Auditory verbal hallucinations among intervention seekers with and without complex PTSD Prevalence and relationship with dissociative symptoms.

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Abstract

A growing body of research suggests that auditory verbal hallucinations (AVHs) are associated with trauma and dissociation. Little is known about the prevalence of AVHs in people with complex PTSD after the launch of the ICD-11. Moreover, much less is known regarding which specific dissociative symptoms are associated with AVHs. This study described the prevalence of AVHs in a sample of trauma intervention seekers ($N = 213$) with and without probable complex PTSD and examined the relationship because AVHs and different specific dissociative symptom clusters. Participants completed validated measures of childhood trauma, complex PTSD, multidimensional dissociation, and AVHs. In participants with probable complex PTSD ($n = 165$, 77.5%), 27.9% reported AVHs, while 15.4% of participants with probable PTSD reported AVHs. After controlling for complex PTSD symptoms, two specific forms of dissociation (i.e., memory disturbance [$\beta = .217$, $p = .024$] and identity dissociation [$\beta = .478$, $p < .001$]) were associated with AVHs. This study provides the first data regarding the prevalence of AVHs in individuals with and without probable ICD-11 complex PTSD. Our findings also contribute to the growing literature on the relationship between AVHs and dissociation. AVHs may be better explained by dissociative processes, especially identity dissociation. These findings suggest that AVHs, at least in some cases, could be a manifestation of identity dissociation.

Keywords: Auditory verbal hallucinations; Hearing voices; Complex post-traumatic stress disorder (C-PTSD); Dissociation; Identity dissociation

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Auditory verbal hallucinations (AVHs) as an important issue in the mental health field

Auditory verbal hallucinations (AVHs) are the experiences of "hearing voices" in the absence of any external stimuli (Beck and Rector, 2003). These internally generated cognitive events, erroneously attributed to a source alien or external to oneself, can be highly distressing and demoralizing, causing negative impacts on both an individual's mental health and social functioning (Jongeneel et al., 2018). AVHs are not always pathological and are sometimes reported in nonclinical or general populations, although AVHs are statistically associated with psychological distress and mental health problems (Fung et al., 2019, Iudici et al., 2019). It is important to acknowledge that AVHs exist on a spectrum and not all voice-hearing experiences are distressing. The cognitive models of AVHs posit that beliefs that voice hearers hold about their voices influence the emotional responses to the experiences (e.g., Chadwick and Birchwood, 1994, Mawson et al., 2010). Specifically, voices appraised to be malevolent and omnipotent provoke more distress (Birchwood and Chadwick, 1997), which further exacerbates voices (e.g., So et al., 2021).

While there are different forms of hallucinations, the present study focused on AVHs, which are operationally defined using two items from the Community Assessment of Psychic Experiences (CAPE) with good face validity: e.g., "hear voices when you are alone."

AVHs and trauma-related disorders

While AVHs have long been recognized as a core symptom of psychotic disorders, many studies have shown that they are also common in people with post-traumatic stress disorder (PTSD). Earlier studies found that 20% to 58% of people with combat-related DSM PTSD may experience AVHs (Brewin and Patel, 2010, David et al., 1999, Hamner et al., 1999). AVHs in PTSD and those in psychotic disorders could be phenomenologically and etiologically similar to one another (Laddis and Dell, 2012, McCarthy-Jones and Longden, 2015, Moskowitz et al., 2017, Ross et al., 1990, Schneider, 1959), highlighting common psychopathological mechanisms in AVHs across both conditions. In addition, some PTSD symptoms, like intrusive memories of past traumatic events, might sometimes results in the report of having AVHs – for example, a patient with PTSD might report hearing what the abusive family member said in the past, which could also be considered AVHs.

Some AVHs may be dissociative in nature

The phenomenological and etiological similarity could be explained by the dissociative nature of psychotic experiences, especially AVHs (Moskowitz et al., 2023). Dissociation, which refers to failures in the process of integrating one's own experiences (American Psychiatric Association, 2013, Loewenstein, 2018), is robustly associated with trauma and stress (Dalenberg et al., 2012, Dalenberg et al., 2014). Dissociation refers to failures in the process of integrating one's own biopsychosocial experiences, such as

memories, emotions, and identities (Ross, 2007, Van der Hart et al., 2006). Such dissociation is multidimensional and can affect different aspects of self, resulting in different forms of dissociative experiences or symptoms, such as depersonalization, derealization, and identity dissociation. When dissociation affects feelings and emotions, for example, an individual might experience depersonalization. When dissociation affects the sense of identity, the individual might experience identity dissociation. Dissociative symptoms have been found to be a reliable and valid, multidimensional construct: and such symptoms have been operationally defined using many well-validated measures, including the Structured Clinical Interview for DSM-III-R Dissociative Disorders (SCID-D) (Steinberg, 1994), the Multiscale Dissociation Inventory (MDI) (Briere et al., 2005b), and the Multidimensional Inventory of Dissociation (MID) (Dell, 2006). These measure have revealed that there are different facets of dissociation. The link between AVHs, trauma, and dissociation has also been well-documented (Daalman et al., 2012, Longden et al., 2012, Fung et al., 2024c). More importantly, it has been found that Schneiderian symptoms in general, and AVHs in particular, are even more common in patients with complex dissociative disorder than in patients with schizophrenia (Dorahy et al., 2009, Laddis and Dell, 2012).

People with high levels of dissociation, such as trauma survivors, may be particularly prone to disconnecting with their own experiences (e.g., thoughts, emotions, memories) (Fung et al., 2020b), making them more likely to develop psychotic-like experiences (Fung and

Geng, 2024). Brewin and Patel (2010) found that all 30 people with PTSD considered their AVH as a manifestation of their thoughts. AVHs, at least in some cases, might originate from dissociated parts of self (Fung et al., 2024c). Therefore, we propose that AVHs may be particularly related to identity dissociation, among other forms of dissociation such as depersonalization and derealization. In other words, we believe that many, if not most, AVHs, might actually be the voices arising from a dissociated self-state, whether it manifests as a fully distinct self-state in Dissociative Identity Disorder (DID) or a partially separate self-state as seen in cases of Other Specified Dissociative Disorder (OSDD). In the present study, we focused on dissociative symptoms (instead of dissociative disorders), as measured using the MDI, as will be further explained.

Current research gaps

Since the launch of the ICD-11, little is known about AVHs among people with complex PTSD. Although complex PTSD has been proposed as a distinct trauma disorder for decades (Herman, 1992, Van der Kolk et al., 2005), it has just been recently listed as an official psychiatric condition and its definition in ICD-11 is not entirely the same as those proposed earlier. According to ICD-11, complex PTSD involves 'classical' PTSD symptoms (i.e., re-experiencing, avoidance, and sense of current threat) as well as disturbances in self-organization (DSO) symptoms (i.e., affective dysregulation, negative self-concept, and disturbances in relationships) after exposure to one or more traumatic events (World Health Organization, 2019).

In addition, as mentioned above, dissociation is a multidimensional construct, and some specific facets of dissociation may be particularly related to AVHs. However, most existing studies did not consider the multidimensional nature of dissociation when

investigating the relationship between dissociation and psychotic symptoms in general, and AVHs in particular. Most studies relied on the DES (Pilton et al., 2015, Longden et al., 2020), which did not comprehensively capture different facets of dissociation (Fung et al., 2024a).

The present study

Considering these research gaps, the current study aimed to describe the prevalence of AVHs in a sample of trauma intervention seekers with and without complex PTSD. Furthermore, we examined the relationship between dissociation and AVHs in this sample. Given that dissociation is considered a multidimensional construct, as discussed above, it is highly important to consider different specific facets of dissociation in relation to AVHs, which previous studies rarely examined. Therefore, this study aimed to further our understanding of the relationship between AVHs and dissociation by examining which specific dissociative symptom clusters would be particularly associated with AVHs. As explained above, we hypothesized that, among different facets of dissociation, identity dissociation would be most correlated with AVHs.

Method

Participants

We analyzed baseline data from an international pilot trial of an online education program in 2023, which obtained ethical approval at Leshan Normal University, China. The trial was pre-registered at chictr.org.cn (ChiCTR2300072457). Online advertising on Facebook and Instagram was used to recruit potential participants for a single-session psychoeducation program. Participants were included if they: (a) were 18 years or above; (b) had provided informed consent; (c) were proficient in English; and (d) had PTSD symptoms

(i.e., endorsed at least one 'classical' PTSD symptom on the ITQ). Participants were excluded if they indicated that they had been diagnosed with learning disability, dementia and/or any form of cognitive impairment, and psychotic disorder. Part of the data has been reported elsewhere (Fung et al., 2024b).

Measures

At baseline, participants had to fill in questions about demographic data and health histories, the Brief Betrayal Trauma Survey (BBTS), the Multiscale Dissociation Inventory (MDI), and the two AVHs items of the Community Assessment of Psychic Experiences (CAPE).

The Brief Betrayal Trauma Survey (BBTS)

The BBTS is a 24-item self-report questionnaire that questions trauma exposure (Goldberg and Freyd, 2006). The BBTS was reported to have acceptable test-retest reliability (Goldberg and Freyd, 2006). We determined how many traumatic events one participant had during their lifetime, as per their responses. The BBTS had satisfactory good consistency (α = .840). The BBTS was used to assess whether participants had any major traumatic events. In this sample, 99.5% endorsed at least one lifetime traumatic event on the BBTS.

The International Trauma Questionnaire (ITQ)

The ITQ is an 18-item measure which assesses PTSD and disturbance of self-organization (DSO) symptoms with good reliability and validity (Cloitre et al., 2021). The

ITQ has been widely used to make provisional diagnosis of PTSD and complex PTSD according to ICD-11 rules in psychiatric and epidemiological studies (Cloitre et al., 2019, Ho et al., 2024). As per the ITQ design, participants were instructed to identify the experience that troubles them most and answer the questions in relation to this specific experience. The two ITQ subscales had satisfactory internal consistency (α = .702 to .789). For the diagnostic algorithms using the ITQ, guidelines can be found at https://www.traumameasuresglobal.com/itq. The ITQ was used because it can assess diverse post-traumatic symptoms, as formulated in ICD-11.

The Multiscale Dissociation Inventory (MDI)

The MDI is a 30-item self-report measure, intended to assess six different psychoform dissociative symptom clusters (i.e., disengagement, identity dissociation, emotional constriction, memory disturbance, depersonalization, derealization). These subscales are moderately intercorrelated (mean, r = .39), and possess satisfactory coefficient (α = .74 – .96) (Briere, 2002). The convergent validity of most MDI factors was confirmed by the scale's ability to correlate with other measures of dissociation (β = .22 – .34), fashioning 64–79% of the variance (Briere et al., 2005a). In this study, a shortened, 18-item version of the MDI was used. The proposed 6-factor model (Briere et al., 2005a) fitted the data well on all fit indexes except RMSEA (SRMR = 0.062, RMSEA = 0.096, CFI = 0.965, TLI = 0.955). All standardized factor loadings were above 0.76. All subscales had satisfactory internal

consistency in this sample (α = .75 – .87). The full 18-item MDI had excellent internal consistency (α = .939). The MDI was used because, unlike some other commonly-used dissociation measures (e.g., the Dissociative Experiences Scale), it can be used to assess different facets of dissociative symptoms.

Two AVHs items from the Community Assessment of Psychic Experiences (CAPE)

The CAPE has 42 items and is a self-report measure of psychotic symptoms (Konings et al., 2006). CAPE has three subscales which can be employed to form a measure of positive and negative symptoms of psychosis and depressive symptoms. This study used two voice-related items from CAPE-P: "Do you ever hear voices when you are alone?" and "Do you ever hear voices talking to each other when you are alone?" (possible responses: "never", "sometimes", "often", or "nearly always"). The presence of AVHs was indicated by reporting "sometimes", "often", or "nearly always" on any of the two AVHs items. This AVHs measure had good internal consistency (α = .848). It also had good face validity. Similar items, such as "Do you hear voices talking to you sometimes or talking inside your head," (Fung et al., 2019, Ross and Browning, 2017) are commonly used to assess AVHs in the literature.

It is important to note that PTSD symptoms, dissociative symptoms, and AVHs, as operationalized using our measures in the present study, are not overlapped constructs. For example, neither the ITQ nor the MDI had items that asked about explicit voice-hearing experiences.

Data Analysis

SPSS 22.0 was used for statistical analysis. Descriptive analysis was first conducted. We then conducted Pearson's correlation to test the association between sample characteristics, trauma exposure (BBTS), dissociative symptoms (MDI) and AVHs. Finally, we conducted hierarchical multiple regression to examine the relationship between dissociative symptoms (MDI) and AVHs (the CAPE items), after controlling for sociodemographic (age, gender, education level) and trauma exposure (BBTS). In particular, we checked that our analysis did not encounter multicollinearity issues because all VIF values were below 4.

Results

Sample characteristics and frequency of AVHs

The sample comprised 213 intervention seekers. Participants were 18 to 58 years old (M = 31.76; SD = 9.92). Participants were mostly female (90.6%); 41.3% completed undergraduate education. Participants mainly lived in United Kingdom (46.9%) and Canada (25.4%). On the ITQ, 6.1% (n = 13) had PTSD, 77.5% (n = 165) had complex PTSD, while 16.4% (n = 35) did not meet the diagnostic criteria for PTSD. The details of sample characteristics are presented in Table 1.

In this sample, 27.9% of participants with complex PTSD (27.9%) reported AVHs, 15.4% of those with PTSD reported AVHs, while 17.1% of those without PTSD reported AVHs.

General correlates of AVHs

The correlation between lifetime trauma exposure (i.e., BBTS total score) (M = 9.03; SD = 4.93) and AVHs was significant (r = .218, p < .05). Besides, the correlation between the specific dissociative symptoms and AVHs were all significant, at small to medium effects (rs = 0.248 – 0.575, ps < .001, see Table 1).

The relationship between AVHs and dissociative symptoms

As reported in Table 2, after controlling for trauma exposure, PTSD and DSO symptoms, and demographic variables, two specific dissociative symptoms, namely memory disturbance (β = .217, p = .024) and identity dissociation (β = .478, p < .001), were significantly associated with AVHs. In particular, identity dissociation was shown to be the strongest predictor as hypothesized. Gender, education level, trauma exposure, PTSD and DSO symptoms, and other dissociative symptoms were not associated with AVHs (see Table 2).

Discussion

This study provides the first data regarding the frequency of AVHs in individuals with and without ICD-11 complex PTSD. We found that 27.9% of participants with probable complex PTSD had AVHs. Our findings suggest that AVHs are relatively common among individuals seeking interventions for trauma, particularly among those with complex PTSD.

In addition, we found that all six factors of dissociative symptoms were positively correlated with AVHs, while identity dissociation was the strongest factor associated with AVHs. This study contributes to the ongoing debate regarding whether AVHs can be explained by dissociative processes (Moskowitz et al., 2017, Ross, 2020). We provide new evidence showing that AVHs may be particularly associated with identity dissociation, among different facets of dissociation. The findings emphasize the importance of recognizing the possibility that AVHs could be the manifestation of a deeper psychological mechanism associated with trauma and identity dissociation (Toh et al., 2022). It is consistent with the clinical observations in patients with dissociative psychopathology – AVHs might be commonly generated or produced by dissociated self-states (Fung et al., 2024c). It is possible and probably common that AVHs among trauma-exposed treatment seekers arise from dissociated self-states, whether or not they fully meet the diagnostic criteria for DID or OSDD. When working with patients reporting AVHs, careful assessment of dissociative symptoms and disorders (including DID) is necessary. Trauma-and dissociation-informed care should be considered when working with patients with AVHs. For example, if the AVHs

are clinically ascertained to be related to dissociative self-states, proactive interventions that address the needs of these self-states and reduce internal conflicts (International Society for the Study of Trauma and Dissociation, 2011) are necessary.

Another interesting point to note is that although AVHs may sometimes have overlaps with PTSD symptoms (e.g., in some cases, flashbacks may be similar to the experience of AVHs), our findings showed that AVHs were not correlated with PTSD nor DSO symptoms. Instead, AVHs were particularly associated with dissociative symptoms in our sample. It further indicates that AVHs may be better explained by dissociative processes rather than post-traumatic symptoms in trauma intervention seekers, although further studies are required to replicate this observation.

This study has the strengths of using well-validated measures and making the first attempt to examine the complex relationship of AVHs with different facets of post-traumatic and dissociative symptoms. This study also has several limitations. Firstly, the provisional diagnosis of PTSD and complex PTSD was made based on the ITQ, which was not confirmed with a diagnostic interview. However, it is important to note that self-assessments are commonly used in psychiatric research and are found to be reliable and valid too (Hyland and Shevlin, 2024, Fung et al., 2020a). Many studies using self-report measures still contributed to the psychiatric literature significantly (e.g., Mason et al., 2023, Folke et al., 2023). The ITQ has also been widely used to make provisional diagnosis of PTSD and complex PTSD in the

psychiatric literature (e.g., Cloitre et al., 2021, Folke et al., 2021, Folke et al., 2023). Yet, we would like to acknowledge the limitation of using self-report measures to assess clinically similar phenomena. For example, while it is important to note that PTSD, dissociation and psychotic symptoms are distinct and distinguishable constructs and are nosologically different in both ICD-11 and DSM-5-TR, they could be phenomenologically similar in some cases (e.g., Moskowitz et al., 2017). Therefore, future studies should replicate our findings using diagnostic interviews, which could strength the validity of the results. In addition, future studies should use a more comprehensive measure to assess different types of voices (e.g., command hallucinations, child voices). Moreover, future studies should also consider other forms of hallucinations, such as visual hallucinations. Secondly, most of the participants were female, and our sample was not representative of all treatment seekers. However, it is important to note that we were not trying to describe the prevalence of PTSD or complex PTSD in this sample, due to the potential sample bias in this study. Instead, we focused on describing the frequency of AVHs in each group and revealing which PTSD or dissociative symptoms could better explain AVHs in this sample. While this sample was not fully representative of all treatment seekers, it is important to note that health-related research that focuses on hypothesis testing can make use of convenience samples and can still contribute to the literature meaningfully (Tyrer and Heyman, 2016). Thirdly, while dissociation can involve both psychoform and somatoform experiences, the present study only measured

psychoform dissociative symptoms. Fourth, the cross-sectional nature of the study restricted causal inferences on the relationship between dissociation and AVHs. Finally, we only relied on two CAPE items to assess AVHs. Future research can employ a longitudinal design to further examine the relationship between dissociation and AVHs using more representative samples.

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Table 1. Sample characteristics and correlates of auditory verbal hallucinations ($N = 213$)

Variables	Mean (SD) / Frequency (%)	Correlation with AVHs
Age	31.8 (9.92)	-0.188**
Gender (Female)	193 (90.6%)	-0.059
Education (Undergraduate or above)	88 (41.3%)	-0.151*
Lifetime trauma exposure (BBTS)	9.03 (4.93)	0.218**
PTSD symptoms (ITQ)	17.92 (4.19)	0.114
DSO symptoms (ITQ)	18.53 (4.46)	0.097
AVHs (CAPE)	2.50 (1.09)	/
Disengagement (MDI)	3.12 (1.06)	0.303***
Depersonalization (MDI)	2.63 (1.26)	0.331***
Derealization (MDI)	2.72 (1.23)	0.316***
Emotional Constriction (MDI)	2.87 (1.21)	0.248***
Memory Disturbance (MDI)	2.36 (1.12)	0.415***
Identity Dissociation (MDI)	1.46 (0.81)	0.575***

Note: *$p < .05$ **$p < .01$ ***$p < .001$
BBTS: The Brief Betrayal Trauma Survey, ITQ: The International Trauma Questionnaire (ITQ), CAPE: the Community Assessment of Psychic Experiences; MDI: The Multiscale Dissociation Inventory

Table 2. Hierarchical multiple regression predicting auditory verbal hallucinations ($N = 213$)

	Model 1			Model 2		
Variables	*B*	*β*	*p*	*B*	*β*	*p*
Age	-0.026	-0.233	.001	-0.021	-0.194	.001
Gender	-0.250	-0.067	.312	-0.113	-0.030	.587
Education	-0.294	-0.133	.050	-0.167	-0.076	.186
Lifetime trauma exposure	0.050	0.228	.003	0.022	0.098	.131
PTSD symptoms	0.009	0.036	.646	0.004	0.014	.834
DSO symptoms	-0.002	-0.010	.900	-0.003	-0.012	.853
Dissociative symptoms:						
Disengagement				-0.045	-0.043	.636
Depersonalization				-0.026	-0.031	.775
Derealization				0.005	0.006	.957
Emotional Constriction				-0.038	-0.042	.597
Memory Disturbance				0.211	0.217	.024
Identity Dissociation				0.642	0.478	<.001
R^2			0.121			0.405
Adjusted R^2			0.095			0.369
F (p-value)			4.729 (p <.001)			11.333 (p <.001)
ΔR^2			0.121			0.284
ΔF (p-value)			4.729 (p <.001)			15.886 (p <.001)