Investigating the Impact of a Virtual Experience Intervention; on Stigma Reduction and Enhancement of Empathy, for Schizophrenia

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Abstract

The stigma surrounding schizophrenia has severe consequences, with literature now suggesting a name change is required for the psychological difficulty in an attempt to destigmatise. Stigma has been reported to present via prejudice and discrimination, usually in the form of socially distancing and is comprised of three components; negative attitudes (stereotypes), negative emotions and a behavioural component (desire for social distancing). Attempts to reduce stigma have commonly been proposed via leaflets and video formats, however recently auditory hallucinations have been implemented with the aim of reducing stigma surrounding mental illnesses. Prolific auditory hallucination 'Hearing Voices that are Distressing' (Deegan, 1996) is most commonly used amongst this research, however indications suggest that the experience is too extreme and feeds into the pre-existing stereotypes, due to increases in the desire for social distancing after experiencing the intervention. Although, empathy is suggested to increase after experiencing Deegan's 'hearing Voices that are Distressing'. This research therefore examined a mild auditory hallucination, with no extreme content. Upon completion of the appropriate stigma measures, participants (n = 39) would listen to a pre-recorded mild auditory hallucination, whilst having a social interaction and then complete the stigma measures again. Results indicated a significant reduction in stereotypes (d = .78 95% CI 1.06 - .15) and social distancing (d = .50 95& CI .93 - .03), alongside an increase in empathy, but consequently it was not statistically significant. These findings propose that a mild auditory hallucination therefore provides a statistically significant stigma reduction intervention, that does not increase the desire for social distancing, however the sample is under powered due to a small sample size (n = 39) to comment on the precision of these findings amongst the general population, which requires further research.

Key Words: *Virtual Experience Intervention, Stigma, Empathy, Schizophrenia*

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The stigma surrounding schizophrenia has severe consequences, with literature now suggesting a name change is required for the psychological difficulty in an attempt to destigmatise. Stigma has been reported to present via prejudice and discrimination, usually in the form of socially distancing and is comprised of three components; negative attitudes (stereotypes), negative emotions and a behavioural component (desire for social distancing). Attempts to reduce stigma have commonly been proposed via leaflets and video formats, however recently auditory hallucinations have been implemented with the aim of reducing stigma surrounding mental illnesses. Prolific auditory hallucination 'Hearing Voices that are Distressing' (Deegan, 1996) is most commonly used amongst this research, however indications suggest that the experience is too extreme and feeds into the pre-existing stereotypes, due to increases in the desire for social distancing after experiencing the intervention. Although, empathy is suggested to increase after experiencing Deegan's 'hearing Voices that are Distressing'. This research therefore examined a mild auditory hallucination, with no extreme content. Upon completion of the appropriate stigma measures, participants (n = 39) would listen to a pre-recorded mild auditory hallucination, whilst having a social interaction and then complete the stigma measures again. Results indicated a significant reduction in stereotypes (*d* = .78 95% CI 1.06 - .15) and social distancing (*d* = .50 95& CI .93 - .03), alongside an increase in empathy, but consequently it was not statistically significant. These findings propose that a mild auditory hallucination therefore provides a statistically significant stigma reduction intervention, that does not increase the desire for social distancing, however the sample is under powered due to a small sample size (n = 39) to comment on the precision of these findings amongst the general population, which requires further research.

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Contents

1. Introduction

1.1 Schizophrenia

Schizophrenia is believed to affect 21 million individuals worldwide (World Health Organisation, 2018) and most commonly presents, initially during late adolescence or early adulthood (Gogtay, Vyas, Testa, Wood & Pantelis, 2011). Whilst the term 'schizophrenia' is relatively commonplace in society's vocabulary (Corrigan, Morris, Michaels, Rafacz & Rüsch, 2012), the categorisation of schizophrenia as a psychological difficulty, is still in infancy in psychology (Feighner et al., 1972). Arguably, it could be suggested that categorising and developing a diagnostic criterion for schizophrenia poses a difficult task as schizophrenia is often viewed as a 'cluster' of syndromes, with vague links to disengagement with reality (Jablensky, 2010). Subsequently schizophrenia was not prevalent in the first Diagnostic and Statistical Manual of Mental Disorders (DSM) (American Psychiatric Association, 1952) as a singular disorder, rather multiple variations of Schizophrenic reactions existed (American Psychiatric Association, 1952), and still to this day, the debate surrounding schizophrenia and what is diagnostically correct, is highly prevalent (Gaebel & Kerst, 2018). Despite the classification being continually debated as to what constitutes diagnostically as 'schizophrenia', schizophrenia has been documented for over a hundred years (Jablensky, 2010), remarking on individuals with hallucinations, as their most salient symptoms; 70% of which are auditory (Hugdahl et al., 2008). However, the DSM V has adapted the definition of schizophrenia to the most medically accurate definition, to correct the short comings of the previous definitions, with the aim of improving diagnostics (Tandon et al., 2013). The DSM V (American Psychiatric Association, 2013) now defines schizophrenia as a condition that is characteristic of; behavioural, cognitive and emotional dysfunctions.

1.2 Stigma

Stigma is perceived to present itself via two main components; prejudice and discrimination, most often the desire for social distancing (Corrigan & Watson, 2002). Defining stigma is widely acknowledged in literature to originate with Goffman's (1963) seminal work, which defined stigma as "an attribute that is deeply discrediting" and

deconstructs an individual's self into something that society can discredit and tarnish. However, Goffman's (1963) view of stigma has been deemed via social psychologists as too individualistic (Link & Phelan, 2001). Instead, stigma is now conceptualised, and it is suggested to comprise of three fundamental components; negative attitudes, namely stereotypes, negative emotions and negative behaviours, most commonly social distancing (Corrigan & Watson, 2002).

The relationship between stigma and the negative effect it poses on individuals with schizophrenia is documented by research from Gaebel and Kerst (2018). The stigmatising attitudes towards schizophrenia have become so prevalent now, the suggestion of re-naming the psychological difficulty, is proposed in an aim to destigmatise, however Gaebel and Kerst (2018) suggest that the efforts vested in wanting to re-name schizophrenia cannot be the only thing which is addressed when aiming to destigmatise schizophrenia, as prejudice and discrimination (Corrigan & Watson, 2002) will still occur, regardless of a new name. Rüsch, Evans-Lacko, Henderson, Flach and Thornicroft, (2011) further suggest that holding positive attitudes towards mental illnesses improves those individuals suffering from stigma, in seeking help for their psychological difficulty, thus destigmatising of schizophrenia has displayed positive effects on the affected individual's wellbeing.

1.3 Standardised Stigma Reduction

The literature indicates that stigmatising attitudes towards individuals with schizophrenia are highly detrimental (Angermeyer & Dietrich, 2006; Nordt, Rossler and Lauber., 2005), therefore many attempts to reduce stigma have been made (Corrigan et al., 2012). These interventions are usually a standardised approach that uses new information to change a person's attitudes, such as lectures and leaflets (Mino, Yasuda, Tsuda & Shimodera, 2001; Tanaka, Ogawa, Inadomi, Kikuchi & Ohta, 2003) and videos (Penn, Chamberlin & Mueser, 2003), indeed the efficacy of addressing stigma towards schizophrenia via an educational intervention has demonstrated positive reductions in stigma (Mino et al., 2001; Penn et al., 2003; Tanaka et al., 2003). Although, the use of protests as a method to address stigma has the opposite, undesired effect of increasing stigmatising attitudes to those suffering

with mental illnesses (Corrigan & Penn, 1999). Standardised stigma reduction approaches however have been more recently suggested to not aid in the reduction stigma, (Mann & Himelein, 2008). Corrigan and Penn, (1999) suggested this lack of reduction in stigma was potentially down to the lack of an active component in the method, indicating that non-traditional approaches to stigma reduction are potentially more effective in reducing stigma towards those who are mentally ill, as non-traditional approaches provide a more active component.

For physical disabilities, a novel approach to stigma reduction has been developed using simulated experiences (French, 1992), who implemented a simulated experience in an aim to destigmatise physical disabilities. The use of virtual reality (VR) interventions in the field of schizophrenia as a stigma reduction technique is evidenced initially by Tichon, Loh and King, (2004), who employed VR as a strategy to help individuals suffering with schizophrenia and struggling with their own hallucinations, as an aid to desensitise the individuals to their own hallucinations. Reuland, Schwarzfeld, and Draper (2009) then executed the use of VR stigma reduction packages initially amongst medical professionals, to reduce the stigma reported by (Nordt et al., 2005). Reuland et al., (2009) also suggested that the use of a VR stigma reduction intervention, allows for empathy to improve in the individuals who participate, towards those who are suffering from mental illnesses (Banks et al., 2004).

1.4 Virtual reality Interventions

The use of VR interventions for stigma reduction has been demonstrated by Sideras, McKenzie, Noone, Dieckmann and Allen, (2015). 145 nursing students (80% female) participated in a pre/post designed experiment, with findings indicative $F(1,142) = 4.27$, $p < .04$, of the previously discussed negative emotions associated with stigma, significantly reducing, when an auditory hallucination is employed as an intervention.

The most common auditory hallucination is from Deegan (1996) who devised the “Hearing Voices that are Distressing” workshop for medical professionals aimed

at reducing the stigma surrounding schizophrenia (Nordt et al., 2005), via the implementation of a VR experience, through the method of a simulated auditory hallucination. The invention of this stigma reduction package is the first of its kind in the field and is therefore widely cited amongst the literature of stigma reduction for schizophrenia via an auditory hallucination, as the most used intervention.

The efficacy of Deegan's (1996) VR intervention is established by findings from, Kepler, Lee, Kane and Mitchell (2016), who demonstrated a significant reduction in the stigma surrounding schizophrenia, in a nurse population, with medium effect size and statistical significance of $p < .01$, suggesting a really statistically significant and real world relevant finding, that the implementation of Deegan's (1996) VR intervention reduces stigmatising beliefs, by allowing individuals to experience what it is like to have schizophrenia, and thus they become less stigmatising.

1.5 Empathy

Chaffin and Adams (2013) also implemented Deegan's (1996) VR intervention, however, with the intention of increasing empathy towards those suffering from stigma, due to having a psychological difficulty. Deegan's (1996) intervention was suggested as an opportunity to witness if empathy can be increased, simultaneously alongside stigma being reduced, due to the findings of Chaffin and Adams, (2010), who three years earlier discovered that nurses struggle the most to find empathy for individuals, especially those with psychiatric disorders. Chaffin and Adams (2013) results indicate via a paired samples t-test, that participants after experiencing Deegan's (1996) intervention, felt more empathy ($t(66) = -18.68$, $p < .001$) towards individuals with mental illnesses, alongside remarking feeling a new understanding and patience towards people with psychological difficulties. Bunn and Terpstra (2009) further indicate that the exposure to Deegan's (1996) auditory hallucination has increased empathy towards individuals with schizophrenia, as the exposure to the reality of what individuals suffering from schizophrenia face, via the implementation of Deegan (1996) allows for a deeper understanding and a subsequent increase in empathy.

It is evident that stigma appears to be reducing via the implementation of Deegan's (1996) 'Hearing Voices that are Distressing', (Kepler et al., 2016) alongside, empathy increasing (Chaffin & Adams, 2013) so it could be assumed that the two main components; prejudice and discrimination, most often the desire for social distancing (Corrigan & Watson, 2002) are being overcome via VR interventions of auditory hallucinations, namely (Deegan, 1996). Although, despite the highly positive findings of increasing empathy due to a VR intervention, Ando, Clement, Barley and Thornicroft, (2011) suggest that the empathy gained may only be short lived, as there is no research to indicate the new found empathy is portrayed to the individuals suffering with psychological difficulties in real life, therefore suggesting that though empathy increases within the control environment of an experiment, the real life demonstrations and practices of the new-found empathy are unknown, therefore requires more research into how empathy increases with stigma reduction. Ando et al., (2001) meta-analysis further highlights the notion that as empathy is noted to be increasing after exposure to Deegan's (1996), the desire to socially distance one's self from individuals with schizophrenia is increasing too. It could therefore be suggested that stigma is increasing, as the desire for social distance is one of the three components of stigma (Corrigan & Watson, 2002).

1.6 Desire for Social Distancing

The content and generalisability of Deegan's (1996) 'hearing Voices that are Distressing' is arguably too extreme. Nayani and David (1996) propose that auditory hallucinations are far less extreme in their content, for the majority of instances reported, therefore Deegan's (1996) is not representative of the target demographic. Their phenomenological study revealed that most individuals suffering from auditory hallucinations report hearing a voice in a sex that is the same as theirs, that stays at a constant volume and is highly repetitive in content, but not constantly abusive and commanding like Deegan's (1996). Dearing and Steadman (2009) also suggest that voices heard in an auditory hallucination begin with statements and lead into arbitrary sounds, opposed to the constant distressing nature of Deegan's (1996).

Nayani and David's (1996) findings are confirmed in research from Brown (2009). Brown (2009) implemented educational interventions into his study of 134 undergraduate students, of which 50.4% reported as female, with an average age of 18.7. Brown (2009) aimed to reduce stigma, utilising Deegan's (1996) 'Hearing Voices that are Distressing' simulated auditory hallucination. Despite the aforementioned statistical significance of Deegan's (1996) intervention aimed at reducing stigma, via the experience of auditory hallucinations, Brown (2009) suggests that the hallucination does not lend anything into the reduction of stigma towards those who are mentally ill ($p > .01$, $d = .11$). The findings indicate a non-significant reduction in stigma, therefore questioning the efficacy of Deegan's (1996) stigma reduction intervention, when Brown's (2009) findings suggest a trend in the opposite direction. Brown (2009) further suggests that Deegan's (1996) 'Hearing Voices that are Distressing' has the counter effect, as Brown's results indicate an increase in the desire for social distancing ($p < .01$, $d = .19$) proposing that once individuals gage the experience of an auditory hallucination, not only do their stigmatising attitudes remain unaffected, they now wish to be further away from individuals who suffer from auditory hallucinations, which is further stigmatising a vulnerable population, as social distancing is reported to be a component of stigma (Corrigan & Watson, 2002).

The desire for social distance towards the mentally ill, has been suggested by Angermeyer and Dietrich (2006) through a comprehensive review of literature, that a sizeable portion of the general population perceive individuals with mental illnesses to present as violent or dangerous. Secondary to the general population perceived stigma, Nordt et al., (2005) suggest that the stigma towards mental illnesses is furthered reinforced by medical professionals. From this it is fair to assume that individuals suffering with psychological difficulties, such as schizophrenia, would be highly deterred from help seeking, when they are receiving stigmatised beliefs from individuals who are in a position to help them (Schomerus & Angermeyer, 2008).

To avoid increasing the desire for social distancing, Galletly and Burton, (2011) devised their own auditory hallucination, opposed to using Deegan's (1996) 'Hearing Voices that are Distressing' which revealed no desire for social distancing and a reduction in the stigmatising attitudes towards those who are mentally ill. Galletly and

Burton (2011), therefore propose that Deegan (1996) may be too extreme of an experience, that Nayani and David (1996) deemed unrepresentative.

Brown, Evans, Espenschade and O'Connor (2010) further researched the efficacy of Deegan's (1996) VR intervention as a stigma reduction strategy, posited against a control group which had no intervention and alongside a standardised stigma reduction film. Brown et al., (2010) results indicate that stigma was still not reduced when utilising Deegan's (1996) intervention ($t(56) = 1.94$, $p > .005$) and social distancing still increased $F(2,55) = 43.72$, $p < .005$. A paired samples t-test, with Cohen's d (Cohen, 1988) demonstrated the magnitude of the desire for social distancing after exposure to Deegan's (1996) intervention was $d = 1.10$, which suggests the effect of Deegan's (1996) intervention is having a very large effect on creating a feeling within individuals to want to distance themselves socially from individuals with schizophrenia, after experiencing Deegan's (1996) hallucination. The weighting of the statistical findings suggests, that these results hold a real-world effect for the implications of using Deegan's (1996) 'Hearing Voices that are Distressing' intervention, as an unsuccessful stigma reduction intervention.

Although Deegan's (1996) intervention has seen to produce effective results for stigma reduction (Kepler et al., 2016), the quality of the auditory hallucination is arguably too extreme in the contents of its nature and not representative of what the majority of auditory hallucinations are (Nayani & David, 1996). The intensity of Deegan's (1996) 'Hearing Voices that are Distressing' could potentially be too distressing for individuals who are experiencing this as a stigma reduction intervention strategy. Though Deegan's (1996) VR intervention is evidenced to increase empathy towards those who are mentally ill (Bunn & Terpstra, 2009; Chaffin & Adams, 2013), it is increasing individual's desire for social distancing (Ando et al., 2011), subsequently increasing stigma (Corrigan & Watson, 2002), therefore it is not achieving its purpose that it was designed to do - reduce stigma.

2. The Current Study and Hypotheses

Brown's (2009) suggestion of including a milder, non-derogatory and non-commanding auditory hallucination, unlike Deegan's (1996), will be utilised as the rationale for this experiment and will, therefore be employed to ascertain if stigma can be reduced, and empathy increased, via a less severe virtual reality intervention, much like the research from Galletly and Burton, (2011). However, Brown (2009) did not include an attitudinal component, only; emotions and behaviour, therefore negative attitudes (stereotypes), negative emotions and behaviours (social distancing) will be individually assessed, as stigma comprises of three components (Corrigan & Watson, 2002). Furthermore, the aspect of new knowledge gained via the use of Deegan's (1996) VR intervention (Chaffin & Adams, 2013) from empathy suggests that knowledge holds a fundamental role in the study of the efficacy of VR interventions for schizophrenia.

Upon inspection of the available literature, the devised hypotheses were as follows;

Does the use if a mild auditory hallucination work as an effective stigma reduction strategy?

Does the use of a mild auditory hallucination work as an effective intervention in increasing empathy for schizophrenia?

If the intervention is successful at reducing stigma, what are the influences of the stigma reduction; the increase in empathy or the gaining of new knowledge?

3. Method

3.1. Participants

39 participants; 7 males 31 females and 1 non-binary, undergraduate university students, studying psychology at the University of Huddersfield, participated voluntarily for the experiment. All participants declared before participating, that they had no auditory issues and had never suffered with auditory hallucinations.

Due to the nature of the experiment having one independent variable, the participants were exposed to all aspects of the experiment and each participated for the full duration of the experiment.

Precise details regarding, ethnicity and marital status were not obtained, as they were not deemed essential to the research, thus are unable to be commented on.

3.2. Recruitment Strategy

Participants were recruited via an opportunity sample. Despite the notable issues surrounding opportunity sampling methods; sampling bias and more prominently issues with generalisability (Coolican, 2013), research regarding the age of onset for schizophrenia suggests that, the typical age of onset for schizophrenia is between 20 and 25 (Gogtay et al., 2011). Thus, the expected issues regarding generalisability are no longer an issue, as the target demographic for generalisability is being targeted.

3.3. Measures / Apparatus

A combination of apparatus and materials were used to conduct the experiment.

The stimuli for the experiment was the mild auditory hallucination, administered via headphones and a mp3 player. The hallucination has a mild content and, unlike Deegan's experience (Deegan, 1996) that is most frequently used in research, does not contain commands, derogatory insults or other disturbing content. The recording was created by the psychology technicians for a previous student project and contains noises, frequently repeated phrases and some mild negative words without

personal reference e.g. the word ‘stupid’ said in a long drawn out, slow voice at normal, quiet volume opposed to ‘You’re stupid’ said in an aggressive shouting tone.

Cognition of the participant was measured via questionnaire materials, in an online format, via the Qualtrics software. Sub-scales from multiple questionnaires were employed to achieve maximum accuracy when measuring stigma, empathy and knowledge.

With stigma now perceived to be compromised of three individual components; negative attitudes, namely stereotypes, negative emotions and a behavioural component, usually, the desire for social distancing (Corrigan & Watson, 2002). Negative emotions and stereotypes were measured by the standardised measurement of stigma in psychological research, Corrigan, Markowitz, Watson, Rowan and Kubiak (2003) Attribution Questionnaire (AQ27). However, only the subsections of responsibility and fear were utilised to measure stereotypes and pity and anger were utilised to measure negative emotions. Responsibility and fear from Corrigan et al., (2003) were deemed the most appropriate as they remarked on controllability and dangerousness of an individual with schizophrenia, most closely linked to stereotyping attitudes. Both subscales were scored on a Likert scale of 1 (completely not) – 9 (yes, absolutely). The vignette was also utilised from Corrigan et al., (2003), which participants read before answering the self-report questionnaires. The vignette detailed a young professional law clerk called Harry, who was 30 and non-violent, with medication controlling his schizophrenia, with no visible effect on his ability to conduct his day to day life. This vignette is the mildest out of the four devised by Corrigan et al., (2003), which increase in severity from one to four, therefore the mildest one was selected for the experiment, to ensure the mild rationale of the experiment was maintained throughout all measures.

The final component of stigma; desire for social distancing, was measured via Link, Cullen, Frank and Wozniak (1987), as Corrigan et al., (2003) AQ27 did not provide accurate measurements of behavioural aspects of stigma. Whereas, Link et al., (1987) specifically ask questions in their questionnaire surrounding how willing an individual would be to live, or work, or marry an individual with schizophrenia, fully measuring how much desire for social distance each participant feels. Link et al.,

(1987) was again measured on a Likert scale 0 (definitely willing) – 3 (definitely unwilling).

Batson et al., (1997) was utilised for a measure of empathy, opposed to Corrigan et al., (2003) pity subscale as that only detailed sympathy, not empathy, and clear distinctions between the two concepts was imperative. Therefore, the six devised synonyms Batson et al., (1997) devised to describe empathy, measured on a 1 (extremely empathetic) – 7 (not at all empathetic) Likert scale, that included how warm or compassionate one would feel towards Harry, measured empathy far more accurately, than a measure of sympathy by Corrigan et al., (2003).

Finally, a knowledge questionnaire was devised from Orr, Kellehear, Armari, Pearson and Holmes (2013) research, whereby the ten individual words their research yielded, that described how it felt to experience an auditory hallucination, were constructed into a questionnaire. Therefore, the full knowledge gain of the experience on each participant could be ascertained via their indication of how distracting, confusing and irritating, amongst other contributing factors, the experience of a mild auditory hallucination. The devised knowledge questionnaire was too measured via a Likert scale; 1(strongly agree) – 5 (strongly disagree).

As the knowledge questionnaire was devised for the sole purpose of this experiment using Orr et al., (2013) findings, the Cronbach alpha score is imperative to ensure there are no internal consistency issues (Field, 2013). The devised knowledge questionnaire scored (α = .86), which adheres to the literature from Field (2013) of a Cronbach's alpha of above .80, ensure high internal consistency of the questionnaire.

Internal consistency of each questionnaire has demonstrated to be robust and above .80 (Field, 2013). Stereotypes (α = .83), emotions (α = .82), social distancing (α = .89) and empathy (α = .88).

3.4. Research Design

Matched pairs and repeated measures design were employed for this experiment, due to the pre and post nature of the experiment, whereby the same individual would repeat the same questionnaires after the stigma reduction experience of a mild

auditory hallucination. The design comprised of; one independent variable (IV) and three dependent variables (DV), all of which were operationalised.

The experiment consisted of a single IV manipulated at one level; the mild auditory hallucination intervention. Alongside, the three DV's; stigma, empathy and knowledge total scores.

All variables ensured operationalisation. The IV, a pre-recorded mild auditory hallucination, containing as accurate noises and phrases as possible (Nayani & David, 1996), to ensure a realistic experience for participant, therefore guaranteeing the virtual reality experience of a mild auditory hallucination. Stigma, empathy and knowledge were each respectively measured via the questionnaires mentioned above.

Every measure was taken to avoid the impact of confounding and extraneous variables. Situational variables (Coolican, 2013) however, could only be controlled for part of the experiment (when the participant was answering the questionnaires) as when receiving the mild auditory hallucination intervention, each individual was asked to have a social interaction which will differ from each instance, thus altering each situation for each participant for part of the experiment. Due to the transparency of a matched pre/post design, demand characteristics, more specifically the Hawthorne Effect (Payne & Payne, 2004) could potentially transpire as participants may be able to gage the rationale for the experiment and thus alter their responses to what they perceive the experimenter is aiming to discover.

3.5. Procedure

Participants arranged an appointment convenient for themselves to voluntarily participate in the experiment. Upon their arrival to the experiment location, participants were first asked if they had any auditory issues, to ensure they could fully hear the mild auditory hallucination, alongside if they had been previously sensitive to auditory hallucinations themselves. Out of the 39 participants, none responded as previously or currently suffering with auditory hallucinations, however, disclosure may have been avoided to maintain social desirability (Dong, Huang & Wyer, 2013). Once this was ascertained, participants read the information sheet, provided via Qualtrics on a computer, which detailed the rationale for the experiment, with example questions and

full disclosure of what the experiment entailed, after reading this they then completed the consent form.

Participants were first met with a vignette from Corrigan et al., (2003) detailing a man called Harry with schizophrenia, after reading the participants answered the empathy questionnaire (Batson et al., 1997), followed by the stereotype and emotion questionnaires (Corrigan et al., 2003), and then finally the social distancing questionnaire (Link et al., 1987).

Participants then received the instructions regarding the mild auditory hallucination; to have a social interaction whilst listening to the intervention via the headphones and mp3 player. Participants were advised of what social interactions to do, such as ordering a coffee, having a conversation to a friend, asking for help in the library. Participants were not followed when they participated in the VR intervention section of the experiment, therefore the accuracy and reliability of the social interactions is unable to be commented on.

Once participants returned they did the same order of questionnaires again, with the addition of the knowledge questionnaire (Orr et al., 2013) first. Upon completion of the questionnaires, post experience, participants were provided with a full debrief and the chance to ask the experimenter any questions.

3.6. Ethical Considerations

All measures were taken to ensure the experiment adhered to The British Psychological Society Code of Human Research Ethics (2010).

Confidentiality

All participants were informed of their confidentiality via their anonymity. Though their student ID numbers were used for data collection, they were removed once the pre and post data was combined, participants were also informed of this via the consent form.

Informed Consent

Participants were provided with full disclosure of the experiment, prior to completing the consent form, alongside the researchers contact details. Participants were reminded of their right to withdraw at any time, such as removing the headphones if the intervention was too distressing or skipping any questions they did not feel comfortable answering.

Debriefing

Participants received a full debrief after completing the experiment. The debrief included resources of where to seek help; (university counsellors and the Samaritans) if they felt concerned or affected by what they had participated in during the experiment.

Deception

No possibility of deception occurred in the study.

Psychological Harm

There was a realistic risk of potential psychological discomfort, via listening to the mild auditory hallucination. However, participants were reminded that they were not obligated to continue listening if they found it too distressing and could remove the headphones whenever they desired. Participants were also provided with a sampling of the auditory hallucination for around 30 seconds prior to their social interaction and asked if they felt okay with the content and were not too distressed. Participants were further informed that they had the right to skip any questions they deemed uncomfortable.

4. Results

A paired samples t-test was deemed the most appropriate statistical test to implement on the data, as the following criteria were met (Field, 2013); data was normally distributed, and the independent variable was dichotomous as the groups were matched pairs, i.e. the same participant did the same experiment pre and post the mild auditory hallucination. However, the recruitment of data was via an opportunity sample, opposed to the desired random sample (Zirkel, Garcia & Murphy, 2015), however due to time constraints of cross-sectional data, random sampling was unobtainable.

Normality of distributions can further be relinquished as the sample size was above 30, (n = 39), (Pallant, 2007). A Shapiro-Wilk test further indicates that the data is normally distributed, as each variable is non-significant and above p > .05. Despite not all normality assumption criteria being achieved, Pallant (2007), suggest that as the sample size is (n = 39), minor violations of normality are no longer an issue and allows for the use of parametric testing, despite non-normality results. Central limit theorem further supports Pallant's claims, stating that samples above 30 (n = 39), will form a normal distribution, regardless of any abnormalities, (Field, 2013).

Table 1.

Mean scores and standard deviations for paired samples t-test

	Pre (n = 39)		Post (n = 39)	
	Mean	SD	Mean	SD
Stereotypes	15.62***	8.50	10.38	4.01
Emotions	19.18	9.43	19.18	10.21
Social Distancing	13.82**	4.05	12.03	3.77
Empathy	16.92	4.75	19.18	10.21

Note. Statistical significance - ** $p < .01$; *** $p < .001$

The means in Table 1. displayed that there was a significant reduction in the negative stereotypes' component of stigma and the desire for social distancing component of stigma, alongside an increase empathy. However, statistical significance cannot be assumed from measures of central tendency.

The statistical analysis of the paired samples t-test indicated that, there was a significant reduction in individuals negative stereotypes: $t(38) = 4.39$, $p < .0001$ and a significant reduction in individuals desire for social distancing: $t(38) = 3.06$, $p < .004$.

However, the increase in empathy was non-significant $t(38) = -1.25$, $p < .22$.

The magnitude of difference for the reduction of negative stereotypes ($d = .78$ 95% CI 1.06 - .15) and reduction of social distancing ($d = .50$ 95% CI .93 - .03) were of considerable and medium effect size, respectively, according to Cohen (1988), ($d = .78$; $d = .50$), therefore indicating the reduction in negative stereotypes and desire for social distancing is significant, but also the magnitude of ($d = .78$; $d = .50$) suggests that the finding is not trivial and of real importance. However, the wide banding of the confidence intervals, suggest that the precision of the results is under powered by a small sample size (n = 39) to detect the precision of these findings amongst the general population. However, there is 95% confidence that the reduction in negative stereotypes is significant and of importance, however the scale of the importance cannot be determined, due to being underpowered.

The first hypothesis was therefore accepted, as negative stereotypes, $t(38) = 4.39$, $p < .0001$ was significant, alongside individuals desire for social distancing: $t(38) = 3.06$, $p < .004$, and the null hypothesis was therefore rejected.

The second hypothesis was rejected, as despite an increase in individuals empathy upon receiving the mild auditory hallucination, the increase was not statistically significant, $t(38) = -1.25$, $p < .22$, and therefore the null hypothesis was rejected for this.

Further statistical analyses were conducted after the paired samples t-test to ascertain what influenced the change in stereotypes ($t(38) = 4.39$, $p < .0001$ $d = .78$ 95% CI 1.06 - .15) and the change in social distancing ($t(38) = 3.06$, $p < .004$, $d = .50$ 95% CI .93 - .03). The analysis sought to determine if the change in stereotypes towards stigma schizophrenia, was a result of an increase in empathy towards individuals with schizophrenia or a gain in knowledge of how schizophrenia is on an interpersonal level. Alongside, determining whether the reduction in desire for social distancing reduced, due to the likewise change in knowledge or empathy. Therefore, a multiple linear regression was deemed the most appropriate statistical analysis to conduct on the data.

Assumptions for normality and linearity were not violated, as evidenced below in Figure 1. and Figure 2 (for stereotype change) and Figure 3. and Figure 4. (for change in social distancing).

Figure 1.

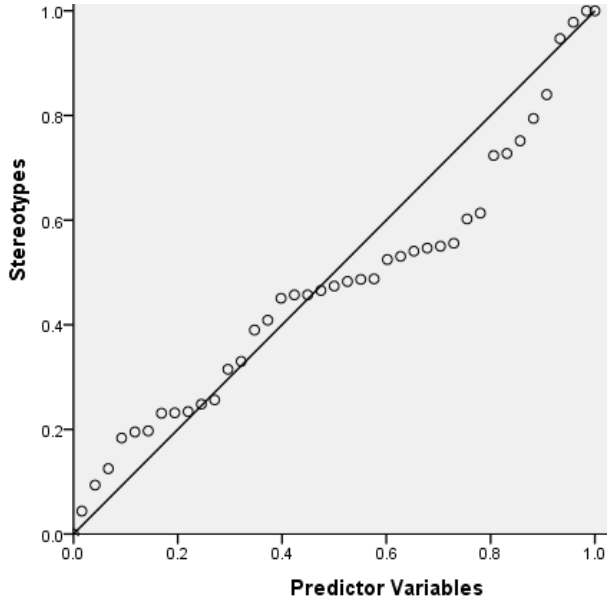


Figure 2.

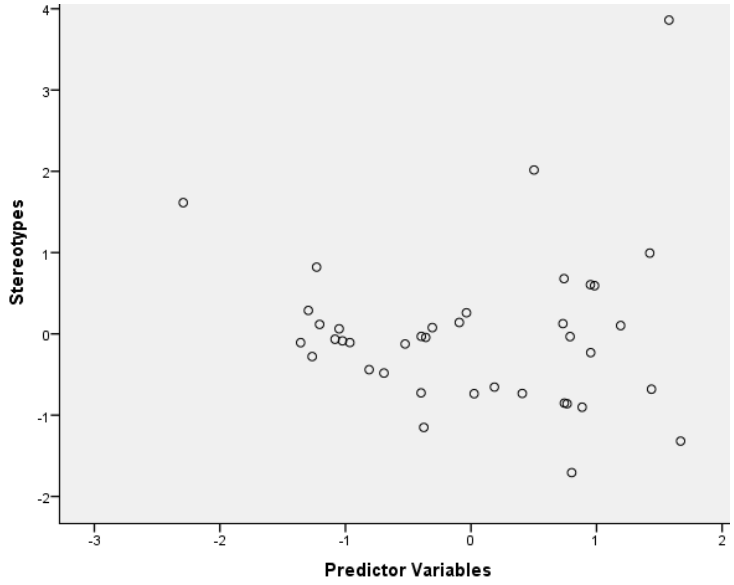


Figure 3.

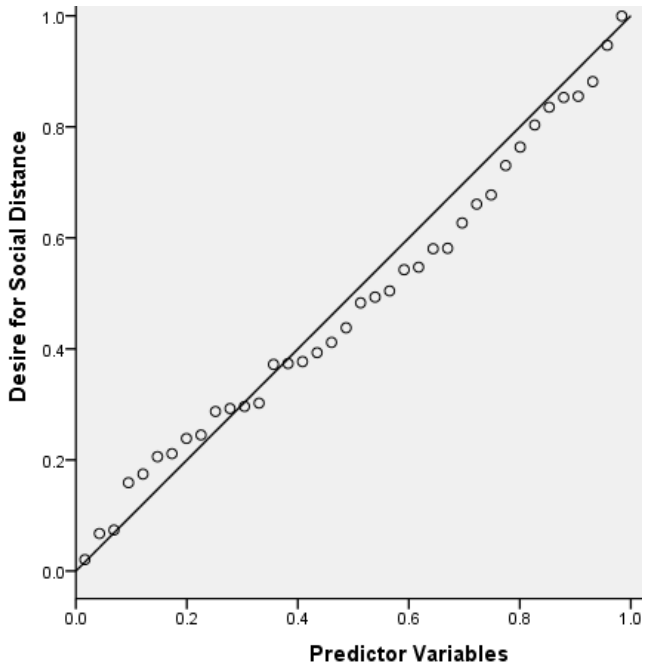
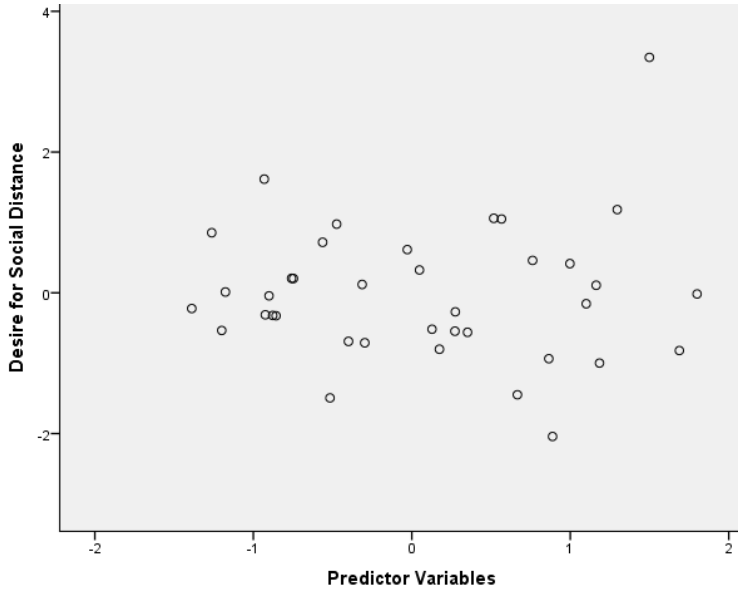


Figure 4.



Homoscedasticity was not ensured, according to Tabachnick and Fidell (2007), as the standardised residuals ranged from a minimum; -12.27 to a maximum of; 27.75 for stereotype change and a minimum; -7.42 to a maximum of; 12.16, opposed to the ideal -3.3 to 3.3. However, removal the two outliers evident in Figure 2., indicate extreme attitudes towards stigma, which is the primary basis for this research, therefore their removal would not be in the best interest of the study.

As the variance inflation factor was below 10; (1.03), for both models, it can be assumed that there were no instances of multicollinearity. According to Stevens (1996) a sample size of n = 39, is suitable to run a multiple regression, however, Tabachnick and Fidell (2007) suggest that for a multiple regression the sample size should be, N > 50 + 8m, which the study's 39 participants does not account for. Therefore, the results may potentially be questionable, due to under powering of a small sample size (n = 39).

The means and standard deviations for; stereotype change, empathy change, and knowledge scores are presented in Table 2. below.

Table 2.

Predictor Variable	Mean	SD
Stereotype Change	5.23	7.45
Empathy Change	2.26	11.29
Knowledge Change	33.51	7.04

Statistical analyses indicated that the model as a whole was statistically significant F (2, 37) = 2.39, p < .01, which explained 6.8% of the variance in what influence the reduction of negative stereotypes.

Table 3. displays the predictive factors for the change in negative stereotypes.

Table 3.

	R^2	β	B	SE	CI 95% (B)
	.07				
Empathy Change		.35**	.23	.11	.02 / .44
Knowledge Change		.08	.08	.17	-.26 / .42

Note. Statistical significance - **p < .01

As there was no *a priori* hypotheses determining the order of entry for either predictor, a direct method was used for the multiple linear regression analyses.

Empathy change and knowledge change account for 7.0% of the variance in stereotype change (F (2, 37) = 2.39, p < .01).

The model indicates however, that only empathy change is a statistically significant predictor of what influenced the reduction of negative stereotypes towards individuals with schizophrenia, (β = .35, p < .01), as knowledge change was non-significant (β = .08, p < .65).

The means and standard deviations for; change in social distancing, empathy change, and knowledge scores are presented in Table 4. below.

Table 4.

Predictor Variable	Mean	SD
Change in Social Distancing	1.79	3.6
Empathy Change	2.26	11.29
Knowledge Change	33.51	7.04

Statistical analyses indicated that the model as a whole was not statistically significant F (2, 37) = .70, p < .50, which explained none of the variance in what influences the reduction in the desire for social distancing.

Table 5. displays the predictive factors for the change in negative stereotypes.

Table 5.

	R^2	β	*B*	*SE*	CI 95% (B)
	.02				
Empathy Change		.20	.06	.05	-.05 / .17
Knowledge Change		.09	.04	.09	-.13 / .22

As there was no *a priori* hypotheses determining the order of entry for either predictor, a direct method was used for the multiple linear regression analyses. Empathy change and knowledge change account for none of the variance in stereotype change (F (2, 37) = .70, $p < .50$).

5. Discussion

5.1. Stereotypes and Social Distancing

The first hypothesis was accepted, as stigma was reduced post-test, via the inclusion of a mild auditory hallucination statistically significantly, across two; stereotypes ($t(38) = 4.39$, $p < .0001$, $d = .78$ 95% CI 1.06 - .15) and social distancing ($t(38) = 3.06$, $p < .004$, $d = .50$ 95% CI .93 - .03), out of three components of stigma. These findings are consistent with the findings from Galletly and Burton, (2011) who reported a reduction in stigma when a milder auditory hallucination is employed, utilising Brown's (2009) advisory's for future research, opposed to Deegan's (1996) 'Hearing Voices that are Distressing'. The decrease in stigma when a mild auditory hallucination is utilised, therefore supports Brown's (2009) suggestion that Deegan's (1996) 'Hearing Voices that are Distressing' is potentially too extreme and plays into the already existing stereotypes (Angermeyer & Dietrich, 2006) and eliciting a fear response, which is seen to motivate social distancing (Ando et al., 2011) creating the opposite effect in subsequently increasing stigma, via the increase in desire for social distancing (Brown, 2009). Thus, a milder version of the intervention is evidenced to reduce stereotypes and the reduce the desire for social distancing.

The reduction in the desire for social distancing was also not predicted by either empathy or knowledge; (F (2, 37) = .70, p < .50), therefore suggesting that the reduction in desire for social distancing can be potentially attributed to the alteration of the VR intervention from Deegan' (1996) 'Hearing Voices that are Distressing' to a mild auditory hallucination with non-derogatory and non-commanding content.

5.2. Empathy

However, the predictor model indicated that the reduction in negative stereotypes is significantly influenced by a change in empathy; ($\beta = .35$, $p < .01$) and not knowledge; ($\beta = .08$, $p < .65$). Therefore, suggesting that the increase in empathy, which has been well documented (Bunn & Terpstra, 2009; Chaffin & Adams, 2010; Chaffin & Adams, 2013; Reuland et al., 2009) can significantly predict the reduction of negative stereotypes for schizophrenia.

Nevertheless, despite empathy increasing (pre = 16.92; post = 19.18), the increase was not statistically significant (p < .22), thus the second hypothesis was

not accepted, and the null hypothesis is accepted instead. Arguably, due to the mild content and nature of the auditory hallucination, which sought to remove the extreme aspect of Deegan's (1996) in the hope of having the stigma reduction intervention, reduce rather than increase stigma, the content may have been too mild to elicit any statistically significant empathy amongst individuals. Whereas, when Deegan's (1996) 'Hearing Voices that are Distressing' is used as the VR intervention, it is indicated that empathy does increase (Chaffin & Adams, 2013).

5.3. Critiques

Although the majority of the literature surrounding VR interventions for stigma reduction, have a simultaneous increase in empathy alongside a reduction in stigma, (Bunn & Terpstra, 2009; Chaffin & Adams, 2013; Kepler et al., 2016). However, current research from Sideras et al., (2015) suggests that stigma did reduce with no statistically significant increase in empathy. Sideras et al., (2015), findings indicate a reduction in stigma, namely negative attitudes, towards schizophrenia when a VR intervention is employed, and the findings are measured with Corrigan et al., (2003) AQ27, similar to the findings produced in this experiment. Sideras et al., (2015) also found a decline in the desire for social distancing too, when Deegan's (1996) 'Hearing Voices that are Distressing' is not implemented as the auditory hallucination, instead one that has been newly devised, with a non-derogatory and non-commanding content. Sideras et al., (2015) suggest that the lack of a statistically significant increase in empathy is potentially a result of an immediate follow up post the VR intervention. As the majority of the literature in VR interventions for stigma reduction, adhere to the pre/post design (Ando et al., 2011) the follow up is usually immediate. With such an immediate follow up, Sideras et al., (2015) suggest that this time frame is too short to measure any significant differences. This is consistent with the empathy findings from this experiment, as despite empathy increasing (pre = 16.92; post = 19.18) it did not increase enough to be statistically significant ($p < .22$), potentially due to the immediate follow up, opposed to if there would have been a secondary follow up, the increase in empathy may have been significant.

As there was no follow up, possibly limiting the time frame in which a significant empathy finding could be captured, the inclusion of a follow up could aid this issue. Previous research into VR interventions for stigma reduction, culminated in a comprehensive review by Ando et al., (2011) suggests only one instance of a study employing a follow up in addition to the pre/post design. Brown et al., (2010) utilised a one week follow up in conjunction with the traditional pre/post design for VR stigma reduction research. Brown et al., (2010) indicated that there was no change in the results they found after a one week follow up, however, Brown et al., (2010) found an increase in stigmatising attitudes when a VR intervention was employed as a stigma reduction package, as Deegan's (1996) 'Hearing Voices that are Distressing' package was utilised. Arguably, Brown et al., (2010) findings highlight the requirement for a study that, identifies a reduction in stigma, via the implementation of a VR intervention, with a follow up to ascertain if the reduction continues after the experiment has ended. The notion of a VR intervention that has lasting effects, of stigma reduction, would significantly aid in the reduction stigma experienced by those with schizophrenia (Angermeyer & Dietrich, 2006; Nordt et al., 2005).

Despite the relatively small sample size (n = 39), the sample is adequate to power the statistics to detect the differences in the magnitudes of the effect sizes for both stereotypes (*d* = .78) and social distancing (*d* = .50) (Cohen, 1988). However, by remaining at the minimum end of the bracket of a sample size required to detect significant changes within the data, the confidence intervals are impacted, and their precision is unreliable. With confidence intervals, confident to 95% of a real-world effect, the findings are promising for the efficacy of a mild auditory hallucination as an effect stigma reduction intervention. However, the range of banding from (.03 – 1.06) the statistics are underpowered, and thus imprecise in determining how specific the effect of the findings is, amongst the general population. Although, Brand and Bradley (2016) posits that 83% of psychological research has wide confidence interval banding, sometimes double the size of the effect size. Thus, it is fair to assume that in that despite the wide bandings indicating a lack of precision, with the results ranging from trivial to great importance, this is not uncommon amongst

psychological research and does not deter from the significance of the findings (Pashler & Wagenmakers, 2012).

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Furthermore, the lack of inclusion of a control group raises doubts surrounding the efficacy of the findings accuracy, because of the devised mild auditory hallucination working as an effective stigma reduction intervention, or attributable to the transparency of the pre/post design, influencing demand characteristics. Payne and Payne (2004) propose the Hawthorne effect may become prevalent when employing a pre/post design, as participants will be able to easily gage the rationale for the study, due to repeating the same measures, and may alter their responses consistent with those that they perceive the experiment is expecting. Thus, compromising the validity and accuracy of a mild auditory hallucination as a stigma reduction intervention.

Whereas, research from Kalyanaraman, Penn, Ivory and Judge (2010) employed a control group when executing a VR intervention is an aim to reduce the stigma surrounding schizophrenia. Their results indicated increases in stigma and desire for social distancing when the VR intervention was implemented on its own, but, which follows the trend of Brown et al., (2010) indications that the intervention may be too extreme and play into pre-existing assumptions. However, Kalyanaraman et al., (2010) did not employ Deegan's (1996) 'Hearing Voices that are Distressing', instead a visual VR intervention, thus visual interventions may be too extreme also. The VR intervention simultaneously paired with an empathy condition yielded the most positive results, with increases in positive perceptions of individuals with schizophrenia when the, however the desire for social distancing was still prevalent throughout all groups, regardless of positive perceptions increasing or decreasing. Whereas, the findings of this study eliminate the desire for social distancing without the need for a control group, thus the lack of a control group, does not seem to provide more fruitful findings, then those presented. Parkes, Forrest and Baillie, (2009) further suggest that, a VR intervention is most effective when combined alongside another learning resource, such as written instructions. Arguably, the VR was aided by a vignette from Corrigan et al., (2003) AQ27, alongside the questionnaires, describing a man called Harry with no extreme

qualities, as to keep to a mild content, to avoid increasing the desire for social distancing (Brown, 2009). The inclusion of the vignette with the mild auditory hallucination arguably allows for more effective results to be yielded, without the requirement of a control group.

5.4. Limitations of the Current Study

The main limitation of the experiment is the impact of the sample size being adequate, but not large enough to ensure precision (n = 39). Though sizeable effects have been detected for both stereotypes (d = .78 and social distancing (d = .50) the wide banding of the confidence intervals cannot determine how precise the size of the effects amongst the general population, therefore a larger sample size is required to more accurately power the statistics. The results could also aid metanalytic research, combining the findings with pre-existing literature to further ascertain how VR interventions can aid in stigma reduction. The validity of the results is also questionable as there is a lack of a control group, to ascertain whether the findings are indicative of stigma being reduced via the implementation of a mild auditory hallucination, or merely due to demand characteristics of the Hawthorne effect (Payne & Payne, 2004) due to the nature of a pre/post design. Furthermore, the longevity of the reduction in stigma is questionable without a follow up to ascertain how long the stigma reduction lasted and if it transpired into real life attitudes and behaviours.

5.5. Future Research Considerations

Findings have indicated that a successful reduction in stigma, due to the implementation of a mild VR intervention, can be significantly predicted by a change in empathy scores (β = .35, p < .01). The inclusion of a mild auditory hallucination further appears to removes any increase for the desire to socially distance ones self from someone with schizophrenia, opposed to the extreme nature of Deegan's (1996) 'Hearing Voices that are Distressing' package, that has been suggested to be too extreme (Brown, 2009) and reduce stigma, yet increase the desire for social distancing (Brown et al., 2010; Galletly and Burton (2011). Consequently, the small sample size (n = 39) underpowers the precision of these findings, despite being adequately

powered enough to detect a reasonable effect size for the efficacy of stigma reduction. Thus, the inclusion of this work into a meta-analysis of similar findings or replicated with a larger sample size would further ascertain the predictors of stigma reduction, which is one step further in understanding and hopefully reducing the components of stigma (Corrigan & Watson, 2002). As empathy has been suggested to be a predictor of stigma reduction, yet empathy, nor knowledge predicted the reduction in desire for social distancing, therefore the predictors of this component of stigma could be further researched. The predictors of empathy also, could be an avenue to be explored as though is has proven a predictor of stigma reduction, the components of empathy remain unknown.

6. Conclusion

The inclusion of a mild auditory hallucination as an intervention to reduce stigma has demonstrated significant efficacy ($t(38) = 4.39$, $p < .0001$, $d = .78$ 95% 1.06 - .15) whilst simultaneously addressing the desire for social distancing increase issue, raised in previous literature by Brown (2009). It is evident that by eliminating the extreme nature of an auditory hallucination, allows for the VR intervention to reduce negative stereotypes, without increasing the desire for social distancing, instead a mild auditory hallucination has demonstrated reducing the desire for social distancing also ($t(38) = 3.06$, $p < .004$, $d = .50$ 95% CI .93 - .03). However, despite an increase in empathy, the immediate follow up potentially was too soon after the intervention (Sideras et al., 2015) to detect a statistically significant increase. Further statistical analysis also indicated that the influence for the reduction in stereotypes was the gaining of new empathy, opposed to the gaining of new knowledge $F(2, 37) = 2.39$, $p < .01$. The incorporation of a predictor model for stigma reduction is the first of its kind amongst the literature and therefore requires far more research into understanding what factors of empathy are significant in predicting the reduction of negative stereotypes towards schizophrenia. The reduction in desire for social distancing was not significantly predicted by either empathy or knowledge, and thus consistent with previous findings (Brown, 2009; Galletly & Burton, 2011), suggesting the extreme nature of Deegan's (1996), plays into preexisting assumptions of schizophrenia. The findings, though successful, due to the wide banding of the confidence intervals, propose that the experiment is under powered due to a small sample size (n = 39) and therefore requires replications at a larger scale, or combined with similar studies for a meta-analysis, to fully ascertain the real-world effect size for the reduction in stigma.

7. References

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8. Appendices

Appendix A1

Ethics Form

DEPARTMENT OF PSYCHOLOGY, UNIVERSITY OF HUDDERSFIELD
ETHICAL APPROVAL FORM FOR UNDERGRADUATE PROJECTS

Part One

Project Title	Investigating the Impact of a Virtual Experience Intervention; on Stigma Reduction and Enhancement of Empathy for Schizophrenia
Student name	Natasha Elizabeth Thain
Supervisor name	Derrol Kola-Palmer
Date	26.10.18

		Yes	No	N/A
1	Will you describe to participants what will happen in your study (e.g. experimental or interview procedures) in advance, so that they are informed about what to expect?	x		
2	Will you tell participants that their participation is voluntary?	x		
3	Will you obtain written consent for participation?	x		
4	If the research is observational, will you ask participants for their consent to being observed?	x		
5	Will you tell participants that they may withdraw from the research at any time and for any reason?	x		
6	With questionnaires and interviews, will you give participants the option of omitting questions they do not want to answer?	x		
7	Will you tell participants that their data will be anonymised and that no information will be included which could lead to them being identified?	x		
8	Will you debrief participants at the end of their participation (i.e. Give them a brief explanation of the study) if the research demands that you can't do this at the outset?	x		

If you have ticked No to any of Q1-8, please make sure you give an explanation on Part Three of the form. You do not have to complete Part three if you have answered Yes to all questions.

		YES	NO	N/A
9	Will your project involve deliberately misleading participants in any way?		x	
10	Is there any realistic risk of any participants experiencing either physical or psychological distress or discomfort? If **Yes**, give details in part three of this form, and state what you will tell them to do if they should experience any problems (e.g. who they can contact for help).	x		
11	Does your project involve work with animals? .		x	
12	Do participants fall into any of the following special groups? If they do, please refer to the guidance notes and provide the justification required in part three		x	

	Prisoners, children (under 18), NHS patients, NHS staff, Social Services clients and other vulnerable adults.			
13	Are there any threats to your safety (either physical or psychological) in carrying out this research?		x	

If you have ticked Yes to any of Q9-12, please make sure you give an explanation on Part Three of the form. You do not have to complete Part three if you have answered NO to all questions.

Part Two

In this section you need to provide more details about your project. Please complete the table below.

<table>
<tr><td>Project title</td><td colspan="2">Investigating the Impact of a Virtual Experience Intervention; on Stigma Reduction and Enhancement of Empathy for Schizophrenia</td></tr>
<tr><td>Project aims/ hypotheses</td><td colspan="2">➢ To investigate whether, the intervention of a virtual experience of a mild auditory hallucination increases empathy towards those suffering from schizophrenia.
➢ To investigate whether, the intervention of a virtual reality experience of a mild auditory hallucination, decreases stigma towards those suffering from schizophrenia.
➢ To compare the effects of virtual reality experience against the standardised, public information stigma reduction intervention.</td></tr>
<tr><td>Project rationale
(Give a brief overview of the literature which supports your aims/hypotheses)</td><td colspan="2">Brown (2010) argues that receiving a virtual reality intervention does not lend anything in the reduction of stigma towards mental illnesses, but however does increase individuals desire to socially distance themselves from an individual suffering with a mental illness. However, Brown (2010) used a rather extreme interpretation of an auditory hallucination, from Deegan's virtual experience "Hearing Voices that are Distressing". Arguably, as this is a highly severe interpretation of an auditory hallucination it could be understood that stigma attitudes did not reduce, as the extreme nature of the voices would be distressing to endure as a participant. However, literature surrounding stigma reduction via a virtual reality intervention mainly focuses the use on Deegan's experience, yet the desired results do not occur. Therefore, my aim is to use a milder; non-derogatory and non-commanding mild auditory hallucination, to ascertain if stigma can be reduced, and empathy increased, via a less severe virtual reality intervention.</td></tr>
<tr><td>Research Design
(What type of study are you doing?)</td><td colspan="2">This is a quantitative repeated measures study, employing a sample of undergraduate psychology students at the University of Huddersfield. Data collection will be gathered via the completion of two questionnaires; before and after receiving the intervention. Participants may receive the experimental or the control intervention.</td></tr>
<tr><td>Recruitment strategy
(How will you get your participants?)</td><td colspan="2">Undergraduate psychology students at the University of Huddersfield are the demographic for participants. Participants will be accumulated via the online resource of SONA, in line with their requirement to complete psychological research.</td></tr>
<tr><td rowspan="4">Participant details</td><td>Number of participants</td><td>A prior power analysis indicates 50-60 participants would be recommended to detect a medium effect size</td></tr>
<tr><td>Age of participants</td><td>18+ (cannot specify further as not all undergraduates fall into 18-21 bracket)</td></tr>
<tr><td>Gender of participants</td><td>Male & female – however it is unimportant to the experiment.</td></tr>
<tr><td>Other details</td><td>n/a</td></tr>
<tr><td>Proposed method
(Give details of what you will do and how you will do it)</td><td colspan="2">Upon signing up to participate in the project, the participant will receive two questionnaires to gather a baseline measurement of their individual stigma and empathy attitudes. The first a demographic questionnaire with general questions gaging familiarity with mental illness. The second questionnaire will have 20 questions gaging the stigma and empathy attitudes of the individual towards mental health, they are to complete this after reading the vignette provided which details an individual with schizophrenia.

Roughly a week after the participant has completed the two online questionnaires, they will be invited to the laboratory to participate in the virtual reality intervention.</td></tr>
</table>

	Participants will then receive either a virtual reality intervention; a mild auditory hallucination; comprising of earphones & an mp3 player or the standardised informative stigma reduction material via the MIND, via a computer. After receiving their intervention, the same vignette as read a week prior, alongside the second questionnaire from before will be administered a second time to detect if a change in stigma attitudes and empathy levels occurred.
Materials/ Measures *(What measures or materials that you intend to use. Include details of the reliability and validity of any scales or provide details of how interview questions were devised.)* *NB. Copies of scales and/or interview schedules should be included in the appendix*	The questionnaire that will be used to assess both stigma attitudes and empathy levels is from Corrigan et al., (2003) Attribution Questionnaire (AQ20). This questionnaire combines both empathy and stigma questions specifically towards severe mental illnesses, such as schizophrenia, encompassed into one questionnaire making it the ideal choice for this project when identifying stigma attitudes and empathy levels towards individuals diagnosed with schizophrenia. Though empathy is not explicitly referred to in the AQ, the pity section indicates the same questions that would be asked in an empathy section, pity and empathy are highly semantically close, an example of the similar semantics is this question from the pity section; "How much concern would you feel for Harry?". Therefore, the pity section will be used to understand empathy measurements. Corrigan et al., (2003)'s AQ is a validated questionnaire and therefore an appropriate measure to use within my research. This is evidenced by research from Brown (2008) who's findings indicated that the AQ provides reliable and valid measurements of four individual aspects of stigma attitudes towards those who are mentally ill. Knowing that this questionnaire can accurately measure stigma and empathy attitudes and levels towards the mentally ill, allows for a more accurate understanding of the data received, which will hopefully aid more strategic stigma reduction strategies. The AQ has 7 yes or no questions surrounding familiarity with mental health, then goes into the remaining 20 questions that assess stigma and empathy. For the purposes of my project I will divide the original AQ into two; the first 7 questions will marry in with the demographic questionnaire to gage a general understanding of the participant, and the second questionnaire will have the specific 20 questions that measure stigma and empathy levels. Corrigan et al., (2003) also provide a vignette of "Harry", however they provide 4 individual ones, where I only require one, I will therefore use their first version as it is the least extreme, which in keeps with my theme of research that using mild, less extreme and most common versions of the mental illness will produce more positive results for stigma reduction. The questionnaires can be viewed in the Appendix labelled Questionnaire 1. and Questionnaire 2. To receive the mild auditory hallucination an mp3 player and earphones are required, to watch the standardised informative stigma reduction via MIND website a computer and headphones will be required. The link to the standardised information stigma reduction video from mind is accessible via the link in the appendix. This study will use a virtual, auditory hallucination in the form of an MP3 player and headphones. The hallucination has a mild content and, unlike Deegan's experience that is most frequently used in research, does not contain commands, derogatory insults or other disturbing content. The recording was created by the psychology technicians for a previous student project and contains noises, frequently repeated phrases and some mild negative words without personal reference e.g. the word 'stupid' said in a long drawn out, slow voice at normal, quiet volume rather than 'You're stupid' said in an aggressive shouting tone.

Planned analysis *(Which statistical analyses do you intend to perform to answer each of your hypotheses or which qualitative data analysis method do you intend to use to answer your research question?)*	The online statistical analysis programme SPSS will be utilised to run a two-way Mixed ANOVA.
How will you communicate your findings? *(Written report, one page summary to participants etc.)*	A finalised one-page summary of the findings will be offered to each individual who participated, upon completion of the written thesis.

Part Three

Please outline any ethical issues you have identified and describe how you will address them.

Ethical Issue	Researcher Response
Realistic risk of potential psychological discomfort (Hearing a mild auditory hallucination)	I will ensure that I provide fully informed consent to each participant. I will also inform each participant of their right to withdraw at any time during the experiment (e.g. remove headphones) and their right to skip any questions they feel uncomfortable answering. Thus, eliminating any chance of potential psychological discomfort.
Debrief	Each participant will receive a debrief at the end of their participation. Within this debrief will be sources of support any individual can access if they feel the need to after the exposure to this project, (e.g. Samaritans).

Part Four

You now need to insert all the accompanying documentation into this application. To do this insert files or copy the information from your files and paste it to the end of this document.

Put a cross next to the documents in the table below to confirm their inclusion. You may not have to include all documents.

Participant information sheet	x
Participant consent form	x
Letters requesting permission to carry out research	
Debrief document	x
Indicative interview schedules	
Questionnaires	x

Supervisor Consent

You must discuss this form with your supervisor and get them to look at it and sign it off prior to submission. Your supervisor should sign the form indicating their approval.

Supervisor name	Derrol Kola-Palmer
Confirmation of approval	*DKP - YES*
Date	16.10.18

You now need to submit this form via Turnitin by

1.15pm by 26th October 2018

Submitting the form via Turnitin will indicate that:

- Your supervisor has agreed your ethics proposal;
- You are familiar with the British Psychological Society Guidelines for ethical research and agree to abide by them;
- That all the information contained in the form is truthful to your knowledge;
- That you will not being any data collection until you receive ethical approval.

Appendix A1a

Information Sheet for Participants

Investigating the Impact of a Virtual Experience Intervention; on Stigma Reduction and Enhancement of Empathy for Schizophrenia

Researcher – Natasha Elizabeth Thain
Researcher Contact – u1674469@unimail.hud.ac.uk
Supervisor – Derrol Kola-Palmer
Supervisor Contact – d.kola-palmer@hud.ac.uk

I would initially like to thank you for your interest into my research and taking the time to participate in my experiment. In this section I will detail the aim of the research, what you as a participant will be asked to do and what happens to the information you provide. Upon reading this information, you should be in a position where you, as a participant, are able to make an informed decision on whether or not you wish to participate in my research.

What's the Topic?

For my final year project, I will be investigating the impact of receiving a mild virtual reality intervention, on reducing individuals' stigma surrounding those individuals affected with schizophrenia and if, simultaneously, empathy can be increased.

What will you be asked to do?

This research comprises of two elements; questionnaires and the experience of a mild virtual reality intervention. After signing up for this experiment, you will be invited to book a time-slot to book in for the experiment. You will then arrive at the specified location.

You will receive five short questionnaires; the first, which just requires your demographic information, (age, gender) You will also be asked for your student number, which will only be used to associate your pre and post questionnaire responses, it will be deleted straight after your responses are coupled together.

A vignette will then be provided for you to read, detailing an individual suffering with schizophrenia. Upon reading of the vignette, is when the four remaining questionnaires are to be answered, which will measure your stigma and empathy attitudes to the vignette you've just read. The questionnaires are short and measured on a Likert scale e.g. 1 – 9, allowing you to indicate you answer per question. The questions asked in these four questionnaires will be of a somewhat sensitive nature, asking, for example if you would employ the person, would you feel aggravated by them. This should take no longer than 30 minutes to complete.

Following the completion of the questionnaires, you will receive your mild virtual reality intervention, which is aiming to reduce the stigma and increase empathy levels towards those individuals diagnosed with schizophrenia. You will listen to a, via earphones and an mp3 player, a virtual reality intervention aimed on reducing stigma surrounding schizophrenia. This experience should take up to 30 minutes. Subsequent to the completion of the experience, you will receive the vignette and four questionnaires you were acquainted with, prior to the intervention experience, for completion. This again should take up to 30 minutes.

What if I don't like the questions or the mild virtual reality experience is too distressing?

If you read a question and would rather not answer it (e.g. you don't feel comfortable stating your opinion regarding the individual in the vignette, or you don't want me to know your age), simply do not answer the question and move onto the next one.

If the mild virtual reality experience is too distressing or overwhelming, simply remove the headphones and do not continue.

If at any point during your participation you realise that this research is not for you, stop immediately.

If you finish your participation in my project but feel that you wouldn't like your information to go any further, please email me at any time, up to two weeks after you've completed your participation to the email address provided above, and your data will be deleted from my project.

What happens once I've finished?

Once you have finished the questionnaire, post your experience, I will provide you with some final information surrounding the research behind this project and a list of contact details for sources of support (should you wish to consultant a professional) and my supervisor in case you wish to raise any issues with him.

What will happen to my information?

The information you provide will be used in my final year project, which is a compulsory part of my degree and key to my professional body of registration. All the information you have provided will be entirely anonymised, so not even myself will be able to identify you from the data. In the analysis of the data, your information will be grouped alongside all the other participants of my project and stored in a password protected file that will be destroyed upon completion of my degree. If you wish to obtain a copy of the results, feel free to email me in early June and I will happily disclose a copy of my project to you.

Appendix A1b

Consent form for participants

	Yes ☐	No ☐
I have read and understood the information sheet.		
I have been given the opportunity to ask questions about the study.	Yes ☐	No ☐
I have had my questions answered satisfactorily.	Yes ☐	No ☐
I understand that my participation is voluntary, and I can withdraw from the study at any time without having to give an explanation.	Yes ☐	No ☐
I agree to questionnaires being digitally recorded and the contents being used for research purposes.	Yes ☐	No ☐
I agree to participate in this project.	Yes ☐	No ☐
I understand that my identity will be protected, and that all data will be anonymous.	Yes ☐	No ☐
I agree to the data (in line with conditions outlined above) being archived and used by other bona fide researchers.	Yes ☐	No ☐
I agree to the use of my student number being used, purely as a means to match the pre and post data together, and know that it will be deleted and anonymised upon the end of data collection	Yes ☐	No ☐

Name (printed) _____

Signature _____**Date**_____

Feel free to contact me if you have any further questions, at; u1674469@unimail.hud.ac.uk or my supervisor at; d.kola-plamer@hud.ac.uk .

Appendix A1c

Debrief

Final Information

Investigating the Impact of a Virtual Experience Intervention; on Stigma Reduction and Enhancement of Empathy for Schizophrenia

Natasha Elizabeth Thain - u1674469@unimail.hud.ac.uk

Thank you for participating in my research. As previously outlined in the information you received before, I'm interested in whether or not the intervention of a mild virtual reality experience reduces stigma and increases empathy towards individuals affected with schizophrenia. To do this you'll have received a mild auditory hallucination, aimed to inform you on the experiences an individual with schizophrenia faces, just via a different format. The idea behind this research was to ascertain whether experiencing an actual auditory hallucination; would reduce the stigma surrounding schizophrenia and increase empathy towards individuals affected with this psychological difficulty, via experiencing what individual's face first hand on a daily basis.

Why the research is important?

This research is important because 1% of the population is diagnosed as being schizophrenic, with extensive research displaying, high levels of stigma towards those individuals. The media further fuels this as mainly negative stories surrounding schizophrenia are apparent, further adding to this issue. This stigma can subsequently negatively affect the individual's lives massively, meaning that on top of dealing with their psychological difficulty they have an added 'layer' of inter-personal problems to contend with as a result of stigma. However, this issue is now recognised at a government level and there is a campaign with the aim to reduce stigma. If you want to discover more on this topic, visit;

https://www.mind.org.uk/news-campaigns/time-to-change

What if I need some support?

Firstly, do not be ashamed of seeking support. Initially when we participate in research we do not foresee it having such an impact on us, however we can go home and further reflect upon it and unanticipated effects occur. If this is the case, you can access support via the following sources;

The Samaritans

- Phone – 116123
- Email – jo@samaritans.org

As a university student, you also have access to the counselling service

- Phone – 01484 473330 (9:00am – 5:00pm Monday – Thursday/ 9:00am – 4:00pm Friday)
- Email – studentwellbeing@hud.ac.uk

What if I think of further questions about the project?

You are always free to email me with any questions regarding my project at the email address provided. However, if you would prefer to speak to my project supervisor, his name is Derrol Kola-Palmer and you can contact him via d.kola-palmer@hud.ac.uk .

Appendix A2

Demographic Questionnaire

Tell Me About Yourself…

Age; please specify

Gender; (please select the most appropriate one)

Male

Female

Non-binary

Other

Prefer not to say

Student ID Number

Appendix A3

Vignette

Please read the following story that describes a man called Harry...

Harry is a 30 year old single man with schizophrenia. Although he sometimes hears voices and becomes upset, Harry has never been violent. Like most people with schizophrenia, Harry is no more dangerous than the average person. He lives in an apartment and works as a clerk in a large law firm. His symptoms are usually well managed with the appropriate medication

Appendix A4

Empathy Questionnaire

Thinking about Harry, how would you describe how you felt towards him, please answer the following;

	1 = Extremely Empathetic	2	3	4	5	6	7 = Not Empathetic at All
How sympathetic would you feel towards Harry?	○	○	○	○	○	○	○
How compassionate would you feel towards Harry?	○	○	○	○	○	○	○
How soft-hearted would you feel towards Harry?	○	○	○	○	○	○	○
How warm would you feel towards Harry?	○	○	○	○	○	○	○
How tender would you feel towards Harry?	○	○	○	○	○	○	○
How moved would you feel by Harry?	○	○	○	○	○	○	○

Appendix A5

Stereotypes Questionnaire

Your opinions about Harry

Part 1

	1 = No, not at all	2	3	× 4	5	6	7	8	9 = Yes, Absolutely
I would think that it were Harry's own fault that he is in the present condition	○	○	○	○	○	○	○	○	○
How controllable, do you think, is the cause of Harry's present condition?	○	○	○	○	○	○	○	○	○
How responsible, do you think, Harry is for his present condition?	○	○	○	○	○	○	○	○	○

Part 2

	1 = Not at all	2	3	4	5	6	7	8	9 = Very Much
How dangerous would you feel Harry is?	○	○	○	○	○	○	○	○	○
I would feel threatened by Harry?	○	○	○	○	○	○	○	○	○
How scared of Harry would you feel?	○	○	○	○	○	○	○	○	○
How frightened of Harry would you feel?	○	○	○	○	○	○	○	○	○

Appendix A6

Emotions Questionnaire

Thinking now about how Harry would make you feel

Part 1

	1 = Not at all	2	3	4	5	6	7	8	9 = Very Much
I would feel aggravated by Harry	○	○	○	○	○	○	○	○	○
How angry would you feel at Harry?	○	○	○	○	○	○	○	○	○
How irritated would you feel by Harry?	○	○	○	○	○	○	○	○	○

Part 2

	1 = Not at all	2	3	4	5	6	7	8	9 = Very much
I would feel pity for Harry?	○	○	○	○	○	○	○	○	○
How much sympathy would you feel for Harry?	○	○	○	○	○	○	○	○	○
How much concern would you feel for Harry?	○	○	○	○	○	○	○	○	○

Appendix A7

Social Distancing Questionnaire

Thinking now about how you'd react to Harry in person

	0 = definitely willing	1 = probably willing	2 = probably unwilling	3 = definitely unwilling
How would you feel about renting a room in your home to someone like Harry?	○	○	○	○
How about as a worker on the same job as someone like Harry?	○	○	○	○
How would you feel having someone like Harry as a neighbour?	○	○	○	○
How about as the caretaker of your children for a couple of hours?	○	○	○	○
How about having your children marry someone like Harry?	○	○	○	○
How would you feel about introducing Harry to a young women you are friendly with?	○	○	○	○
How would you feel about recommending someone like Harry for a job working for a friend of yours?	○	○	○	○

Appendix A8

Knowledge Questionnaire

Thinking about the voice hearing experience you've just had, please answer the following questions...

	1 = Strongly Agree	2 = Agree	3 = Neutral	4 = Disagree	5 = Strongly Disagree
It was more difficult to concentrate than I thought	○	○	○	○	○
It was less confusing than I had anticipated	○	○	○	○	○
The voices were more distracting than I thought	○	○	○	○	○
I didn't feel as self-conscious as I anticipated	○	○	○	○	○
It was more difficult to interact with others than I thought	○	○	○	○	○
I was less withdrawn from the real world than I anticpated	○	○	○	○	○
It was more stressful that I thought	○	○	○	○	○
It was not as irritating as I had anticipated	○	○	○	○	○
I felt more angry than I had expected to during the experience	○	○	○	○	○
The content of the voices was not what I had expected	○	○	○	○	○