in Table 5. The location was similar, and the content of the voices was found to be incongruent with current mood in both SCZ and DID. Both groups with experienced maltreatment experienced an increased likelihood of commanding voices, as well as feeling controlled by them (Dorahy et al., 2009).

Differences were found in the nature of the voices. DID was found to have more pervasive voices and experienced an earlier age of onset. Their voices were experienced as closely related to their identity and had a higher variety in the characteristics of their voices, regarding age and gender (Dorahy et al., 2009).

Table 5
Primary Studies in Dissociative Identity Disorders Literature

Author(s)	Origin	Study Design	Aim	Population / Sample size	Methodology	Key Findings
Dorahy, M. J. et al. (2009)	Northern Ireland / Australia	Cross-Sectional Study Qualitative Interview Case/Case/ Case Study	- Examine whether there were phenomenological differences in the VH experiences of those with SCZ and no childhood abuse/neglect, SCZ with childhood abuse/ neglect and DID.	18 SCZ patients without maltreatment 16 SCZ patients with maltreatment 30 DID patients	CTQ DDIS MUPS DES-T	- DID sample was more likely to hear voices before 18, have more than 2 voices, hear both child and adult voices, and experience visual, tactile, and olfactory hallucinations than the SCZ groups. - All groups experienced more internal voices than external voices. - The three groups incrementally increased in childhood maltreatment (SCZ without maltreatment, with maltreatment, and DID). - Higher maltreatment pointed to earlier voice onset. - Dissociation increased the risk of hearing more than two voices.

Voice Hearing (VH); Schizophrenia (SCZ); Dissociative Identity Disorder (DID); Childhood Trauma Questionnaire (CTQ); Dissociative Disorders Interview Schedule (DDIS); The Mental Health Research Institute Unusal Perception Schedule (MUPS); Dissociative Experiences Scale-Taxon (DES-T).

3.3.5 VH in Multiple Diagnoses

Certain studies focus on comparing VH in multiple diagnoses. For that reason, they have been grouped together in the following section. Due to the low number of studies, and the relatively small crossover between primary studies in this review and primary studies used in the secondary literature, both will be written together. If primary studies are referred to in the secondary literature, it will be noted. The overview of the texts can be seen in Table 6.

One study (Honig et al., 1998), two narrative reviews (Larøi et al., 2012; Moskowitz, Mosquera & Longden, 2017), and one literature review (Zhuo et al., 2019) found phenomenologically similar characteristics of VH across dissociative disorders, SCZ, DID, PTSD, BD, and BPD. Similarities were found between dissociative disorders and SCZ in voices dialogue and comments on behavior, negativity or neutrality in voices, patients' fear and disturbances in their everyday life, and the location of the voices (Honig, 1998; Larøi et al., 2012; Moskowitz, Mosquera & Longden, 2017). Differences were found in sexual abuse (Honig, 1998), and age of the voice (Larøi et al., 2012; Moskowitz, Mosquera & Longden, 2017).

Larøi and colleagues (2012) utilize similar primary literature in their BPD analysis as has been addressed in this study already. In their BD studies, they found that VH is a common psychotic feature in this diagnosis and that the duration of VH is often brief (Larøi et al., 2012). Similarities were found between commentaries, the nature of the voice, and the association with childhood abuse in both SCZ and BD (Larøi et al., 2012).

Zhuo and colleagues (2019) found similar phenomenological subjective experiences of loudness and spatial orientation in VH in MDD, BD, PTSD, BPD, and SCZ. It should be noted that Zhuo and colleagues (2019) utilize similar primary literature as is included in the current paper. Moskowitz, Mosquera & Longden (2017) found that phenomenologically VH appears similar to perceived reality, personification, and the number of voices in PTSD, BPD, DID, and SCZ. However, they reported that SCZ in comparison appeared to have more severe VH with higher intensity, frequency, and more negative content (Moskowitz, Mosquera & Longden, 2017). Severity appeared to be related to the person’s attitude and relation to the voice. SCZ also appeared to have a higher age of onset (Moskowitz, Mosquera & Longden, 2017).

Table 6
Primary Studies in Multiple Diagnosis Literature

Author(s)	Origin	Study Design	Aim	Population / Sample size	Methodology	Key Findings
Honig, A. et al. (1998)	Netherlands	Cross-Sectional Study Qualitative Interview Case/Case/ Sub-Clinical Study	- Compare the chronic auditory hallucinations in psychiatric diagnosis with NCVH, hypothesizing that they would be similar in form, content, and history.	Number of participants: N/A A group of patients with SCZ or dissociative disorders A group of SCZ patients A group of NCVH	Semi-Structured interview	- The nature of voices was similar across the three groups and all met the criteria for DSM IV A-type hallucinations. - Voices were often experienced inside the head and not outside of it. - Found differences in content, emotional quality, and loss of control. Clinical groups experienced more negative or neutral content, were more afraid of the voices, and were more disturbed. - Emotional neglect and abuse were found in all three groups, although sexual abuse was more prevalent in
						dissociative groups. External triggers were reported more often in dissociative groups. - NCVH started hearing voices earlier.
Secondary Studies in Multiple Diagnosis Literature						
Larøi, F. et al. (2012)	United States	Narrative Review	- To review the characteristics of AVHs in clinical and non-clinical groups, using findings derived from empirical studies that have used quantitative measures of hallucination characteristics.	N/A	N/A	- The phenomenological characteristics of AVHs experienced in a wide range of clinical disorders are similar to those experienced by SCZ patients: Including AVH in substance abuse, late-onset SCZ, BD, BPD, and dissociative disorders. - Similar unpleasant, third-person voices that are associated with delusions, high frequency, and uncontrollable, eliciting anxiety and distress that may disrupt individuals' everyday life functioning. - Dissociative disorders experienced more child voices compared to SCZ.
Moskowitz, A., Mosquera, D. & Longden, E. (2017)	French	Narrative Review	- To consider the status of the relationship between AVH and SCZ in comparison to certain posttraumatic disorders, and the implication of this relationship both conceptually and clinically.	N/A	N/A	- Patients diagnosed with SCZ, PTSD, DID, and BPD differ in delusions, thought disorder, and negative symptoms but not in many AVH aspects. - Frequency and negative content appeared more intense in SCZ, but it correlated with individual attitudes towards voices. - Age of onset for AVH was later for SCZ than any other diagnosis or NCVH. - Dissociative disorders experienced more child voices compared to SCZ. - The person's attitude towards their voices affects their intensity, frequency, and content, which often change when the relationship changes.

Zhuo, C. et al. (2019)	China	Literature Review	- Describe clinical features and imaging characteristics of AVHS and interventions in patients with psychiatric disorders, including those in SCZ, BPD, BD, MDD, and PTSD, as well as healthy subjects.	N/A	Via the following databases: PubMed	- AVH in clinical and nonclinical populations appear to have some similar phenomenological features. - Appears to be a continuum in the phonemic features of AVH in NCVH to psychiatric disorders. - Psychiatric patients experienced a higher frequency of AVH, more negative content, and less control. They also had more suffering and a different emotional response. - Risk factors (family history and trauma in childhood) were similar in all groups. - AVH symptoms have been related to alterations in particular brain structures and disturbances of blood flow, and metabolism.

Post-Traumatic Stress Disorder (PTSD); Dissociative Identity Disorder (DID); Borderline Personality Disorder (BPD); Bipolar Disorder (BD); Schizophrenia (SCZ); Auditory Verbal Hallucinations (AVH); Voice Hearing (VH); Non-Clinical Voice Hearers (NCVH); Auditory Verbal Hallucinations (AVH); Clinical Voice Hearers (CVH); Non-Clinical Voice Hearers (NCVH).

3.3.6 Comparison across diagnoses

To conclude this section regarding VH in different diagnoses, overall characteristics will be summed up and compared across these diagnoses.

Overall similarities in the differential diagnoses include the location of the voice, childhood trauma, negative content, positive content, commanding voices, commentaries, disruption of life, and loudness (Honig et al., 1998; Dorahy et al., 2009; Larøi et al., 2012; Slotema et al., 2012; Tschoeke et al., 2014; Noordenbos, Aliakbari & Campbell, 2014; Merrett, Rossell & Castle, 2016; Smith, Johns & Mitchell, 2017; Moskowitz, Mosquera & Longden, 2017; Zhuo et al., 2019; Beatson, 2019; Beatson et al., 2019; Aya, Ulusoy & Cardi, 2019; Cavalti et al., 2021; Strawson et al., 2022; Smith et al. 2023).

Overall differences in the diagnoses include age of onset, ambivalence with escaping the voices, frequency, severity, experiencing the voices as powerful, and emotional engagement (Gilbert et al., 2001; Dorahy et al., 2009; Hepworth, Ashcroft, and Kingdon, 2013; Noordenbos, Aliakbari & Campbell, 2014; Smith, Johns & Mitchell, 2017; Moskowitz, Mosquera & Longden, 2017; Aya, Ulusoy & Cardi, 2019; Dhakne et al., 2021).

Specific differences are e.g., DID patients' voices appear to be more connected to their identity, and their voices seem to vary the most in characteristics (Dorahy et al., 2009; Larøi et al., 2012; Moskowitz & Longden, 2017). Voices in BD and MDD seem to more often be mood congruent, which is not as often found in other diagnoses (Toh, Thomas & Rossell, 2015; Smith, Johns & Mitchell, 2017). Depression was found to have a generally higher escape motivation from their voices than both ED and SCZ (Gilbert et al. 2001; Aya, Ulusoy & Cardi, 2019). SCZ was found to have higher severity, frequency, more negative content, as well as the highest age of onset when compared to MDD, BD, PTSD, and BPD (Moskowitz, Mosquera & Longden, 2017). This, however, contradicts one study that argues that the severity and frequency of VH in BPD are found higher than in SCZ (Hepworth, Ashcroft & Kingdon, 2013). One BD study also found a similar age of onset for VH in both SCZ and BD (Dhakne et al., 2021).

3.4 VH in the General Population

In the following section, data that addresses VH in the general population will be presented. Similarities and differences in VH between Clinical Voice Hearers (CVH) and Non-Clinical

Voice Hearers (NCVH) groups will be divided into primary and secondary literature and presented separately. The results can be seen in Table 7.

Seven studies (Barrett & Caylor, 1998; Daalman et al., 2011; Diederen et al., 2012; Kråkvik et al., 2015; de Boer et al., 2016; Fung, Liu & Ma, 2019; Baumeister et al., 2021), three literature reviews (Beavan, Read & Cartwright, 2011; Hill & Linden, 2012; Daalman & Diederen, 2013), one narrative review (Larøi, 2012) and one systematic review (Baumeister et al., 2017) was selected that addresses VH in the general population. VH has been found in about 15% of the general population, often in the context of stress or lack of sleep (Larøi et al., 2012). Fung, Liu, and Ma (2019) found the occurrence of VH to be respectively 26% and 28% in two samples of randomly selected college students. Another study found that the prevalence of VH in a lifetime was about 7.3% (Kråkvik et al., 2015).

Phenomenological similarities found in both CVH and NCVH regard the location of the voices (Slotema et al., 2012; Daalman et al., 2011; Honig et al., 1998), loudness (Slotema et al., 2012; Daalman et al., 2011), number of voices, personification (Daalman et al., 2011), the content of the voices (Honig et al., 1998; Daalman et al., 2011), and shared belief about the voices (Barrett & Caylor, 1998). Studies found no differences between sexual and non-sexual victimization, discrimination, socioeconomic disadvantages (Baumeister et al., 2021), neglect, and abuse (Honig et al., 1998). Kråkvik and colleagues (2015) found that those in clinical groups experienced more different types of severe life events, than NCVH.

Differences involve CVH having a higher frequency (Barrett & Caylor, 1998; Slotema, 2012; Fung, Liu & Ma, 2019), longer durations (Barrett & Caylor, 1998; Slotema et al., 2012), later age of onset (Daalman et al., 2011; Larøi, 2012; Baumeister et al., 2017), higher severity, lower level of resistance (Slotema et al., 2012; Kråkvik et al., 2015; Baumeister et al., 2021), more fear of their voices (Honig et al., 1998; Kråkvik et al., 2015) lower sense of control, and more negative content of the voices (Barrett & Caylor, 1998; Honig et al., 1998; Daalman et al., 2011; Slotema et al., 2012). de Boer and colleagues (2016) similarly found more negative content of voices in the CVH, but this was a non-significant result.

Table 7
Primary Studies in General Population

Author(s)	Origin	Study Design	Aim	Population / Sample size	Methodology	Key Findings
Barrett, T. R. & Caylor, M. R.	USA	Cross-Sectional Study Qualitative Interview Case/Control	- To assess the comparability of their assessment technique to an earlier one. - To compare perceived reality characteristics of verbal hallucinations in college students and SCZ patients.	24 College students with voice hearing 20 Hallucinating SCZ Patients	Verbal Hallucination Scale MMPI	- The majority reported verbal hallucinations in college students met the accepted definition of hallucinations. - Commonalities between college students and SCZ patients. Similar first experiences with AVH - College students more often believed their voices to be auditory to other people when they heard them. - College students reported more control over voices. - VH does not appear to be causally related to psychopathology.
Daalman, K., et al. (2011)	Netherlands	Cross-Sectional Study Quantitative Questionnaire Case / Sub-Clinical	- To investigate if AVHs are the same phenomenon in the 2 extreme limits of the spectrum. .- To investigate which characteristics have the most prominent diagnostic value in predicting the presence or absence of a psychotic disorder.	111 NCVH 118 outpatients with psychotic disorder	AHRS	- Psychotic disorder patients had more negative emotional valence of content, higher frequency of AVH, a lower degree of control, and generally later age of onset than NCVH. - Perceived location, loudness, number of voices, and personification were found similar in the two groups. - CVH more often attribute VH as stemming from their own mind, while NCVH often attributes external things such as paranormal phenomena. - Uncertainty about VH on a spectrum, as there are not enough evidence to conclude this. An observed difference in age of onset points to different etiology between CVH and NCVH.
Diederen, K. M. J. et al. (2012)	USA	Cross-Sectional Study fMRI BOLD Study Case / Sub-Clinical	- To identify commonalities and/or differences in brain activation during AVH between psychotic and nonpsychotic individuals with AVH in samples that are large enough to enable group-wise analysis.	21 Psychotic patients with AVH 42 Nonpsychotic participants with AVH	LSHS CASH SCID-II SPQ GAF PSYRATS	- No significant brain activity differences were identified between the two groups. - No significant differences were found in the lateralization of language activity. - No significant correlation was present between lateralization indices and the emotional valence of the AVH content in either group. - Not enough evidence to support VH on a spectrum. Data cannot be used as evidence for or against the hypothesis.
Kråkvik, B. et al. (2015)	United Kingdom	Population-Based Study	- To investigate the prevalence of AVH in a large, randomly selected sample of the general population. - To compare individuals who report AVH with those who do not - To compare the experience of AVH between people who do and do not seek	2,533 adults from the general Norwegian population	Norwegian translation of LSHS HADS	- The prevalence of lifetime AVH was 7.3%, and of those who reported AVH approximately 84% had not sought professional help. - The content of the voices as well as used coping strategies between patients and non-patients were found to be different. - Confirmed an association between experiencing severe life events and hallucinatory experiences.
			professional help.			
de Boer, J. N. et al. (2016)	Netherlands	Cross-Sectional Study Case / Sub-Clinical	- Whether AVH in psychotic patients is characterized by more negative emotional content and reduced syntax, but similar use of nouns, compared to AVH in nonpsychotic patients.	17 Psychotic Disorder Patients 19 Nonpsychotic Patients	LSHS CASH SCID-II	- AVH in psychotic disorder were characterized by shorter mean length of utterances and higher number of literal and negative thematic preservation - No differences were found for scores on verb complexity, noun-verb ratio, type-token ratio, and positive thematic perseveration. - Appears to be more involved in the right hemisphere in the production of AVH in psychotic patients.

Fung, H. W., Liu, R. K. W. & Ma, Y. H. E. (2019)	China	Cross-Sectional Study Qualitative Interview Case / Control	- Whether there are significant differences in the measured psychosocial variables between VH and NVH in four independent samples. - To study the prevalence of VH in Chinese samples	Sample 1: 190 College students Sample 2: 138 College students Sample 3: 71 Patients with depression Sample 4: 94 people with disabilities (non-psychiatric)	DDIS, CAPE, MSPSS, PBI, LEC, SHS, SRMH, BSRS-5, PHQ-9, RPQ, PC-PTSD, DES-T SDQ-5	- The prevalence of VH experiences was 26% to 28% in samples 1 and 2, and 27.7% in sample 4. About two-fifths of participants in sample 3 had VH. - AVH should be interpreted as a spectrum where voices are experienced by psychotic individuals and NCVHs are on a continuum of normality.
Baumeister, D., et al. (2021)	Netherlands	Cross-Sectional Study Case / Sub-clinical / Control	To show in CVH, compared to NCVH and healthy controls: - An elevated salivary α-amylase reaction in the context of a blunted cortisol responds to the SECPT and higher overall cortisol level. - Increased anticipatory stress appraisal before exposure and higher subjective stress level, as well as diminished recovery.	20 Clinical voice hearers, 23 Non-clinical voice hearers, and 23 Healthy controls	SECPT, Saliva sample, PSYRATS, SAM, VAS.	- Found the highest stress levels in the CVH. - NCVH showed overall lower cortisol. This response matched that of individuals that have experienced trauma, which this group has been found to have higher exposure to than the HCG.
Secondary Studies in General Population						
Beavan, V., Read, J. & Cartwright, C. (2011)	United Kingdom	Literature Review	- To present a comprehensive picture of the prevalence of VH in the general population.	17 studies included	Via the database PsychInfo	- There was found a great variation in prevalence, mostly due to differences in methodology and definition. - Roughly 5-15% of the adult population hears voices. - There was found a correlation with trauma in both clinical and non-clinical samples - VH should not automatically be attributed as something psychopathological or assumed to be exclusively negative. Distress seems to be associated with negative interpretations more so than negative voice content in itself.
Larøi, F. (2012)	Switzerland	Narrative Review	- To find similarities and differences in verbal hallucinations between in- and outpatients.	N/A	N/A	- Similarities in brain activity during AVH in both CVH and NCVH. - No significant differences in brain activity during AVH. - Phenomenologically, CVH seems to experience more negative emotional content which elicits more distress. There are a higher frequency and less controllability. - NCVH had a lower age of onset
Hill, K. & Linden, D. E. J. (2012)	USA	Literature review	- AVH in NCVH and compares it to CVH.	Present literature from other studies	N/A	- VH can be experienced outside psychiatric disorders, but usually less negative and distressing. - Correlation between trauma and voice hearing. - NCVH generally describe their voices as positive and enriching experiences. - Theory: Early trauma can develop into schemata that view others as dominant and threatening, and the self as subordinate and vulnerable

Daalman, K. & Diederen, K. (2013)	UK	Literature Review	- Reviews studies on AVH in NCVH with a specific focus on the comparison between CVH and NCVH	22 Studies	Via the following databases: PubMed Scopus	- Phenomenological differences. CVH experienced more negative emotional valence of content, distress-related characteristics of voices, and more negative beliefs about voices. - Characteristics mostly form-related appeared to be similar. CVH often showed dysfunction in most cognitive domains, while NCVH showed aberrant or superior functioning. - Trauma scores did not differ in the groups. AVH activation in language areas in the brain was similar.
Baumeister, D., et al. (2017)	USA	Systematic Review	- To give a comprehensive overview of the phenomenon of persistent AVHs in a healthy adult population	36 Studies	Via the following databases: PsycInfo Embase Medline	- The phenomenology of AVHs has similarities between NCVH and CVH, especially in form, perceptual qualities, cognitive functioning, and most brain and language lateralization activity. Trauma scores were similar. - CVH experienced later age of onset, more voices, more negative content, more distress and emotional disturbances, higher frequency, and more loudness. - Childhood maltreatment has a strong correlation with AVH

Schizophrenia (SCZ); Auditory Verbal Hallucinations (AVH); Non-Clinical Voice Hearer (NCVH); Clinical Voice Hearer (CVH); Voice Hearing (VH); Non-Voice Hearers (NVH); Healthy Control Group (HCG); Minnesota Multiphasic Personality Inventory (MMPI); Auditory Hallucinations Rating Scale (AHRS); Launay-Slade Hallucination Scale (LSHS); Comprehensive Assessment of Symptoms and History (CASH); Structured Clinical Interview for DSM-IV axis II personality disorders (SCID-II); Schizotypal Personality Questionnaire (SPQ); Global Assessment of Functioning (GAF); The Psychotic Symptom Rating Scales (PSYRATS); Hospital Anxiety and Depression Scale (HADS); Dissociative Disorders Interview Schedule (DDIS); Community Assessment of psychic Experiences (CAPE); The Multidimensinal Scale of Perceived Social Support (MSPSS); Parental Bounding Instrument (PBI); Life Events Checklist (LEC); Subjective Happiness Scale (SHS); Single-Item Meassure of Self-Rated Mental Health (SRMH); 5-item Brief Symptom Rating Scale (BSRS-5); Patient Health Questionnaire (PHQ-9); Reactive-Proactive Aggression Questionnaire (RPQ); Primary Care PTSD Screen (PC-PTSD); Dissociative Experiences Scale-Taxon (DES-T); 5-item Somatoform Dissociation Questionnaire (SDQ-5); Socially Evaluated Cold Pressor Test (SECPT); Stress Appraisal Measure (SAM); Visual Analogue Scale (VAS)

CVH was found to often ascribe their voices to internal factors, while NCVH more often attributed them to external situations (Daalman et al., 2011). Studies focusing on neurological activity found no differences in brain activity or lateralization of language between CVH and NCVH (Diederen et al., 2012; de Boer et al., 2016). There was, however, found to be more activation in the right hemisphere when hearing voices in CVH (de Boer et al., 2016). NCVH were found to have lower levels of cortisol compared to HC and CVH (Baumeister et al., 2021).

The secondary literature utilized similar primary studies as already discussed, so differences and similarities will be described briefly unless contrary results are found. Overall similarities regarded phenomenological features, similar trauma history (Daalman & Diederen, 2013; Baumeister et al., 2017; Zhuo et al., 2019), cerebral activation (Larøi, 2012), voice quality, and language lateralization (Baumeister et al., 2017). Compared to the primary literature, similar family histories were found in both groups (Zhuo et al., 2019).

Differences in the secondary literature depicted a similar picture as the primary literature (Larøi, 2012; Daalman & Diederen, 2013; Hill & Linden, 2012; Baumeister et al., 2017). However, there were found conflicting results regarding differences in cognition. Daalman and Diederen (2013) found cognition to be different between CVH and NCVH, whereas Larøi (2012) did not, instead pointing to them being similar. Furthermore, secondary literature found that NCVH had generally more benevolent beliefs about their voices (Daalman & Diederen, 2013; Baumeister et al., 2017).

3.5 Nature of VH

In the following section data addressing different views on the nature of VH will be presented. First texts that address the phenomenon of VH will be displayed, then data regarding the change in voice's characteristics over time. Lastly, texts considering the correlation between VH, dissociation, and anxiety will be presented.

Different theories regard distress (Hill & Linden, 2012), and trauma's link to the emergence of VH (Larøi et al., 2019). Bereavement similarly seems to be related to VH (Morrison & Petersen, 2003; Pierre, 2010). Pierre (2010) notes how hallucinations can be helpful and comforting for individuals dealing with grief. Studies point to VH being a post-traumatic reaction (McCarthy-Jones & Longden, 2015) that may serve as a coping strategy against negative life experiences (Vallath et al., 2018) or as an internalized repression of experienced trauma (Anketell, Dorahy & Curran, 2011; Vallath et al., 2018).

Certain studies view VH as a continuum between normality and pathology (Beavan, Read & Cartwright, 2011; de Boer et al., 2016; Zhuo et al., 2019). Cavalti and colleagues (2021) discussed how VH should not be seen as a phenomenon tied to psychosis and SCZ, but as a phenomenon that can appear in correlation with other disorders such as BPD, BD, and depression. In contrast, some studies discuss how there is not enough evidence to back up the theory of VH on a spectrum (Daalman et al., 2011; Cavalti et al., 2021).

3.5.1 Change in Character of the Voices

Some studies address the phenomenon that voices appear able to change character over time. Smith and colleagues (2013) found that 23.8-38.1% of their sample reported a change in the content or tone of their voices over time. One participant in Anketell, Dorahy, and Curran (2011) described how their voice started out as positive and as a 'way to survive'. After some time, the voice turned harsh and negative, suggesting things like suicide. A similar experience was described by a female participant in Longden and colleagues' study (2012), who was comforted by her voices when young, but they changed nature after a traumatic experience. Aya, Ulusoy, and Cardi (2019) addressed how ED voices often change character over time. They often start out as compassionate and guiding, but as the illness progresses, they appear to turn more controlling, bullying, and critical.

Other studies focus on whether the individual's attitude towards the voices, could have an effect in making them more positive or negative (Romme & Escher, 1989; Moskowitz, Mosquera & Longden, 2017). Two studies discuss how individuals' responses to the voices affect their nature and can make them either more negative or positive (Romme & Escher, 1989; Larøi et al., 2019).

3.5.2 Dissociation as a Potential Mediating Factor

Dissociation was often highlighted as being correlated to VH (Anketell, Dorahy & Curran, 2009; Larøi, 2012; Moskowitz, Mosquera & Longden, 2017; Larøi et al., 2019; Beatson et al., 2019). Larøi (2012) and Larøi and colleagues (2019) argued that VH should be seen as a dissociative experience resulting from trauma. Related to this, Moskowitz, Mosquera, and Longden (2017) argued that VH is essentially a dissociative phenomenon and that VH in SCZ and other diagnoses are not fundamentally different.

Studies argue that dissociation might be an underlying mechanism for VH related to traumatic experiences (Anketell, Dorahy & Curran; 2009; Beatson et al., 2019). It was theorized that voices might be dissociative parts of the patient's personality or alters (Beatson et al., 2019) Anketell and colleagues (2010) found that there are higher levels of dissociation in voice hearers, than non-voice hearers.

3.5.3 Anxiety as a Potential Moderating Factor

Some of the used text proposes anxiety as a moderating factor for VH. In the following section correlations from different studies will be presented regarding anxiety and VH. The overview of literature specifically addressing anxiety and VH can be viewed in Table 8.

Ratcliffe and Wilkinson (2016) found that anxiety induces an episode of VH. This happens when the individual develops an anxious anticipation for the content of the voices, which in turn results in the content becoming increasingly more determinate. They found that anxiety of the voices resulted in a worsening of the phenomena (Ratcliffe & Wilkinson, 2016). Freeman and Fowler (2009) argue that trauma influences persecutory thinking non-specifically via the creation of anxiety, and they are therefore independently associated. Three different studies argue that anxiety is tightly linked to the severity and intensity of VH (Kråkvik et al., 2015; Ratcliff & Wilkinson, 2016; Strawson et al., 2022).

Table 8
Primary Studies in Anxiety Literature

Author(s)	Origin	Study Design	Aim	Population / Sample size	Methodology	Key Findings
Freeman, D., & Fowler, D. (2009)	United Kingdom	Population-Based Study Replication Study	- To examine the association between trauma and psychosis via a connection of paranoia and anxiety.	350 Randomly selected participants from the general population	LSC G-PTS Part B CAPS WASI DASS BCSS Maudsley Addiction Profile	- Lifetime experience of trauma is common in the general population. - Found a five times greater likelihood of verbal hallucinations for individuals with trauma experiences. - Trauma influences persecutory thinking non-specifically via the creation of anxiety - Trauma history and levels of anxiety were independently associated with the occurrence of AVH. - Childhood maltreatment has been found to have a strong association with AVH.
Secondary Studies in Anxiety Literature						
Ratcliffe, M., & Wilkinson, S. (2015)	United Kingdom / Australia	Narrative Review	- To offer an account of the relationship between a substantial subset of verbal hallucinations and feelings of anxiety.	N/A	N/A	- Anxious anticipation of thought content as they become increasingly determinate results in a quasi-perceptual experience of thought content. - Anxiety alienates the individual from their own thoughts. When individuals face something they seek to avoid, they might feel helpless which results in charged perception, often negative self-evaluations.

Auditory Verbal Hallucinations (AVH); Life Stressor Checklist (LSC); Green et al. Paranoid Thoughts Scale-Part B (G-PTS Part B); Cardiff Anomalous Perceptions Scale (CAPS); Wechsler Abbreviated Scale of Intelligence (WASI); Depression Anxiety Stress Scale (DASS); Brief Core Schema Scales (BCSS).

4. Discussion

The used literature points to a correlation between adulthood trauma and VH in both NCVH and CVH. Studies pointed to a link between trauma, stressors, and severity as well as content and patterns in VH. There appear to be similarities between CVH and NCVH; albeit severity and distress levels appears to differ. The phenomenological factors seemed similar, however. Voices were found to be changeable and could appear both positive and negative in an individual's life, enriching or harming them. Dissociation was found to be a relevant potentially mediating factor in studies investigating it, while anxiety was found to be a potentially moderating factor in the occurrence of VH.

4.1 Function of VH

One point that was evaluated to be important to highlight, was whether VH might be a psychotic feature or a trauma response. Multiple studies investigated the correlation between trauma and VH, finding links between content and severity.

One aspect was NCVH in the general public. There were found signs of trauma in this group similar to those in CVH compared to HC without VH, who had significantly lower trauma scores (Larøi, 2012; Daalman & Diederen, 2013). VH was found by studies to potentially be a coping mechanism against traumatic events, helping the individual deal with the overwhelming situation (Vallath et al., 2018; McCarthy-Jones & Longden, 2015; Anketell, Dorahy & Curran, 2011). Studies found that traumatic events might trigger VH in participants, and voice hearers were often able to trace back the voices to overwhelming situations (Romme & Escher, 1989; Dorahy et al., 2009; Beavan, Read & Cartwright, 2011; Anketell, Dorahy & Curran, 2011). This potentially indicates that VH could in certain situations be a response to trauma that might be helpful. E.g., could be seen in the young woman addressed in Longden and colleagues' (2012) study. She found comfort in the voices in her younger years when she was lonely and saw them as positive. Another example is Anketell, Dorahy, and Curran (2011), who investigated PTSD in three participants. One explicitly states that the voices were helpful to him and offered him a way to survive by being supportive and accommodating. These could be examples of how VH might serve as a positive influence and coping for certain individuals.

Positive voices are also seen in NCVH as well (Barrett & Caylor, 1998; Honig et al., 1998; Daalman et al., 2011; Slotema et al., 2012; de Boer et al., 2016). NCVH more often described

positive beliefs about their voices (Anketell, Dorahy & Curran, 2011; Daalman & Diederen, 2013; Baumeister et al., 2017) and external reasonings for their appearance, such as trauma or paranormal causes (Daalman et al., 2010; Baumeister et al., 2017; Tolmeijer et al., 2021). One study investigated how cortisol was affected by trauma (Baumeister et al., 2021). This study found that cortisol was highest in CVH, however, they found that NCVH had lower cortisol than HC. They argued that it might be due to desensitization of the HPA stress activity. However, if this was the case, similar lowered HPA stress activity could be hypothesized to be seen in CVH with trauma, but that was not found in their results (Baumeister et al., 2021). For this reason, it could be hypothesized that it might not be trauma desensitizing the HPA stress activity, but rather that a healthy relationship with one's voices could potentially function as a destressing factor. Another point related to this that was deemed relevant to highlight was the found ambivalence some voice hearers have regarding losing their voices (Gilbert et al., 2001; Aya, Ulusoy & Cardi; 2019). Some of the voice hearers studied describe that they do not wish to lose these voices, which might potentially point to the voices adding something positive to the individual's life; be that company or potentially a form of guidance.

However, studies also found patterns of negative or hostile voices. Some found that positive voices could turn negative and change character. One case of this was the example given prior, with the woman who experienced positive voices that helped her against loneliness (Longden et al., 2012). Her voices had previously been supportive and helpful; caring and good playmates, however, after she was raped by a male colleague at the age of 18, they changed. After the event, one of the positive voices that had previously supported her, disappeared, while the other turned hostile and shaming. It caused her a great amount of distress, and she became diagnosed with SCZ (Longden et al., 2012). The authors argued that the voices earlier had filled a void in her life such as her mother neglecting her and lack of friends, while after the traumatic event, her worldview was shattered. Instead of support, the voice was marked with anger, guilt, and shame over the situation (Longden et al., 2012). This could show how one traumatic experience can alter the nature of voices and turn them from a healthy coping mechanism against e.g., lack of care in childhood to a maladaptive coping mechanism causing distress for the individual.

This maladaptive form, however, could also be an indirect attempt to guide the person. This was e.g., seen in the PTSD participant, who similarly viewed his voices as positive (Anketell, Dorahy & Curran; 2011). His voices were similarly supportive and accommodating at first but later conceived of suicide as the solution to his despair, isolation, pain, and regret (Anketell,

Dorahy & Curran; 2011). In this regard, they did turn negative, however, he still saw them as trying to initiate helpful advice, despite the hostility. This could indicate that even though voices might turn maladaptive, they could potentially still be trying to help but it may be hidden behind hostile behavior.

VH has also been found to have associations with dissociation (Anketell et al., 2010; Anketell, Dorahy & Curran, 2011; Larøi, 2012; Moskowitz, Mosquera, & Longden; 2017; Beatson et al., 2019; Larøi et al., 2019). Studies also pointed to VH potentially being a sign of repressed trauma, that the individual cannot remember, but is still affected by (Anketell, Dorahy & Curran, 2011. A study investigating this, is Badcock and Hugdahl (2011), who found that intrusive memories can comprise either individual features such as words and voice identity or complete episodes such as memories of abuse. These two perspectives could point to VH being an unconscious response to traumatic and distressing events mediated by dissociation. This could suggest that VH is an unconscious coping or survival strategy, outside of the individual's own control.

HVM shares this view of VH being related to social-emotional problems in the individual's life and that it is not a sign of mental illness. Instead, it is seen more as a response for the individual to handle difficult situations (Escher & Romme, 2012). They suggest that a fitting intervention for VH is group or trauma therapy. The HVM movement focuses on how attitude can affect the voices' nature, and how bettering one's relationship with the voices can lower distress for the voice hearer (Escher & Romme, 2012). This was similarly found in this study's results (Romme & Escher, 1989; Moskowitz, Mosquera & Longden, 2017).

4.2 Similarities and Differences in different Diagnoses

VH appears to be phenomenologically similar across different diagnoses, while certain aspects do seem to change depending on the specific diagnosis. One difference across the diagnoses was the severity in which VH manifested itself. This difference in severity could point to a potential continuum, as some of the found literature points out. SCZ was found to have the highest level of severity and distress regarding their VH. There was found conflicting evidence regarding BPD, where one study found higher distress related VH in BPD (Hepworth, Ashcroft & Kingdon, 2013), one study found similar distress levels (Strawson et al., 2022), and one study argues that there is higher distress in SCZ (Slotema et al., 2012). In the secondary literature on BPD, three studies found that BPD seemingly had more distress than SCZ

(Beatson, 2019; Beatson et al. 2019; Cavalti et al., 2021), while one found that SCZ appeared to have higher severity than other diagnoses (Moskowitz, Mosquera & Longden, 2017). On the other end of the continuum, NCVH appears to have less severity and distress compared to CVH (Slotema et al., 2012; Kråkvik et al., 2015; Baumeister et al., 2021). Both NCVH and CVH appear to have similar brain activity, indicating that this severity and distress might not be mainly a neurological difference (Diederen et al., 2012; Larøi, 2012; de Boer et al., 2016).

The reason for this difference in severity might stem from the severity of trauma (Morrison & Petersen, 2003; Merrett, Rossell & Castle, 2016; Bless et al., 2018; Vallath et al., 2018), or potentially the individual's relationship with their voices (Romme & Escher, 1989; Baumeister et al., 2017; Moskowitz, Mosquera & Longden, 2017; Larøi et al., 2019). The view of why the voices appears and whether they have meaning, or a biological symptom also appear to influence the severity of the voices (Romme & Escher, 1998). Age of onset might also influence the severity of SCZ, as SCZ was found to have the highest average age of onset out of all CVH and NCVH groups (Moskowitz, Mosquera & Longden, 2017).

Why SCZ might experience a higher age of onset, was only indirectly theorized by two studies included (Baumeister et al., 2017; Moskowitz, Mosquera & Longden, 2017). Baumeister and colleagues (2017) theory regards how early onset of negative appraisal, such as believing oneself to be crazy in societal standards, is less likely to be prevalent at a young age (Baumeister et al., 2017). Therefore, NCVH is less likely to fear or act hostile towards the voices. Still, they conclude that there is not enough evidence or research on the topic (Baumeister et al., 2017).

There appears to be a gap in the literature regarding why SCZ might experience more severe VH, and later age of onset compared to other clinical and non-clinical groups. A hypothesis of the reviewers regarding why SCZ might experience a later onset of VH, might not be to focus on late onset, but rather on early onset in NCVH as Baumeister and colleagues (2017) did. NCVH on average experiences an earlier onset of VH than SCZ. Most experience it in childhood and it continues throughout their adolescence and adulthood (Daalman et al., 2011; Larøi, 2012; Baumeister et al., 2017). The early age they experience VH in, might make them more adaptive when it comes to dealing with it as their minds might be more adaptive (Gopnik, Griffiths & Lucas, 2015) and they might not have been affected by the same societal standards as adults have (Baumeister et al., 2017). If children are less likely to associate VH with something negative, it might cause them less distress as studies indicate earlier (Romme &

Escher, 1989; Baumeister et al., 2017; Moskowitz, Mosquera & Longden, 2017; Larøi et al., 2019). This, in turn, could potentially make their severity and distress lower compared to SCZ groups and they might not be diagnosed with SCZ as adults. Individuals who experience VH later in life might be affected by society to think more negatively of the experience, and their voices might become more hostile. Their minds might also be less likely to be able to deal with the sudden phenomenon which causes them heightened distress.

A theory as to why it might appear later was also discussed by Moskowitz, Mosquera, and Longden (2017). This theory hypothesizes VH as a dissociative phenomenon that might stem from repressed trauma in the past that has been kept away by social isolation and disengagement of the attachment system. In adulthood, this can then be re-experienced or retriggered and cause VH to first appear later for SCZ (Moskowitz, Mosquera & Longden, 2017).

The evidence pointing to more severity and later onset of VH in SCZ could support the continuum theory. NCVH appears to be on one end of the spectrum, where they suffer less distress and severity from their voices, while on the opposite end, severe mental illness appears to have more severity and distress. This, paired with the previous discussion regarding coping, could potentially indicate that instead of being a sign of mental illness, or solely a psychotic feature VH could be seen as a response to traumatic events and appears to be on a spectrum.

4.3 Critical View on Studies

In the next section, secondary literature with results contrary to found primary studies will be addressed. One of those studies is Pierre (2010), which is one of the only studies included, that found lacking evidence for a causal and triggering link between VH and adulthood trauma. From the studies included in this review, that statement appears to be true. Prior to 2010, information regarding adulthood traumas links with VH appeared scarce with only three included studies addressing it (Romme & Escher, 1998; Morrison & Petersen, 2003; Anketell et al., 2010), while after 2010, the field seemed to be more saturated (Anketell, Dorahy & Curran, 2011; Beavan, Read & Cartwright, 2011; Longden et al., 2012; McCarthy-Jones & Longden, 2015; Baumeister et al., 2017; Vallath et al., 2018; Wearne et al., 2018; Larøi et al., 2019; Tolmeijer et al., 2021). This could suggest that the claim made by Pierre (2010) regarding the link, might be outdated.

Beatson (2019), Beatson and colleagues (2019), and Cavalti and colleagues (2021) all found that distress appeared to be higher in BPD compared to SCZ. This was not found to be supported by the primary studies included in this review, which found conflicting results (Slotema et al., 2012; Hepworth, Ashcroft & Kingdon, 2013; Strawson et al., 2022). Conflicting data regarding distress from VH in BPD compared to SCZ is something that authors should be alert about when they study this field.

5. Conclusion

The aim of this review was to explore a potential association between adulthood trauma and VH as well as illuminate similarities and differences in clinical and non-clinical populations. The results from the literature indicated that there is a link between trauma and VH. Some studies found that the type of trauma and severity of it might influence VH. It can be discussed whether VH potentially has a function against trauma, with some pointing to it being a coping mechanism that can be helpful. However, whilst it can be seen as a helpful coping strategy for some, it can also be a maladaptive phenomenon causing distress for others experiencing it.

Most of the researched material included found phenomenological similarities between VH in SCZ, BPD, BD, depression, ED, DID, and PTSD. This points to VH not being an SCZ-exclusive phenomenon, but rather an experience that can occur in multiple diagnoses and the general population. VH appeared common in the general population, although it seemed to cause less distress and fewer disruptions in their everyday life. NCVH also appeared to have generally more positive voices compared to CVH.

There were found some differences regarding severity and age of onset, where SCZ appears to have higher severity and later age of onset. There appears to be a gap in the literature regarding why this might be the case from a psychosocial perspective. Voices appear to be able to change over time, and their nature seems to be determined by several factors such as appraisal of the voices. Dissociation and anxiety seem to be linked with VH as well, with dissociation being a more mediating factor, and anxiety appearing to be a moderating factor.

6. Clinical Implications

Based on the results of this review, it might be of value for professionals working in the clinical field to consider trauma when treating patients with VH. Research has found that trauma tends

to be overlooked when treating patients (Simontchik & Eilskov, 2022). However, the results in this current study, point to trauma being correlated with VH and should therefore be of importance to investigate in clinical relations. HVM's principles on VH might be helpful to those working in the field. They suggest focusing on group- and trauma therapy, as well as how to work on improving the relationship between voice-hearers and their voices.

7. Research Implications

A potential gap was found in the current review, involving why VH appears to be more severe in SCZ and why its age of onset seems to be higher than in other clinical and non-clinical groups. This warrants further research on the topic.

Furthermore, another topic that might influence VH that was not researched in the current study, but that literature vaguely mentioned, is how societal standards and views might affect VH and how it is seen. This also includes how different cultures might respond to VH and individuals with it.

Another topic that warrants more research, is how to best treat VH. It was found that the individual's attitude towards the voices could potentially affect their content and whether they appeared negative or positive. The aspect focusing on the appraisal of voices warrants further research, also when considering the treatment of VH.

8. Limitations

This study has some limitations that the authors wish to address transparently. The research was conducted in line with university requirements, which involve limitations in pages and timeframe. The authors also lacked in-depth knowledge of the phenomenon prior to conducting the review, which might have affected the outcome. This includes the possible exclusion of relevant material regarding attitudes toward voices since studies focusing on reactions to voices were excluded. Due to the authors limited language abilities, the search was only conducted in English, which excluded non-English publications. This might also have affected the search which mostly found material oriented around the Western world. This gap in cultural focus was further increased by the authors excluding texts focusing on VH as a spiritual phenomenon.

Furthermore, scoping reviews have certain limitations such as not generally assessing the quality of included studies during the selection phase. Scoping reviews also risk being more affected by author selection bias than some other review forms. There is also potential publication bias involved, when selecting reviews and studies. Another potential risk of bias is including secondary literature that risks having the same results as already included primary literature. Furthermore, secondary literature might have affected the authors with their tone and content, regarding what is most relevant to highlight. Due to having a multitude of different review studies and both qualitative and quantitative studies, it was difficult to compare the chosen literature. This included a lack of similarities in the used methods. Furthermore, there was also found a lack of clear definitions of VH in SCZ, as well as trauma in the literature. It should be mentioned that the current review's quality is affected by the included studies' strengths and weaknesses.

The study also has certain strengths. Scoping reviews, in general, are able to research a topic broadly and draw patterns, connections, and illuminate gaps in the literature. The current review includes a large amount of material from four different databases, which furthers the broadness. The current review also utilized two blinded researchers to minimize selection bias. Furthermore, there were clearly defined eligibility criteria and a standardized protocol led by JBI and PRISMA. The methodological approach was also transparent, and the systematic search makes the research paper more easily replicable.

The review offers new information for clinical intervention and future research. It points to potential new perspectives on etiology and the nature of VH.

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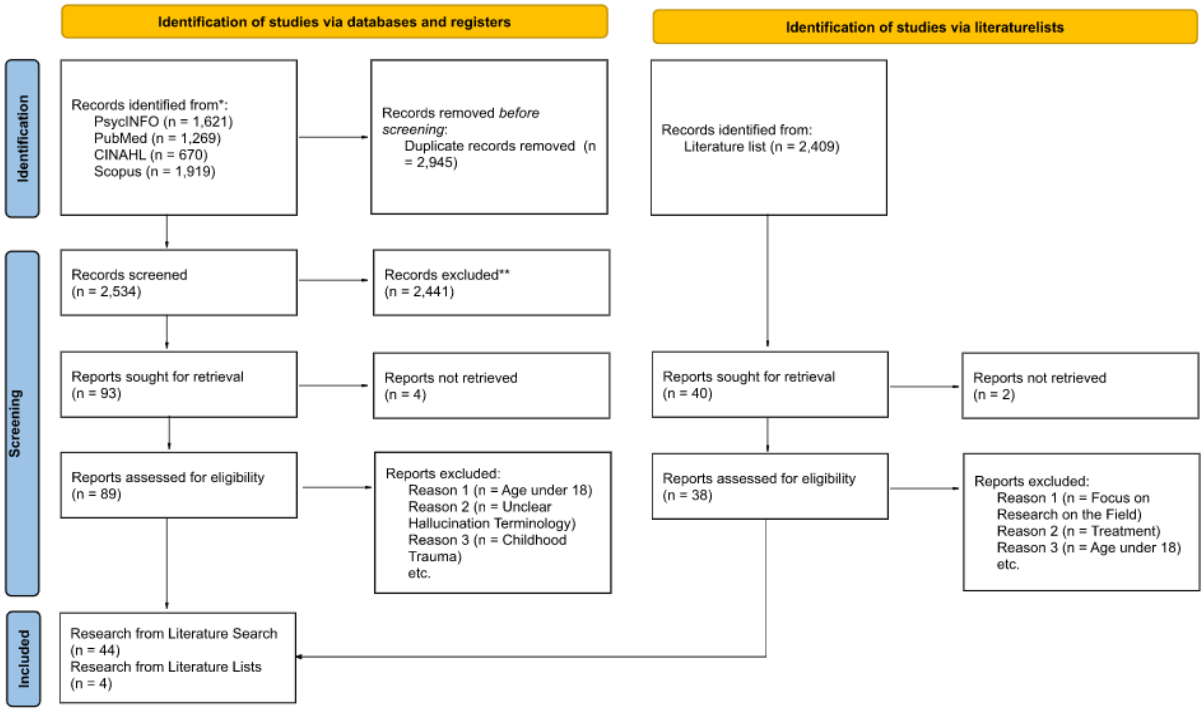
Appendix 1

Results for Any Field: "Voice hearing" OR Any Field: "Voice hearer*" OR Any Field: "Voice hallucination*" OR Any Field: "Hearing Voices" OR Any Field: "Verbal Hallucination*"

Appendix 2

Appendix 2:

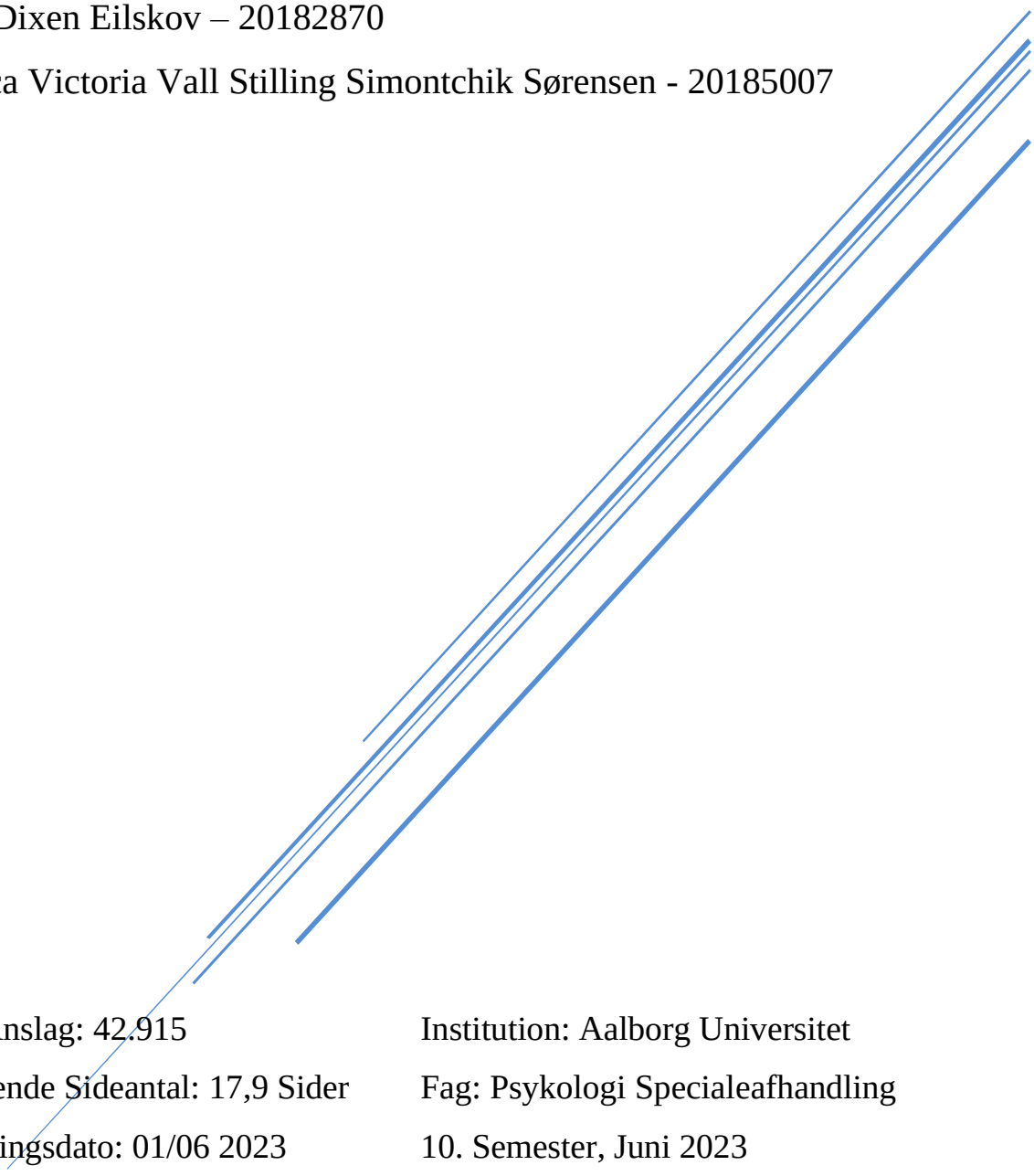
PRISMA 2020 flow diagram for new systematic reviews which included searches of databases, registers and other sources



Framework for: Voice Hearing; A Response to Traumatic Experiences or a Sign of Psychosis: A Scoping Review

Maria Dixen Eilskov – 20182870

Rebecca Victoria Vall Stilling Simontchik Sørensen - 20185007



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Vejleder: Kristine Kahr Nilsson

Indhold

1. Method

In the following sections, the considerations behind the method used in the framework and review will be elaborated. This involves why a scoping review was chosen for the current study, the protocol, the eligibility criteria of chosen studies which consist of inclusion and exclusion criteria, and the search strategy utilized. Furthermore, the data charting and the considerations behind the structure will be explained.

1.1 Why a Scoping Review

The purpose of the study is to explore an alternative view of the symptom Auditory Verbal Hallucination (AVH), which will be referred to as Voice Hearing (VH) in the current paper. The broad interest and search used throughout the study are done with a desire to illuminate VH's potential relation to adulthood trauma. This includes VH in not only schizophrenia (SCZ) but other mental disorders and the general population as well.

A scoping review was found fitting when considering the purposes of this study. It was evaluated to be a useful research form to explore the existing literature in the research area and to give a coherent overview of found data, while also allowing for immersion in the material. Furthermore, there was a wish to synthesize and discuss relations between VH and trauma and hypothesize the reasonings behind the potential correlations (Aromataris & Munn, 2020). To gain awareness of a field, a scoping review was chosen as the first step to making sure the product produced had not been investigated prior. It was evaluated to be relevant in order to inform future research such as quantitative and qualitative empirical studies and systematic reviews (Aromataris & Munn, 2020). A scoping review was also evaluated to be relevant since there were not found any other scoping reviews that explored this study's specific field of interest. Furthermore, a scoping review allows the authors to be transparent and systematic when conducting the literature search, making the results replicable (Aromataris & Munn, 2020). A scoping review was also deemed fitting due to its wider field of interest and the broad research question, which suits the study. This was done due to the wish to study both clinical and non-clinical populations, as well as theorize possible correlations between VH and traumatic experiences.

To obtain the broad view that was sought, the literature was obtained on a mixture of healthcare professional databases and more generalized databases. Furthermore, a scoping review allows the inclusion of an array of different material types such as quantitative and qualitative studies,

reviews, meta-analysis studies, and others such as books, comments, editorials, etc. if they were evaluated to add value to the review. Scoping reviews also allow the authors to search through literature lists to obtain a deepened understanding of the field and supplement potential gaps that were not filled in the original search (Aromataris & Munn, 2020).

The general structure of a scoping review consists of an introduction, background, methods, results, discussion, and conclusion. (PRISMA-ScR, n.d.). Furthermore, clinical implications, research implications, and the study's limitations and strengths will be added. The addition of the latter three subtitles is done to create clarity around the study's goals and potential clinical significance while being transparent about perspectives, limitations, and strengths. The results will be set up thematically in trauma's correlation to VH, VH in clinical diagnoses, VH in the general populations, and the nature of VH.

Other study forms were also considered such as a systematic review. This format was not chosen, since the research question would be focused more on how precise variables affect one another, and the questions are generally more specific (PRISMA, n.d.; Munn et al., 2018). The current study is more focused on exploring the potential relationship between VH and trauma, and VH in a multitude of groups, so a narrower search and focus were found unsuitable. Scoping reviews focus more on providing an overview of the evidence and answering questions regarding the nature of the phenomenon, instead of clinical guidelines and recommendations which are a more common goal for systematic reviews (Munn et al., 2018; Aromataris & Munn, 2020).

Conducting a qualitative or quantitative study was considered but was ultimately evaluated to not be an optimal study form for the given project. There were various reasons for this choice, such as the authors not being familiar enough with the research field to pinpoint specific gaps that would warrant this type of empirical research. Another consideration when addressing the possibility of conducting a qualitative or quantitative empirical study, was whether or not it would be realistic to obtain the specific participants who would be able to contribute. Part of the needed participant group for this study would be involved with the psychiatric ward which involves rules and regulations beyond what is possible for us as students. The selection of participants also risked selection bias, especially since there would not be resources or time to include a larger sample size that might be more generalizable. Due to these considerations, it was evaluated that a review would offer more scientific value to the current field in contrast to an empirical study.

1.2 Elaboration of the research question

In the following section, the research question will be elaborated on and the definitions of trauma and VH will be expanded. The research questions are as follows:

Is there an association between adulthood trauma and VH? Are there similarities and differences between VH in clinical and non-clinical populations?

The aim of the study was to explore whether VH might be related to traumatic experiences in adulthood. The interest was formed through the authors' previous clinical experience and earlier research in the field. These earlier experiences suggested a potential link between VH and trauma in patients. Furthermore, the experiences also indicated that VH might not exclusively be a psychotic symptom, but present in an array of other diagnoses and the general population. This potential occurrence in other groups than psychotic ones, and the possible link with trauma, caused the authors to hypothesize that VH might be a response to trauma, and not purely a phenomenon tied to psychosis. Other literature found in earlier research, pointed to VH potentially being a natural response to trauma in order to assist individuals through the distress of some situations (Simontchik & Eilskov, 2023).

The wish to explore whether VH was present in other diagnoses and in the general population focused less on trauma etiology and more on whether VH was present. Furthermore, there was an interest in how it phenomenologically displayed itself. This was done to investigate if VH is solely a psychotic feature or possibly a phenomenon that can appear independently of psychosis.

In the current study, VH will be used instead of the psychological terminology of AVH. This will be done because of the dichotomy appearing between the two terminologies in the studied literature. AVH was seen to often be used when viewing the phenomenon as a symptom or something dysfunctional, whereas literature using the term VH seems to view the phenomenon more like a natural occurrence that is not necessarily related to serious mental illness (Higgs, 2020).

Harrison and colleagues (2018) define a hallucination as: "... a percept that is experienced in the absence of external stimulus to the corresponding sense organ". VH is a form of verbal auditory hallucination that can take different forms such as second-person hallucination and third-person hallucination (Harrison et al., 2018). The study wishes to exclude single-episode, due to it appearing only once, and isn't a continuous phenomenon.

The trauma terminology used in the current study is focused on longitudinal trauma burdens causing allostatic loads as well as single-standing episodes of trauma such as single-occurring, overwhelming situations that affect the individual long-term. This includes episodes such as rape, shocking events while in care, bullying, discrimination, accidents, losing loved ones, and near-death experiences. Trauma-Informed Care Implementation Resource Center defines trauma as "[Trauma] results from exposure to an incident or series of events that are emotionally disturbing or life-threatening with lasting adverse effects on the individual's functioning and mental, physical, social, emotional, and/or spiritual well-being." (Trauma-Informed Care Implementation Resource Center, 2023). Under this definition of trauma, the authors will include phenomena such as stress and daily life pressure affecting the individual. Physical traumas and somatically caused VH, such as head trauma, infections, and inflammations, are excluded, both to narrow down the research area and due to the fact that the biological and somatic perspectives might play a part when studying those types of traumas. Furthermore, drug induced VH is excluded for the same reasons.

There will be a focus on adults and adulthood traumas in the current study. This is due to a wish to examine the emergence of trauma and how the phenomenon potentially forms afterward in response. It can be difficult to reliably study the exact moment or trigger that occurs in childhood compared to adulthood with suddenly occurring voices. The authors have also previously made a study researching the view of SCZ as a genetic disorder or a psychosocially influenced diagnosis. The focus was on childhood trauma potentially being a factor in the development of SCZ (Simontchik & Eilskov, 2023). Looking at adults in this study might reveal more direct links between trauma and the occurrence of VH. Furthermore, it appears that adulthood trauma has been less studied in the field of research, compared to childhood trauma. For these reasons, participants in the current study should have experienced trauma at the age of 18 years or above. For other groups, the participants also have to be above 18 years of age. There will not be an upper limit to the age of the participants.

1.3 Protocol

The current study is inspired by the protocol Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) (PRISMA, n.d.) and The Joanna Briggs Institute Reviewers' Manual (JBI) (Peters et al., 2015; Aromataris & Munn, 2020). PRISMA-ScR is an acknowledged and well-established protocol for ensuring uniformity in scoping reviews. The checklist was furthermore used, to ensure that every aspect

was included. JBI was included due to its in-depth description of the reasonings behind conducting scoping reviews and for the general setup and structure of the study.

1.4 Eligibility Criteria

In the following section inclusion and exclusion criteria will be discussed as well as the reasoning behind these choices. This is done to create transparency and construct an overview to clarify what the specific interest involves. JBI will be used for structure in the following section.

1.4.1 Participants

The age of participants, when they experienced trauma, was evaluated to be relevant from 18 years and above, as this will allow the review to focus on adulthood traumas. An upper limit was not evaluated to be relevant, as long as somatic illnesses were not present. The reason for the selection of 18 years of age, stems from the previewed literature that seems to favor this limit when addressing adulthood. It was evaluated that trauma was a less important criterion when investigating VH in other diagnoses, and for that reason, it was only a criterion for participants to be above the age of 18.

The participants in this study should be people with VH. However, control groups without VH used for comparison, were also evaluated as relevant in order to explore the phenomenon. It is not a limitation if they have other mental diagnoses or no diagnoses at all. However, somatic illnesses will be excluded, including illnesses such as brain trauma, dementia, bodily inflammations, infections, etc. Aside from this, drug induced VH will also be excluded. Furthermore, studies that focus on VH in the resting state of participants were excluded. Studies focusing on the participants' level of function and cognitive abilities will also be excluded as the current paper focuses on trauma etiological viewpoints of VH. Participants' reactions to voices are similarly evaluated to be less relevant for the current study and will be excluded as well. If participants experience exclusively auditory hallucinations without voices, such as knocking on doors, birds chirping, etc. the material will also be excluded. This also includes if the study does not clearly separate between auditory hallucinations and AVH. If VH was studied solely from the perspective of it being a spiritual phenomenon it was similarly excluded. VH was a criterion in other diagnoses as well, however, control groups and groups without VH were also included to deepen understanding of the phenomenon.

1.4.2 Concept

The core concept of the study helps guide the focus of the scoping review and should therefore be presented clearly (Aromataris & Munn, 2020). The main focus of the paper is to explore whether VH might be related to traumatic experiences. The paper will be regarding multiple clinical populations, not just SCZ or psychosis, as there is a wish to explore whether the phenomenon is solely psychotic, or it can be present in other disorders and the general population.

1.4.3 Context

The culture and geographical settings are evaluated to be less significant. This is due to the current paper's focus on VH's correlation to trauma, which might be thought to be universal despite cultures. Both genders will be included to make the current study more generalizable. However, studies focused solely on gender differences will be excluded. Both clinical voice hearers (CVH) and non-clinical voice hearers (NCVH) will be included.

Because VH is considered a mental phenomenon, there was included data from psychological databases. To further a broadened understanding, medicine-focused databases, and nurse databases were also included, as well as more generalized databases. There was no specific timeframe for the studies included, as there was not found to be an overwhelming amount of material in the field. Therefore, it was evaluated to be more important to include everything on the databases used, to make sure that all perspectives were thoroughly researched. Furthermore, due to a wish of including multiple different perspectives, non-peer-reviewed material was also included.

The language included in the research papers is English due to the authors' limitations. Furthermore, English was evaluated to be the most relevant language when searching for international data, compared to languages such as Danish, Swedish, and Norwegian which might be too specific for the given countries. Only including English articles were evaluated to possibly increase the likelihood of uniformity in the literature, since the same standards are more likely to be used. Due to time limitations and resources, it was evaluated that doing a search in multiple languages would be too consuming of a task, and not possible without potentially decreasing the quality of the study. Due to this decision, the authors acknowledge the risk that a majority of the material might be of Western origin.

1.4.4 Types of Evidence Sources

In the current study, an array of types of literature were included. This is to grasp the entirety of the field and better create an overview, which is the goal of a scoping review. Both primary and secondary literature has been selected. The selected studies include systematic-, literature-, and narrative reviews, case studies, epidemiological studies, neurological studies, opinions, cross-sectional studies, and experimental studies.

1.5 Search Strategy

To further make the paper transparent, the search process will be included. When conducting the search, JBI's three-step standard was used to ensure transparency and a systematic approach. To organize the literature found, Rayyan, an Intelligent Systematic Review Program, was utilized.

The first step involves using different databases to find relevant material and keywords in the field. Initially, a test search was made on PsycINFO, which revealed fewer results than expected despite the search being as broad as the authors found possible. This led the authors to test the same search on different databases, which all ended up giving fewer results than anticipated. It was decided to include several different databases due to the small field of the topic, both to make sure the field was adequately scoured for nuances and depth as well as to obtain a wide variety of opinions and perspectives on VH. The databases included were respectively PubMed due to their medical perspective, PsycINFO which has a primary psychological focus, Scopus which is a general database, and CINAHL which is a database for nurses. The reason Scopus was included was due to its generalized data which also involves sciences such as anthropology, social sciences, and arts and humanitarian sciences. CINAHL was evaluated to be relevant due to a wish to explore material with a focus on the patients' experience, instead of a clinical one.

After choosing relevant databases to use for the review, the second step of the JBI three-step standard search strategy requires the authors to familiarize themselves with the chosen field's literature. This allowed them to acquire a more thorough understanding of relevant aspects and keywords for the current study. Since the search for relevant literature showed a lower amount of literature than expected, the authors decided to use a broader search, which was meant to allow the study to explore as much relevant literature as possible. The search words that were decided on were "Voice hearing", "Voice hearer*", "Voice hallucination*", "Verbal hallucination*", and "Hearing Voices". The reason for including less psychologically claimed

terms such as voice hearing and voice hearer was to allow for a broader perspective from sciences that might not use verbal hallucinations e.g., anthropology.

MeSH terms and Thesaurus were not included, due to the closest corresponding terms being too broad and allowing too much unrelated material. E.g., the MeSH term 'auditory hallucinations' was considered, however, it included phenomena such as hearing knocks on doors, etc. which was evaluated to be irrelevant for the current paper.

The research in PsycINFO resulted in a total of 1.621 hits, while PubMed resulted in 1.269 hits. 1.919 hits were found on Scopus and 670 hits on CINAHL. In total, this generated 5.479 results. Those results were transferred to Rayyan, and 2.945 duplicates were removed, leaving 2.534 articles to be screened. The search was conducted on the 21 of February 2023. The full search block can be seen in Appendix 1 (PRISMA, n.d.). Furthermore, a flowchart has been conducted to give a visual representation of the material screened (PRISMA, n.d.).

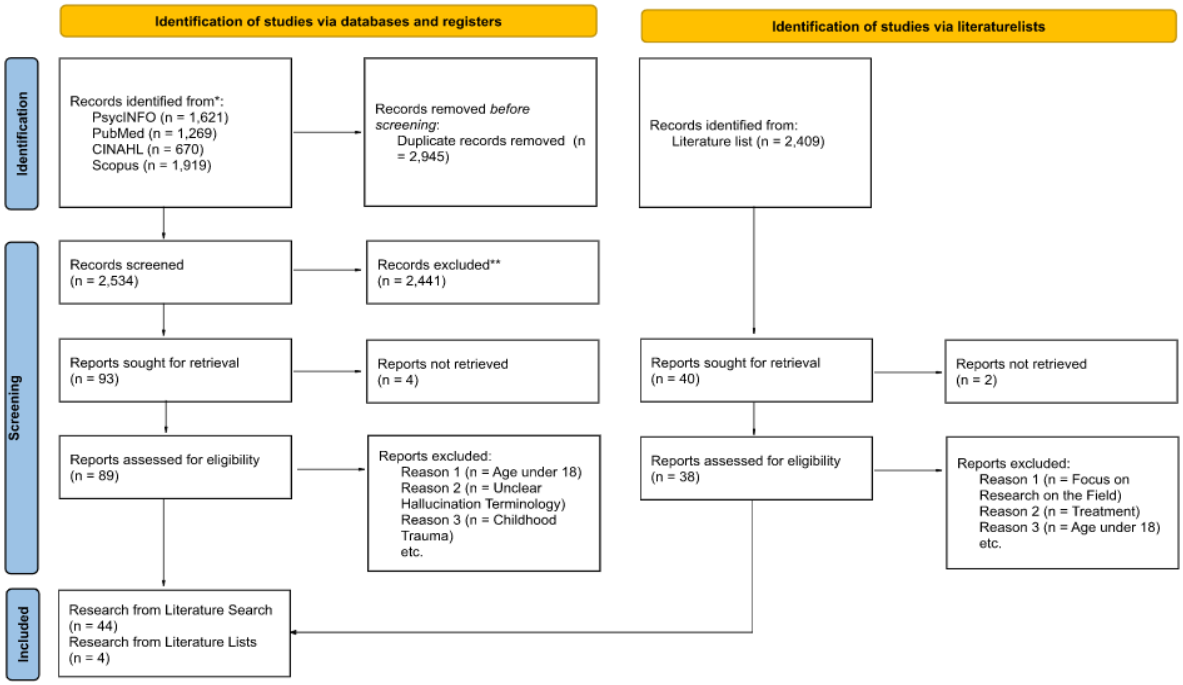
Once the search was conducted, the material was examined for relevance in their title and abstracts through Rayyan. This was done with two blinded authors to minimize the risk of bias and relevant material being discarded by mistake. Once this was done, the remaining texts were thoroughly screened for relevance. Texts, where authors disagreed, were discussed and counterpoints were made until an agreement was reached.

After the first screening process, there were 159 conflicts between the authors in regard to relevance. Articles were mainly excluded due to focusing primarily on neurological processes or somatic etiology, treatment to lessen VH, cognitive functioning of patients, foreign languages, or participants being too young or the trauma happening in childhood. Sorting through those, the review was left with 93 articles, which were then assessed for eligibility on the full texts, and an additional 45 were excluded. The remaining articles were sought for retrieval whereas four were unattainable.

The third step involved looking through the selected literature's reference lists which resulted in 40 articles being identified as potentially relevant to the study. They were then assessed; two were unattainable and four were included. While searching through literature lists, the authors encountered a lot of the already included articles, which might indicate that the literature of the chosen field has been well explored. This third step left the authors with a total of 48 articles included in the scoping review. Due to the nature of the scoping review, articles were not excluded based on quality assessments made by the authors. A visual presentation of the search strategy can be seen in the Flowchart in Figure 1.

Figure 1:

PRISMA 2020 flow diagram for new systematic reviews which included searches of databases, registers and other sources



1.6 Data Charting

According to JBI's guidelines for a scoping review, extracted data should be charted in comprehensive charting tables. The recommended categories of information are 'author', 'year of publication', 'country of origin', 'aims', 'population and sample size', 'method', 'intervention type', 'outcomes', and 'key findings' (Aromataris & Munn, 2020).

The JBI guidelines suggest modifying and using the categories that make sense for the given scoping review to create clarity for the extracted data. For this reason, the authors have chosen the following categories: 'author', 'country of origin', 'aims', 'population and sample size', 'methodology', and 'key findings'. Furthermore, 'study design' was added. The latter was evaluated to create more transparency and clarity regarding what type of literature was included. 'Year of population' was not given its own category, but was instead included under 'author', to minimize the space the table would take up.

'Intervention type' and 'outcomes' were not included. 'Intervention type' was evaluated to be irrelevant since texts were specifically excluded if they focused on treatment. 'Outcomes' are often related to potential intervention types, and how well they fare compared to others. Due to this being a treatment focus, this was also excluded. The tables 1-8 containing the selected literature can be viewed in the article.

Due to the broad focus of this review, multiple tables were formed to offer a clearer overview of the selected texts. The tables were separated by diagnoses and trauma. The trauma table involved material that had been evaluated to focus on adulthood traumas' potential link to VH. A separate table was made for the general population. These were texts focusing on VH outside of clinical groups. This both concerned individuals with and without VH. Each diagnosis was charted in its own respective table for clarity. This includes Borderline Personality Disorder (BPD), Affective disorders, which include Bipolar Disorder (BD) and Depression, Anxiety, Post Traumatic Stress Disorder (PTSD), Eating Disorder (ED), Dissociative Identity Disorder (DID), and studies focusing on multiple diagnoses at the same time. These diagnoses were the ones the reviewers were able to identify that lived up to the set inclusion and exclusion criteria. All the chosen material that was included in the different topics was sorted into primary and secondary literature. This was done to further create a clear overview of the literature found in the current field.

Both authors were involved in charting the data which was done separately. Afterward, this was reviewed together to ensure consistency in the tables. Material that did not provide a clear description of their methods or sample sizes was indicated as; Not Applicable (N/A).

2. Arrangements of Results and Discussion

In the presentation of the results, the structure was built up after themes. The themes were respectively, trauma, the different diagnoses, the general population, as well as the nature of the voices. The structure was inspired by other scoping reviews with a similarly large quantity of data (Tricco et al., 2016; Burr, Schnackenberg & Weidner, 2022). It was decided that the tables constructed for the current review would be used as a supporting overview of the data extracted from the used literature. The data judged most important was presented in text format in the article to assist the clarity of the arguments, while less important, but still relevant, data was only mentioned in the table. Thereby the table allows for a clear overview. Furthermore, it allows the sections in the written results to be clearer and sharper.

The first section regarded trauma, where the various articles found for specifically adulthood trauma were compared and contrasted with each other. This was done in themes such as who viewed trauma as being linked to VH and who found the evidence to be more tentative. Furthermore, trauma's relation to severity was also reported through the use of the literature, as well as how trauma might influence the content in VH. Regarding trauma, the PTSD texts identified for the study were included. This was done, due to the PTSD texts not comparing

differences and similarities of VH. Instead, it was studied how PTSD and trauma might affect VH. For this reason, PTSD was not given its own section with most of the other diagnoses but rather used to add further data regarding the connection between trauma and VH. A special decision made for this theme was that the authors decided to include texts from the other themes if they to some degree studied or addressed the connection between adulthood trauma and VH.

The diagnoses were categorized individually with BPD, Affective Disorders, ED, DID, and multiple diagnoses. Under each section, the literature was divided into primary and secondary literature, and it was stated whether the secondary literature utilized the same primary literature as already presented in the current study. The only exceptions to this were DID which only had one primary study, and ED which only had two studies: one primary and one secondary. The reason for not differentiating the ED texts was due to the secondary texts not utilizing the primary text already acquired, and the results being vastly different. Multiple diagnoses were not differentiated either, due to low overlap between the one primary study found and the secondary studies. After this, a comparison of similarities and differences was made across the diagnoses. After diagnoses, texts regarding the general population were presented. Similarities and differences were found with primary literature presented first, and secondary literature afterwards.

Lastly, the subject regarding the nature of VH was presented. Here, results from all the selected studies were included to display different viewpoints and theories on the phenomenon of VH, and how it might be triggered. In this sector, primary and secondary literature was not separated but instead compiled into a cohesive presentation of the different perspectives. Furthermore, phenomena such as how voices change over time were presented. Data regarding dissociation as a mediating factor and anxiety as a moderating factor were also presented. Anxiety did not get a separate section in the diagnosis part, as the studies included did not compare similarities and differences, but rather focused on how anxiety might affect VH and be a moderating factor. For this reason, it was included under the nature of VH.

When deciding on the structure of the review's discussion, JBI criteria were used as guidelines (Aromataris & Munn, 2020). The authors decided, like in the result section, to organize the text under headings that described a current topic of focus. This was done to collect and discuss collected data in a relevant and manageable way, to enclose an answer more clearly to the formulated research question. Lastly, a section named 'Critical view of studies' was included, where some of the conclusions of the used secondary literature were considered in relation to the included primary literature.

3. Quality Assessments of Material

Scoping reviews do not tend to utilize a strict quality assessment when including material due to the broadness of the format. This is also the case for the current review. The authors, however, acknowledge that quality assessment and critical appraisal of literature is a competence required of the university. Therefore, the authors will spend the next section pointing out general strengths and weaknesses in the found literature and discuss shortly what implications these might have for the review. To assess the quality of the texts the JBI Critical Appraisal Tools were used (*Critical Appraisal Tools | JBI*, n.d.). The section will be divided into two parts: 'Primary studies' and 'Secondary studies'. This was done since the quality assessment of these two types of literature is generally different and difficult to assess collectively. Primary studies are further separated into 'Qualitative' and 'Quantitative' for the same reason. Schemas including the used texts were constructed, where the strengths and limitations found in each study were presented in comprehensive points. These can be found in Table 1, Table 2, and Table 3. The schemas will be supplied with a text that sums up some of the limitations that were most often seen repeated.

3.1 Primary Literature

General limitations seen in both qualitative and quantitative studies were that a majority appeared to be retrospective and lacked generalizability due to uneven gender distribution, small sample size, and the participants often solely using singular clinical groups. This makes the collected data less generalizable when discussing voice hearers in general, or patients diagnosed with a specific diagnosis. Furthermore, there was a lack of control groups in both qualitative and quantitative studies, and while the majority pointed out medication in their samples, it can still have affected their results and outcomes and made them less comparable. A general issue when regarding the use of SCZ patients is a potential risk for misremembered events or delusion playing a part in recollection. However, studies have shown that SCZ patients are not more likely to misremember traumatic events than other groups (Kraan et al., 2018).

Some general strengths of both study types were their transparent and clear process and research questions, as well as the coherence between the question and objective. This allowed the reviewers to easily identify if the texts were relevant for the current study in the data extraction state. Furthermore, both types were generally clear regarding the medication used

by participants, used reliable, valid measuring tools, and had clear inclusion and exclusion criteria. When needed, analytical procedures and tools were described. A majority of the studies focusing on the general population also used subclinical groups for comparisons; often NCVH.

Specific weaknesses seen in the qualitative studies included limited generalizability in the content obtained. They often used a non-randomized sample, which could weaken the generalizability further. Furthermore, there was a potential bias in the interpretation of data. Strengths in this group regarded more in-depth information and perspectives from participants that are otherwise hard to obtain in more quantitative study designs. This might strengthen a phenomenological understanding of the phenomenon.

Specific weaknesses of the quantitative studies included a potentially limited in-depth exploration of the phenomenon. This was mostly a limitation if it was researched from a phenomenological perspective, as most of the included literature appeared to do. Furthermore, they risked potential measuring errors. They did have strengths in their more objective forms, replicability, and their randomized sample selected groups. This might strengthen the results from the studies and make them more comparable.

Specifically, BPD studies often did not include either sub-clinical groups, healthy control groups, or other clinical groups to compare with, but only research participants with BPD. This can result in their studies being more difficult to use when comparing across groups.

Specific strengths and weaknesses for each qualitative and quantitative study included can be seen in Tables 1 and Table 2.

Table 1

Primary Qualitative Studies in Trauma Literature

Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Longden, E., et al. (2012)	United Kingdom	Cross-Sectional Study Case Study	A 21-year-old woman Diagnosed with paranoid SCZ	Construct Interview adapted from the Maastricht Hearing Voices Interview	Strengths: - Critical use of studies - Transparent set-up for exploratory themes used to devise their construct interview - Clear description of patient's characteristics - Clear timeline of patient's history - Clear clinical condition of the patient presented in the study Weaknesses: - 'Small' sample size (Less generalizable) - Selective parts of the therapy sessions are used - Retrospective study
Vallath, S., et al. (2018)	Switzerland	Cross-Sectional Study Qualitative Interview Study	21 Participants - Mixed Sample	Semi-Structured Interview 30-60 minutes in length	Strengths: - Transparent methodology - In-depth interviews - Maximum variation purposive sampling technical - Coherency between research question and objectives - Congruity between research methodology and representation and interpretation of results. - Clarity regarding medication Weaknesses: - Risk of retrospective bias and memory distortion - Small sample size - It was a non-random sample
Wearne, D., et al. (2018)	United Kingdom	Cross-Sectional Study Qualitative Interview Experts/Case Study	Four hospitals, 11 psychiatrists and 69 participants with a PTSD diagnosis.	PSYRAT PSSI-5 DSPS	Strengths: - Transparent inclusion and exclusion criteria - Transparent methodology - Congruity between research method, research question, objective, representation of data, and interpretation of results. Weaknesses: - Retrospective study - It was a non-random sample that was dependent on clinical accuracy regarding diagnosis. - Lack of clarity regarding medication
Tolmeijer, E., et al. (2021)	Netherland	Cross-Sectional Study Quantitative Questionnaire	125 outpatient care participants with VH	IPQ TALE TSQ	Strengths: - Measurements with validity and reliability - Large sample size Weaknesses: - Only outpatient care participants - Unclear methodological procedure - Limited traumatic and adverse life events included - Retrospective study - Lack of clarity regarding medication

Primary Qualitative Studies in Post-Traumatic Stress Disorder Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality Assessment
Anketell, C. et al. (2010)	Ireland	Cross-Sectional Study Qualitative Interview	40 Chronic PTSD Participants	PDS PANSS DES WBSI	Strengths: - Clearly stated research question - Transparent eligibility criteria - Clearly stated methodological process - Clarity regarding medication Weaknesses: - Poorly distinguished between psychotic hallucinations and benign hypnopompic experiences or thought vocalization - Schizophrenia was an exclusion criterion but was not formally tested for - Retrospective study
Anketell, C., Dorahy, M. J., & Curran, D. (2011)	Ireland	Cross-Sectional Study Qualitative Interview	3 Chronic PTSD Participants	Interview	Strengths: - Transparent eligibility criteria - Clearly described methodology and procedure - Clearly described analytical process - Clarity regarding medication Weaknesses: - Unclear research question
					- Unclear interview measurements - Small sample size (and only male participants) - Participants were not assessed for psychotic disorder or dissociative identity disorder - All participants were chronic PTSD patients; non-chronic might be different - Retrospective study
Primary Qualitative Studies in General Population Literature					
Daalman, K., et al. (2011)	Netherlands	Cross-Sectional Study Quantitative Questionnaire Case / Sub-Clinical	111 NCVH 118 outpatients with psychotic disorder	AHRS	Strengths: - Clear inclusion/exclusion criteria for sample. - Relevant used method - Clarity regarding medication Weaknesses: - The group of healthy individuals was a selected sample. - Using a not very reliably tested independent model.

Diederen, K. M. J. et al. (2012)	USA	Cross-Sectional Study fMRI BOLD Study Case / Sub-Clinical	21 Psychotic patients with AVH 42 Nonpsychotic participants with AVH	LSHS CASH SCID-II SPQ GAF PSYRATS	Strengths: - Clearly stated aim of research - Healthy comparison group - Clearly described participants - Representative psychotic sample - Controlled sample group - Transparent eligibility criteria - Clearly described analytical procedure - Clarity regarding medication Weaknesses: - fMRI BOLD does not demonstrate all types of neuronal activation, nor does it do so at finer spatial and temporal scales - Moderate sample size
Kråkvik, B. et al. (2015)	United Kingdom	Population-Based Study	2,533 adults from the general Norwegian population	Norwegian translation of LSHS HADS	Strengths: - Uses a randomized sample. - Relevant methodological approach. - Clearly stated inclusion criteria - Clarity regarding medication
					Weaknesses: - Low response rate - No strict definition of AVH was used.
Primary Qualitative Studies in Borderline Personality Disorder Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Slotema, C. W., et al. (2012)	Netherland	Cross-Sectional Study Qualitative Interview Case/Case/ Case/ Sub-Clinical	38 BPD 36 SCZ 15 Schizoaffective 66 Non-patients with VH	SCID-II PSYRATS	Strengths: - Clearly stated research question - Clearly described participants - Clearly described inclusion and exclusion criteria - Transparent methodological process - Clearly described analytical method - Clarity regarding medication Weaknesses: - Unclear interview tools and process - Potential sampling bias - Only females participants
Hepworth, C. R., Ashcroft, K., & Kingdon, D. (2013)	United Kingdom	Cross-Sectional Study Qualitative Interviews	45 clinical patients diagnosed with BPD	SCID BAVQ-R	Strengths: - Clearly stated research question - Clear description of participants - Clear description of analytical method - Valid and reliable measurement tools Weaknesses: - Unclear description of inclusion and exclusion criteria - Small sample size - Limited to patients under the care of the services in Hampshire and Dorset - Lack of clarity regarding medication

Tschoeke, S., et al. (2014)	Germany	Cross-Sectional Study Qualitative Interview	23 BPD Patients 21 SCZ patients	PANSS CTQ-SF DES FDS SCID-D	Strengths: - Clear description of research question - Transparent eligibility criteria - Valid and reliable measurement tools - Clear description of analytical tools
		Case/Case study			Weaknesses: - Significant age difference in the two groups - Only female participants - Lacking control and analysis of family-wise errors and power analysis. - Retrospective study
Niemantsverdriet, M. B. A. et al. (2017)	Netherland	Cross-Sectional Study Qualitative Interview	324 Telephone Interviews 98 Face-to-face Interviews All with BPD diagnosis	PSYRATS PANSS MINI PLUS 2000 CTQ-SF LSC-R	Strengths: - Clearly stated research questions - Transparent eligibility criteria - Clearly described measurement tools and procedure - Clearly described analytical processes Weakness: - No control groups/comparison groups - Participants showed reluctancy to discuss symptoms during phone interviews - PSYRATS and PANSS are validated for schizophrenia but not BPD. - Predominantly female sample - Retrospective study - Lack of clarity regarding medication
Hayward, M. et al. (2022)	United Kingdom	Cross-Sectional study	48 BPD Participants with VH	SCID-5-PD SCID-5 BAVQ-R BCSS BSIS CTQ-SF cbSASH PCL-5 STAI PANSS PSYRATS-AH ZAN-BPD	Strengths: - Transparent inclusion/exclusion criteria - Clear subject and setting description - Valid and reliable measurement tools - Clearly described process and analytical tools Weaknesses: - Relatively small sample and not adequately powered to detect all statistically meaningful findings - Considerable amount of missing data for some variables - The correlational nature of the analyses does not facilitate exploration of the causal relations between variables. - No control group with a psychosis disorder - Lack of clarity regarding medication
Strawson, W. H. et al.	United Kingdom	Cross-Sectional Study	52 BPD Patients with	PANSS PSYRATS-AH	Strengths: - Clearly described research question
(2022)			VH	BNSS BSIS BAVQ-R Signal Detection Task Neuroimaging Task Paradigms	- Transparent eligibility criteria - Clearly described methodological approach Weaknesses: - No control/comparison group

Primary Qualitative Studies in Affective Disorder Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Gilbert, P. et al. (2001)	United Kingdom	Cross-Sectional Study Qualitative Interview Case / Case	66 SCZ voice-hearers 50 Depressed patients who did not hear voices	BDI The Power Scale (Voices) Power Scale (Critical Thoughts)	Strengths: - Clearly described research questions - Transparent eligibility criteria Weaknesses: - Questionnaires were not validated or tested for reliability - They didn't test anger, aggression, or contempt in either group - They did not measure directly, the experience of feeling subordinate and unable to defend themselves to derogating thoughts/voices - Risks of potential type I errors
Smith, L. M. et al. (2023)	United Kingdom / Australia	Cross-Sectional Study Qualitative Interview	21 BD patients	MINI ASRMS QUIDS-SR YMRS BDI-II MUPS	Strengths: - Clearly stated research question - Transparent eligibility criteria - Clearly described analytical process - Clarity regarding medication Weakness: - No control / clinical group for comparison - Retrospective bias risk since AVH was experienced years ago in some participants
Primary Qualitative Studies in Eating Disorder Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Noordenbos, G., Aliakbari, N. & Campbell, R. (2014)	Netherlands	Cross-Sectional Study Qualitative Questionnaire Case/Control	74 Eating Disorder Participants 58 Healthy Control	EDE-Q RSES FSCRS PSYRATS BAVQ-R	Strengths: - Clearly stated research question/hypotheses - Clearly described procedure - A healthy control group - Clearly described analytical measurements - Fairly large sample size with high effect sizes Weaknesses: - Primarily eating disorder patients who did seek treatment, so less generalizable to untreated eating disorder patients. - Participants (54%) struggled with the term critical inner 'voice' as it is known to be related to psychotic features. - Retrospective recollection of the most severe stages of their eating disorder. - Lack of clarity regarding medication

Primary Qualitative Studies in Dissociative Identity Disorder Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Dorahy, M. J. et al. (2009)	Northern Ireland / Australia	Cross-Sectional Study Qualitative Interview Case/Case/ Case Study	18 SCZ patients without maltreatment 16 SCZ patients with maltreatment 30 DID patients	CTQ DDIS MUPS DES-T	Strengths: - Clearly stated research question - Clearly described methodological procedure - Clearly described analytical tools used - Clinical Group Comparisons - Clarity regarding medication Weaknesses: - Small convenience sample - Retrospective reports of childhood maltreatment - More DID patients were stabilized inpatients - Potential confounding variable with gender differences in groups
Primary Qualitative Studies in Multiple Diagnosis Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Honig, A. et al. (1998)	Netherlands	Cross-Sectional Study Qualitative Interview Case/Case/ Sub-Clinical Study	Number of participants N/A A group of patients with SCZ or dissociative disorders A group of SCZ patients A group of NCVH	Semi-Structured interview	Strengths: - Clear research question - Transparent eligibility criteria - Clarity regarding medication Weaknesses: - Unclear methodological approach - Not stated number of participants - Lacking validated and reliable measurement tools for the interview - None-randomized sample

Post Traumatic Stress Disorder (PTSD); Non-Clinical Voice Hearers (NCVH); Clinical Voice Hearers (CVH); Voice Hearing (VH); Auditory Verbal Hallucinations (AVH); Schizophrenia (SCZ); Borderline Personality Disorder (BPD); Bipolar Disorder (BD); Psychotic Symptoms Rating Scale (PSYRAT); PTSD Symptom Scale Interview (PSSI-5); Dissociative Subtype of PTSD Score (DSPS); Illness Perception Questionnaire (IPQ); Trauma and Life Events (TALE); Trauma Screening Questionnaire (TSQ); Posttraumatic Stress Diagnostic Scale (PDS); Positive and Negative Syndrome Scale (PANSS); White Bear Suppression Inventory (WBSI); Auditory Hallucinations Rating Scale (AHRS); Launay-Slade Hallucination Scale (LSHS); Comprehensive Assessment of Symptoms and History (CASH); Structured Clinical Interview for DSM-IV axis II personality disorders (SCID-II); Schizotypal Personality Questionnaire (SPQ); Global Assessment of Functioning (GAF); The Psychotic Symptom Rating Scales (PSYRATS); Hospital Anxiety and Depression Scale (HADS); Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (SCID); Beliefs About Voices Questionnaire-Reivsed (BAVQ-R); Childhood Trauma Questionnaire-Short Form (CTQ-SF); Dissociative Experience Scale (DES); 'Fragebogen zu Dissoziativen Symptomen (FDS); Structured Clinical Interview for DSM-IV Dissociative Disorders (SCID-D); MINI-International Neuropsychiatric Interview (MINI PLUS 2000); Life Stressor Checklist-Revised (LSC-R); Structured Clinical Interview for DSM-5 Personality Disorder (SCID-5-PD); Structured Clinical Interview for DSM-5 (SCID-5); Brief Core Schema Scale (BCSS); Brief System Impact Scale (BSIS); Computerized Binary Scale of Auditory Speech Hallucinations (cbSASH); Posttraumatic Stress DIsorder Checklist for DSM-5 (PCL-5); State-Trait Anxiety Inventory (STAI); The Psychotic Symptoms Rating Scale-Auditory Hallucinations (PSYRATS-AH); Zanarini Rating Scale for Borderline Personality Disorder; Self-report Version (ZAN-BPD); Brief Negative Symptom Scale (BNSS); The Beck Depression Inventory (BDI); The Mini International Neuropsychiatric Interview (MINI); Altman Self-Rating Mania Scale (ASRMS); Quick Inventory of Depressive Symptomatology Self-Rated (QUIDS-SR); Young Mania Rating Scale (YMRS); Beck Depression Inventory (BDI-II); The Mental Health Research Institute Unusal Perception Schedule (MUPS); Eating Disorder Examination-Questionnaire (EDE-Q); Rosenberg Self-Esteem Scale (RSES); Forms of Self-Critizing / Attacking and Self-Reassuring Scale (FSCRS); Dissociative Disorders Interview Schedule (DDIS); Dissociative Experiences Scale-Taxon (DES-T).

Table 2

Primary Quantitative Studies in Trauma Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Morrison, A. T. & Petersen, T. (2003)	United Kingdom	Cross-Sectional Study Quantitive Questionnaire	64 Undergraduate students and warehouse operatives	MCQ RHS IVI DES Trauma Measure (Designed by authors) PSS-SR PTCI	Strengths: - Transparent Methodology - Most questionnaires used have validity and reliability. Weaknesses: - Unclear inclusion and exclusion criteria - Undergraduate students and warehouse operatives only (An analogue population) - Predominantly female participants - The Trauma Measures questionnaire lacks validity and reliability. - Retrospective study
Bless, J. J., et al. (2018)	Norway	Population-Based Study Case/Case Study	2,533 initially screened No-adverse-trigger group = 59 Adverse-trigger group = 76	LSHS LEDS	Strengths: - Transparent inclusion and exclusion criteria - Well described research questions - Large initial sample size - Randomly selected participants - Multiple groups for comparison - Tested other external factors such as medication - Valid and reliable measurement tool - Clearly described analytical process - Clarity regarding medication Weaknesses: - Adverse Life Events were based on memory (retrospective data) - Emotional Content was open-ended which complicated interpretations - Potential false-positive and false-negative in the 'adverse-life event group' and the 'no-adverse-life event group'.
Primary Quantitative Studies in General Population Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Barrett, T. R. & Caylor, M. R. (1998)	USA	Cross-Sectional Study Qualitative Interview	24 College students with voice hearing 20 Hallucinating	Verbal Hallucination Scale MMPI	Strengths: - Clearly described research questions - Transparent eligibility criteria - Randomized student sample - Clearly described methodological approach and procedure
		Case/Sub-Clinical	SCZ Patients		- Clarity regarding medication Weaknesses: - Students as a healthy comparison group might lower generalization - Schizophrenic patients were inpatients - An untested questionnaire for interview

de Boer, J. N. et al. (2016)	Netherlands	Cross-Sectional Study Case / Sub-Clinical	17 Psychotic Disorder Patients 19 Nonpsychotic Patients	LSHS CASH SCID-II	Strengths: - Clearly stated hypothesis - Clearly described methodology - Valid and reliable measurement tools - The control group - Clearly described procedure - Clearly described analytical procedure - Clarity regarding medication Weaknesses: - The majority of patients were on antipsychotic medication which might affect the form and content of AVH - Modest sample size - Not a homogenous clinical group - All scorings were done by the same person - No measurement of overt language complexity were taken - Intelligence was not measured in the study - Uncertainties whether all words were spoken
Fung, H. W., Liu, R. K. W. & Ma, Y. H. E. (2019)	China	Cross-Sectional Study Qualitative Interview Case / Control	Sample 1: 190 College students Sample 2: 138 College students Sample 3: 71 Patients with depression Sample 4: 94 people with disabilities (non-psychiatric)	DDIS, CAPE, MSPSS, PBI, LEC, SHS, SRMH, BSRS-5, PHQ-9, RPQ, PC-PTSD, DES-T SDQ-5	Strengths: - Mostly used reliable and well-tested measures. - Relevant methodological approach. - Clarity regarding medication Weaknesses: - Unrepresentative samples - Chosen media for questionnaire regarding trauma. - Some measure validity was unknown in Chinese samples.
Baumeister, D., et al. (2021)	Netherlands	Cross-Sectional Study Case / Sub-Clinical / Control	20 CVH 23 NCVH, and 23 Healthy controls	SECPT, Saliva sample, PSYRATS, SAM, VAS.	Strengths: - Clearly stated selection criteria. - Relevant chosen study design. - Control group - Clarity regarding medication Weaknesses: - Small sample sizes - All clinical voice hearers were medicated - Potential bias in the selection of the clinical group.

Primary Quantitative Studies in Affective Disorder Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Dhakne, R. S. et al. (2021)	India	Cross-Sectional Study Quantitative Questionnaire Case / Case	140 SCZ patients 140 BD patients	CAHQ	Strengths: - Transparent eligibility criteria - Clearly described process - Focus on confounding variables Weaknesses: - Slightly unclear research question - Unclear analytical analysis - Lack of clarity regarding medication
Primary Quantitative Studies in Anxiety Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Freeman, D., & Fowler, D. (2009)	United Kingdom	Population-Based Study Replication Study	350 Randomly selected participants from the general population	LSC G-PTS Part B CAPS WASI DASS BCSS Maudsley Addiction Profile	Strengths: - Transparent eligibility criteria - Clearly described methodological process - Clearly described analytical measurement - Valid and reliable questionnaires Weaknesses: - Didn't succeed in including variables relevant to the association between trauma and hallucinations.
					- Retrospective study - Lack of clarity regarding medication

Auditory Hallucinations (AH); Schizophrenia (SCZ); Auditory Verbal Hallucinations (AVH); Voice Hearing (VH); Non-Voice Hearers (NVH); Clinical Voice-Hearers (CVH); Non-Clinical Voice-Hearers (NCVH); Bipolar Disorder (BD); Metacognition Questionnaire (MCQ); Revised Hallucination Scale (RHS); Interpretation of Voices Inventory (IVI); Dissociative Experiences Scale (DES); PTSD Symptom Scale - Self Report (PSS-SR); Post-Traumatic Cognitions Inventory (PTCI); Launay-Slade Hallucination Scale (LSHS); The Life Events and Difficulties Schedule (LEDS); Minnesota Multiphasic Personality Inventory (MMPI); Comprehensive Assessment of Symptoms and History (CASH); Structured Clinical Interview for DSM-IV axis II personality disorders (SCID-II); Dissociative Disorders Interview Schedule (DDIS); Community Assessment of psychic Experiences (CAPE); The Multidimensinal Scale of Perceived Social Support (MSPSS); Parental Bounding Instrument (PBI); Life Events Checklist (LEC); Subjective Happiness Scale (SHS); Single-Item Meassure of Self-Rated Mental Health (SRMH); 5-item Brief Symptom Rating Scale (BSRS-5); Patient Health Questionnaire (PHQ-9); Reactive-Proactive Aggression Questionnaire (RPQ); Primary Care PTSD Screen (PC-PTSD); Dissociative Experiences Scale-Taxon (DES-T); 5-item Somatoform Dissociation Questionnaire (SDQ-5); Socially Evaluated Cold Pressor Test (SECPT); Stress Appraisal Measure (SAM); Visual Analogue Scale (VAS); The Characteristics of Auditory Hallucination Questionnaire (CAHQ); Life Stressor Checklist (LSC); Green et al. Paranoid Thoughts Scale-Part B (G-PTS Part B); Cardiff Anomalous Perceptions Scale (CAPS); Wechsler Abbreviated Scale of Intelligence (WASI); Depression Anxiety Stress Scale (DASS); Brief Core Schema Scales (BCSS).

3.2 Secondary Literature

Overall weaknesses in the included secondary literature included a general lack of descriptions regarding used methods; especially with narrative reviews and opinions, where this isn't an outright requirement. Oftentimes, databases, search strategies, search words, and results from the search were omitted. Another general limitation regarding secondary literature concerns the fact that no novel data was produced, but results are taken from other studies. This means that the results found are only as valid and reliable as the studies used. There is also the potential risk of selection bias when the search was not done by blinded co-authors. A further potential limitation or weakness could also be if secondary studies do not include all relevant data in the researched field. This could mean that the results and conclusions might be inconclusive of the entire topic studied.

The secondary literature included also has potential strengths. When researchers clearly displayed their methodology, they often used an array of databases with high credibility. Furthermore, most secondary literature had clearly stated research questions and transparent eligibility criteria. They display strengths in their abilities to compare results across studies and formulate well-founded arguments with coherent patterns.

Specific strengths and weaknesses of each secondary study included can be seen in an overview in Table 3.

Table 3

Secondary Studies in Trauma Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Romme M. A. & Escher, A. D. (1989)	Netherlands	Opinion	N/A	N/A	Strengths: - Coherent reasoning and argumentation - Clearly stated research aim - Clear standing of expertise in the field - Directed at the relevant population Weaknesses: - Almost no references to previous literature - Lack of methodological procedure regarding literature search or databases
Larøi, F., et al. (2019)	United States	Narrative Review	N/A	N/A	Strengths: - Cohesive reasoning - Clearly stated research question - Recommendations for practice appear to be supported by data. Weaknesses: - Unclear search strategy/obtainment of material - Unclear uses of databases
					- Lack of appraisal of studies and reviews - Lack of methods to minimize errors in data extraction
Secondary Studies in Post-Traumatic Stress Disorder Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Pierre, J. M. (2010)	United States	Narrative Review	N/A	N/A	Strengths: - Coherent reasoning and arguing Weaknesses: - Somewhat unclear research questions - No depicted appraisal of the quality of texts - No described methods to minimize errors in data extraction - No clear description of databases used
McCarthy-Jones, S. & Longden, E. (2015)	Ireland / United Kingdom	Narrative Review	N/A	N/A	Strengths: - Clearly stated research questions - Coherent arguing and reasoning - Depicted appraisal of the quality of texts Weaknesses: - Unclear search strategy and databases used

Secondary Studies in General Population Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Beavan, V., Read, J. & Cartwright, C. (2011)	United Kingdom	Literature Review	17 studies included	Via the database PsychInfo	Strengths: - Clear methodological procedure. - Clear directives for new research. - Relevant exclusion criteria Weaknesses: - Varying contexts in which participants were interviewed. - Varying definitions in the different texts. - No description of critical appraisal.
Larøi, F.	Switzerland	Narrative	N/A	N/A	Strengths:
(2012)		Review			- Clear inclusion and exclusion criteria - Clear descriptions of used studies Weaknesses: - Lacking clarity regarding text selection and search strategy - No quality assessment of the used texts
Hill, K. & Linden, D. E. J. (2012)	USA	Literature review	Present literature from other studies	N/A	Strengths: - Addresses a relevant and debatable topic. - The claims and data used are in line with literature in the field. - Clearly formulated. Weaknesses: - No description of the gathering of data or selection. - No criteria presented.
Daalman, K. & Diederen, K. (2013)	UK	Literature Review	22 Studies	Via the following databases: PubMed Scopus	Strengths: - Clearly stated aims of study - Clear methodological search strategies - Transparent eligibility criteria Weaknesses: - No depicted appraisal of the used texts - The presence of AVH during testing, might affect the results when comparing non-clinical groups - Selection bias may be present when including non-clinical individuals with AVH
Baumeister, D., et al. (2017)	USA	Systematic Review	36 Studies	Via the following databases: PsycInfo Embase Medline	Strengths: - Clearly stated research question - Appropriate and clearly described inclusion/exclusion criteria - Systematic search strategy Weaknesses: - No depicted appraisal of the quality of texts - No described methods to minimize errors in data extraction

Secondary Studies in Borderline Personality Disorder Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Merrett, Z., Rossell, S. L., & Castle, D. J. (2016)	Australia / New Zealand	Systematic Review	16 Publications	Via the following databases: Scopus PubMed MEDLINE	Strengths: - Clearly stated research question - Clearly stated search strategies and databases - Transparent eligibility criteria - Critical appraisal of studies included Weaknesses: - Small number of empirical studies - Underresearched field, so gathering studies was an issue
Beatson, J. A. (2019)	Australia	Narrative Review	N/A	N/A	Strengths: - Coherent arguing and reasoning - Contribution to the field of topic Weaknesses: - Unclear research questions - Unclear search strategy - Unclear databases used - No depicted appraisal of the used studies
Beatson, J. A. et al. (2019)	Australia	Systematic Review	23 articles	Via the following databases: PsycINFO Medline Embase	Strengths: - Clearly described search strategy - Clearly described dates and databases - Clearly described inclusion and exclusion criteria Weaknesses: - Only a small number of empirical studies examined differences and similarities in BPD vs schizophrenic AVH. - Their studies had small sample sizes with predominantly female participants - Absence of comparison between AVH in BPD and AVH in dissociative disorders.
Cavalti, M. et al. (2021)	Netherlands	Narrative Review	N/A	N/A	Strengths: - Clear description of research question Weaknesses: - Unclear search strategy - Unclear databases used - No depicted appraisal of the used studies

Secondary Studies in Affective Disorder Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Toh, W. L., Thomas, N. & Rossell, S. L. (2015)	Australia	Systematic Review	14 Articles	Via the following databases: PsychInfo Medline Web of Science	Strengths: - Clear research questions - Clear search strategy and databases - Transparent eligibility criteria - Coherent reasoning and arguing - Critical appraisal of the studies used Weaknesses: - No described methods to minimize errors in data extraction - No clear description of databases used
Smith, L. M., Johns, L. C. & Mitchell, R. L. C. (2017)	United Kingdom	Systematic Review	32 Articles	Via the following databases: PubMed PsycINFO EMBASE CINAHL	Strengths: - Clearly described research question - Clearly described search strategy and databases - Transparent eligibility criteria - Critical use of articles Weaknesses: - They only searched literature during the last 20 years - Potential loss of papers due to their search terms - No quality assessment of the articles - No control group to compare to - Retrospective study
Secondary Studies in Anxiety Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Ratcliffe, M., & Wilkinson, S. (2015)	United Kingdom / Australia	Narrative Review	N/A	N/A	Strengths: - Clearly stated research question - Transparent eligibility criteria Weaknesses: - No depicted appraisal of the quality of texts - No described methods to minimize errors in data extraction - No clear description of databases used

Secondary Studies in Eating Disorder Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Aya, V., Ulusoy, K., & Cardi, V. (2019)	United Kingdom	Systematic Review	13 Studies	Via the following databases: Embase PsycINFO Medline	Strengths: - Clearly described research question - Clearly described search strategy and databases - Transparent eligibility criteria - Critical use of articles / Depicted appraisal of the quality of texts Weaknesses: - Limited number of articles in the field - A variety of methods and instruments were used, making it hard to compare - Similarities and differences between the ED voice and AVH in other disorders needs to be investigated further
Secondary Studies in Multiple Diagnoses Literature					
Author(s)	Origin	Study Design	Population / Sample size	Methodology	Quality assessment
Larøi, F. et al. (2012)	United States	Narrative Review	N/A	N/A	Strengths: - Clear research questions - Coherent reasoning and arguing - Clear coherency with the research questions Weaknesses: - Unclear methodological process regarding search strategy and databases - No described methods to minimize errors in data extraction - No clear description of databases used - Unclear number of selected texts - No depicted appraisal of the used material - Studies used a lot of different assessment tools, making comparisons difficult
Moskowitz, A.,	French	Narrative Review	N/A	N/A	Strengths: - Clear research questions
Mosquera, D. & Longden, E. (2017)					- Coherent reasoning and arguing - Critical appraisal of the studies used Weaknesses: - No described methods to minimize errors in data extraction - No clear description of databases used - Retrospective study
Zhuo, C. et al. (2019)	China	Literature Review	N/A	Via the following databases: PubMed	Strengths: - Clear research questions - Coherent reasoning and arguing - Described search strategy and terms Weaknesses: - No clear statement of how many articles were found - No clear description of the criteria of texts nor selection - No depicted appraisal of used texts

Limitations and Strengths

In this final section of the framework, the authors wish to present some of the strengths and weaknesses judged relevant to mention regarding the conducted study. First limitations will be mentioned, and thereafter strengths.

First, the authors wish to illuminate the fact that they both are students at a university. This means that the study conducted must fit into certain set standards, which risks limiting its quality. This is the case regarding the number of allocated pages for the study, which possibly limits its potential to dive deeper into the chosen topics. Another way the standards set by the institution have limited the reviewers is the set timeframe the study must be conducted in. The fact that the reviewers have a limited time of only a few months, might reduce the quality of the review, compared to if there had been more time available.

Like any methodological approach, a scoping review also has some general limitations. Among others, a scoping review does not generally assess the quality of the chosen literature. Since scoping reviews do not quality assess, the selection of texts risks being more affected by the opinions of the authors, since they decide what should be included and excluded. This can affect the confidence of the findings. This also results in a heightened risk of selection bias since the inclusion of texts solely depends on the reviewers' judgments. The authors attempted to minimize this risk with clear eligibility criteria and blinding the authors under the selection process.

Another possible risk with the selected data is possible publication bias. There might be publication bias in the selected data, regarding positive correlation studies being more likely to be published, compared to studies not finding a correlation. Furthermore, it is important to note that the quality of the current review is reflected in the literature it uses.

Secondary literature was used, which can be a strength since it adds more perspectives and viewpoints, specifically in the discussion section. However, secondary literature also introduces the potential risk of using data from primary literature multiple times and therefore falsely increasing the evidence for certain viewpoints over others. The authors have attempted to be aware of this while presenting the findings by separating primary and secondary literature and making the reader aware of when similar material was used. Furthermore, secondary literature was mostly used to support primary literature if they had different material, or their theorization and elaborations were utilized. However, it is still a potential limitation that risks affecting the final results of the chosen field. Furthermore, another risk might potentially be that the authors could have been influenced by what the secondary literature found as relevant focus points as well as their tone used.

It was evaluated to be a limitation that the authors had little prior knowledge of the chosen topics' literature prior to starting. This meant that the reviewers had to spend more time getting acquainted with the literature, and the risk of missing important authors or studies was higher compared to if the authors had more expert knowledge in the field. The authors experienced that when looking through literature lists, most of the referred texts on the topic had already been included in the review, but the risk was still heightened. This lack of prior knowledge meant that the exclusion criteria set up regarding reactions to voices might potentially have influenced the selection process. It was later in the study's process found that attitudes towards voices might have a greater impact on the nature of the voices than first thought. This means

that some articles regarding attitudes might have been excluded when screening articles that focused on reactions.

Another limitation of this study is a language bias toward English texts. This choice was made to keep the review international, but also to limit the number of studies the authors had to go through in the set timeframe. It, however, still results in the review losing potentially relevant findings from more locally focused studies, as well as data from non-English-speaking countries. This also relates to another potential limitation which is that with English texts, it has been observed that the majority of the chosen texts originate from the Western world, which conflicts with the reviewers' interest to study the phenomena of VH despite culture and geographical areas. The reviewers also excluded texts solely addressing VH as a spiritual phenomenon, which might also have influenced the literature of the review in a more Western direction.

Regarding the literature included, a methodological limitation of the current study is how different the included material is. Rarely did studies use the same methods which made it more difficult to compare them methodologically. It can also be challenging to compare quantitative and qualitative data with each other due to differences in approach. While researching the chosen field the authors also learned that very few studies have been conducted that have occupied themselves with mapping out the characteristics of VH in SCZ, which makes comparison more challenging (Larøi et al., 2012). Furthermore, the articles included often seemed to have a vague trauma definition, which complicated comparability with other studies. The reviewers have therefore mostly used studies comparing other clinical and non-clinical groups to SCZ, which results in the definition changing from study to study.

Lastly, the authors wish to present some of the general strengths of the conducted scoping review. First, there are general strengths in choosing to conduct a scoping review, which the current review also has benefitted from. Scoping reviews are broad and enable the reviewers to draw patterns, connections, and illuminate gaps in the literature (Aromataris & Munn, 2020). This broadness highlights another strength of the current review, regarding the large amount of literature included. While looking through literature lists, it appears as if the search was saturated and adequate. Another strength of conducting a scoping review is its ability to map out conducted literature on the chosen field. The current review has done this by both conducting a very broad search, with the use of four databases and the broadest keywords the reviewers could think of, as well as organizing all the used studies in manageable tables, which

assist the reader in creating a comprehensible overview. This allows the review to include a wide array of materials to explore the field in as much width as possible.

While selection bias is a risk when conducting a scoping review, the reviewers have also taken some steps to minimize this risk. This was done by having two blinded reviewers evaluate the texts separately, by clearly defining the research question and eligibility criteria, as well as following a standardized protocol doing the systematic search. The current study has followed the guidelines presented in JBI and PRISMA, which strengthens its standardization, validity, and transparency of the review.

It is also a strength that the review generally is very transparent in its framework, concerning its methodological approach. This makes other authors able to replicate the found literature and studies included. The transparency regarding the review, also makes it easier for others to assess the paper critically and form their own thoughts on the results found. The review offers new information for clinical use in the future pointing to more perspectives on etiology and potential interventions when it comes to VH. Furthermore, it suggests research perspectives for future studies.

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Appendix 1

Results for Any Field: "Voice hearing" OR Any Field: "Voice hearer*" OR Any Field: "Voice hallucination*" OR Any Field: "Hearing Voices" OR Any Field: "Verbal Hallucination*"