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Empirical Research

The effects of a voice hearing simulation on implicit fear of voices

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ABSTRACT

The current study investigated potential changes in implicit negativity of hearing voices in a non-voice hearing student population ($N=28$) subjected to a hearing voices simulation using the Implicit Relational Assessment Procedure (IRAP). On the Baseline IRAP, participants were required to pair voices-as-positive and voices-as-negative statements on alternating trial blocks. Participants were subsequently exposed to a simulation procedure and a Post-simulation IRAP. At baseline and post-simulation, hearing voices was implicitly evaluated as both positive *and* fearful, however positivity toward voices reduced and negativity increased after the simulation. Interestingly, implicit changes also appeared to be influenced by high delusional ideation.

1. Introduction

Given the breadth of the label of psychosis, and even schizophrenia, researchers have begun to investigate key features that may be specific to these patterns of suffering, specifically hearing voices. This impetus is likely due to two related facts: 1. It is now established that voices are a very commonly reported symptom, not only in diagnoses of psychosis and other psychiatric diagnoses (see Sartorius et al. (1986) and Slotema et al. (2012)), but also in non-clinical contexts (e.g., Beavan, Read, & Cartwright, 2011); and 2. Social movements, such as the Hearing Voices Movement (aim to normalize and promote the acceptance of unusual experiences) have grown rapidly and are now powerful advocates for social change (Bentall, 2004; Corstens, Longden, McCarthy-Jones, Waddingham, & Thomas, 2014).

Given the prevalence of voice hearing in clinical and non-clinical contexts, and the growing desire for a social change in attitudes toward mental health difficulties, an increasing number of studies have examined attitudes toward voice hearing. Indeed, a vast literature exists demonstrating the presence of negative professional attitudes toward psychological suffering (Schulze, 2007), thus many studies on voice hearing contain interventions that attempt to target these negative attitudes in mental health professionals, often with the aim of targeting stigma, empathy, etc. regarding voices. Many of these studies have included simulations of distressing (or critical) voices within these interventions, due to the prevalence of these types of voices, as reported by voice hearers (Larøi et al., 2012). Overall, these interventions have been associated with positive outcomes and voice simulations have been shown to reduce stigma, but improve empathy, behavioral intentions, and positive attitudes toward voice hearers (Bunn & Terpstra, 2009; Chaffin & Adams, 2013; Dearing & Steadman, 2009; Deegan, 1996; Hojat et al., 2001; Kalyanaraman, Penn, Ivory, & Judge, 2010; Kidd, Tusaie, Morgan, Preebe, & Garrett, 2015; Sideras, Mckenzie, Noone, Dieckmann, & Allen, 2015; Ward, 2015; Wieland, Levine, & Smith, 2015; Wilson et al., 2009).

However, some voice hearing simulation studies have shown less favorable outcomes. For example, Brown, Evans, Espenschade, and O'Connor (2010) found *increased* negative attitudes and an increased desire for social distance (see also Kalyanaraman, Penn, Ivory, and Judge (2010)). Moreover, Brown (2010) reported decreases in willingness to interact with voice hearers, and stronger attitudes centered on help seeking. Interestingly, the mixed findings may pertain to the types of assessment measures researchers have employed. That is, qualitative measures generally produce positive outcomes, while quantitative measures have been more associated with the negative outcomes (Ando, Clement, Barley, & Thornicroft, 2011). Furthermore, the simulation procedures employed vary considerably in presentation (i.e., some were audio simulations and others were virtual reality), length (from 4 to 45 min), and content, all of which may also account for the mixed outcomes.

The fact that negative findings have more readily been associated with self-report measures, and that these too have varied considerably across studies of voice hearing simulations, may also speak to the reliance in those studies on a single type of measure. And problems with using only explicit self-report measures are

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well established (Nisbett & Wilson, 1977; Paulhus, 2002; Wilson & Dunn, 2004). One solution to this situation has seen an increasing number of researchers complement explicit measures with implicit measures, such as the Implicit Association Test (IAT) and the Implicit Relational Assessment Procedure (IRAP), but to date there are no published studies using implicit measures in the context of voice hearing.

2. The IRAP

The Implicit Relational Assessment Procedure (IRAP) is an automated reaction-time based measure developed specifically from Relational Frame Theory (RFT, Hayes, Barnes-Holmes, & Roche, 2001). It requires participants to pair words and/or pictures, and its basic assumptions are that participants should respond more quickly to pairings that are consistent with their pre-experimental verbal histories than pairings that are inconsistent. To illustrate, Barnes-Holmes et al. (2006) administered a simple IRAP comprising of the sample word stimuli "pleasant" and "unpleasant", pleasant-related target stimuli (e.g., "love" and "peace") and unpleasant-related target stimuli (e.g., "abuse" and "crash") and the relational terms "similar" and "opposite" as response options. On each trial, participants were presented with a sample, a target stimulus and the two relational response options. On blocks of trials deemed consistent, participants were required to respond with "similar" during pleasant-pleasant (e.g., pleasant-love-similar) and unpleasant-unpleasant (e.g., unpleasant-abuse-similar) trial-types and with "opposite" during pleasant-unpleasant and unpleasant-pleasant trial-types. On inconsistent blocks, participants were required to respond with "similar" for pleasant-unpleasant and unpleasant-pleasant trial-types and "opposite" for pleasant-pleasant and unpleasant-unpleasant trial-types. The standardized difference score between response latencies on consistent and inconsistent blocks of trials generates four D_{IRAP} scores for each trial-type (i.e., pleasant-pleasant, pleasant-unpleasant, unpleasant-unpleasant and unpleasant-pleasant).

In the original 2006 study, Barnes-Holmes et al. found, as expected, larger D_{IRAP} scores for trials that were consistent with participants' pre-experimental verbal histories (e.g., pleasant-pleasant and unpleasant-unpleasant) than those that were inconsistent. In numerous studies subsequently, the IRAP has also demonstrated good reliability and predictive validity (Carpenter, Martinez, Vadhan, Barnes-Holmes, & Nunes, 2013; Fischer, 2013). And as the body of supporting evidence for use of the IRAP grows steadily (there are now over 50 published empirical articles), it has come to be used increasingly, and with robust effects, in the study of clinical phenomena (see Vahey, Nicholson, and Barnes-Holmes (2015)).

3. The current study

The current study sought to decrease negativity in terms of fear of voices using a newly-developed, brief, audio voice hearing simulation and the IRAP. The IRAP juxtaposed hearing voices with seeing things. It must be emphasized that the contrast category of seeing things was selected for purely experimental reasons, because it is very difficult to generate relevant categories about hearing voices for individuals who have never had this experience. Notably, the data from the seeing things trial-types were not analyzed because no measure of visual hallucinations was included in the study to control for the experience of seeing things. In such an exploratory study, and given the mixed outcomes from simulations noted above, it was difficult to predict whether any change would occur at the implicit level from baseline to post-simulation, however, we hypothesized that we would observe a reduction in negativity at post-simulation.

4. Method

4.1. Setting

All participation was on an individual basis. On average, experimental sessions lasted between 30 and 60 min, and all participation was completed in one session. The experimenter interacted with participants only during instructional phases of the IRAP and remained seated behind participants at all other times.

4.2. Participants

The current study involved a group of non-voice hearing participants who were identified as such using current screening methods from a general sample of undergraduate students recruited from the National University of Ireland Maynooth. There were 46 participants, 24 were male and 22 female, with an age range of 18–28 years and a mean age of 19.72 years (standard deviation was 1.81 years).

4.3. Materials

4.3.1. Self-report measures

Three broad categories of self-report measures were administered. The first series of measures assessed voice hearing and delusional ideation (CAPE). The second set assessed general psychological well-being (AAQ, ATQ and the DASS). The third measured stigma toward mental health difficulties (SAB).

4.3.2. Community Assessment of Psychic Experience (CAPE; Stefanis et al., 2002)

The CAPE is a 42-item measure of delusional ideation in the general population (derived from the Peters Delusions Inventory, PDI, Peters, Joseph, & Garety, 1999). This scale has demonstrated adequate reliability: positive dimension (alpha=0.63), negative dimension (alpha=0.64), and depressive dimension (alpha=0.62), and good validity (Konings, Bak, Hanssen, Van Os, & Krabbendam, 2006).

4.3.3. Acceptance and Action Questionnaire II (AAQ-II; Bond et al., 2011)

The AAQ-II is a 10-item measure of acceptance of negative private events. This scale has demonstrated adequate internal consistency 0.78–0.88), test-retest reliability (0.81 and 0.79), and also demonstrated good construct, concurrent, and predictive validity across several samples (Bond et al.).

4.3.4. Automatic Thoughts Questionnaire (ATQ; Hollon & Kendall, 1980)

The ATQ is a 30-item measure of the frequency and believability of negative thoughts. This scale has demonstrated excellent internal consistency with an alpha coefficient of 0.97 and has demonstrated good concurrent validity (Hollon & Kendall).

4.3.5. Depression Anxiety and Stress Scales (DASS–21; Lovibond & Lovibond, 1995)

This 21-item DASS comprises three subscales that measure depression, anxiety and stress. This scale has demonstrated excellent internal consistency with an alpha coefficient of 0.93 for the total DASS score and the three sub-scales: depression (alpha=0.82); anxiety (alpha=0.90); and stress (alpha=0.93), and has demonstrated good convergent and discriminant validity, and

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