Assessing threat responses towards the symptoms and diagnosis of schizophrenia using visual perceptual biases

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ABSTRACT

Stigma towards individuals diagnosed with schizophrenia continues despite increasing public knowledge about the disorder. Questionnaires are used almost exclusively to assess stigma despite self-report biases affecting their validity. The purpose of this experiment was to implicitly assess stigma towards individuals with schizophrenia by measuring visual perceptual biases immediately after participants conversed with a confederate. We manipulated both the diagnostic label attributed to the confederate (peer vs. schizophrenia) and the presence of behavioural symptoms (present vs. absent). Immediately before and after conversing with the confederate, we measured participants' facing-the-viewer (FTV) biases (the preference to perceive depth-ambiguous stick-figure walkers as facing towards them). As studies have suggested that the FTV bias is sensitive to the perception of threat, we hypothesized that FTV biases would be greater after participants conversed with someone that they believed had schizophrenia, and also after they conversed with someone who presented symptoms of schizophrenia. We found partial support for these hypotheses. Participants had significantly greater FTV biases in the Peer Label/Symptoms Present condition. Interestingly, while FTV biases were lowest in the Schizophrenia Label/Symptoms Present condition, participants in this condition were most likely to believe that people with schizophrenia should face social restrictions. Our findings support that both implicit and explicit beliefs help develop and sustain stigma.

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1. Introduction

Despite increasing public awareness about schizophrenia, stigma towards people with this disorder has actually increased (Link et al., 1999; Hinshaw, 2006; Pescosolido et al., 2010). The effects of stigma are devastating, including reduced employment opportunities (Hinshaw, 2005), social support availability (Sartorius, 1999), quality of life (Link and Phelan, 2001), and community acceptance (Hinshaw, 2006; Hinshaw and Stier, 2008). Indeed, stigma is one of the greatest barriers in achieving functional recovery (Berge and Ranney, 2005).

The lack of progress in reducing stigma may result from research employing mainly self-reports (Link et al., 2004). Measurement of stigma relies almost exclusively on questionnaires assessing explicit attitudes, introducing biases, such as the tendency to respond in a socially desirable way (Link et al., 2004; Stier and Hinshaw, 2007; Hinshaw and Stier, 2008). Implicitly and objectively measuring stigma with techniques that are less susceptible to response biases may thus offer new perspectives on how these negative beliefs are developed, sustained, and considered in stigma reduction programmes (Corrigan and Shapiro, 2010). Although implicit attitude measures such as the Implicit

Association Task (Greenwald et al., 1998) and the Concept Association Task (Steffens et al., 2008) are widely used to measure implicit attitudes, there have been concerns regarding the validity of these measures (De Houwer et al., 2009). Some argue that these tasks may actually measure knowledge of societal views (Karpinski and Hilton, 2001), degree of stimulus salience (Rothermund and Wentura, 2004), or task switching neurocognitive abilities (De Houwer, 2001) as opposed to personal biases that would influence behaviour. Furthermore, these measures only provide a gross assessment regarding positive or negative attitudes, and ignore specific components, such as perceived dangerousness (Penn et al., 1999), which are thought to play a critical role in the stigmatization of people with schizophrenia. Recently, more objective methods for examining responses to the diagnosis and/or symptoms of schizophrenia have been developed (e.g., Best and Bowie, 2013; Lavelle et al., 2013). These methods are complex though (e.g., EEG), so there is a need for more easy-to-administer implicit measures that can be integrated into the evaluation of large scale stigma reduction programmes.

The belief that others are threatening or dangerous is an essential characteristic of stigmatization (Link et al., 1999; Corrigan, 2000; Blascovich et al., 2001; Angermeyer and Matschinger, 2003), but people are biased to not admit to feeling threatened (Blascovich et al., 2001). Using implicit measures, then, is especially important when assessing perceived threat. Corrigan (2000) argued that mental

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health stigma in particular is sustained by the majority's fear of the disparaged group, leading to avoidance of stigmatized individuals. For instance, Link et al. (1999) found that people who read about individuals labelled as having schizophrenia were significantly more frightened, and more likely to believe that people with schizophrenia should be institutionalized to keep the public safe.

One method of implicitly measuring perceived threat that has never before been examined in the context of stigma is to measure one's facing-the-viewer (FTV) bias for stick-figure walkers (SFWs). These stimuli consist of a series of connected points depicting three-dimensional human-like figures that are displayed 'walking' (Johansson, 1973). Originally used to study biological motion perception, these figures are projected orthographically on a two-dimensional plane and are therefore depth-ambiguous. Because such stimuli do not provide information regarding their position in depth (e.g., by means of occlusion), observers may perceive SFWs as either facing-the-viewer or facing away (Vanrie et al., 2004). Interestingly, examination of the frequencies with which individuals perceive either of these percepts has revealed that these stimuli are more often seen as facing-the-viewer, and this phenomenon is known as the FTV bias (Vanrie et al., 2004; Brooks et al., 2008; Schouten et al., 2010).

As a preference to see ambiguous human figures as facing towards oneself would be intuitively beneficial for survival, researchers have hypothesized that the FTV bias may exist for sociobiological reasons (Vanrie et al., 2004; Brooks et al., 2008; Schouten et al., 2010). That is, mistakenly perceiving an ambiguous human figure as approaching would be advantageous compared to making the opposite error. This implies that the facing-towards percept of SFWs is more threatening, and in support, more anxious individuals have stronger FTV biases (Heenan and Troje, 2014). Furthermore, observers perceive male walkers as facing-the-viewer more often than female walkers (Brooks et al., 2008; Schouten et al., 2010), and males are typically perceived as more threatening than approaching females (Cicone and Ruble, 1978).

The purpose of this experiment was to implicitly measure perceived threat by examining participants' FTV biases as a function of the presence of symptoms and/or diagnosis of schizophrenia in a social interaction partner. In a 2 (Symptoms Absent vs. Symptoms Present) × 2 (Peer Label vs. Schizophrenia Label) between-subjects design, we assessed the difference in FTV biases before and after participants conversed with a confederate. We hypothesized an interaction between variables such that FTV biases would range from the lowest to the highest in the following order of conditions: Peer/Symptoms Absent, Peer/Symptoms Present, Schizophrenia/Symptoms Absent, and Schizophrenia/Symptoms Present.

2. Method

2.1. Participants

Fifty-one (44 women, 7 men) university undergraduate students participated in the study and were compensated with either partial course credit or $15.00. Of the 51 people recruited, 10 were excluded (all women) because they guessed the purpose of the experiment. Included participants did not differ significantly from excluded participants in terms of their age, questionnaire data, or perceptual biases (before or after manipulation). All statistical analyses were performed on the remaining 41 participants (34 women, 7 men), who ranged in age from 18 to 21 years ($M = 18.85, SD = 1.08$).

2.2. Materials & stimuli

2.2.1. Stick-figure walker (SFW) task

To avoid confounding the variable of interest with a simple response bias (e.g., Is the walker facing towards or away?), we presented SFWs rotating about a vertical axis and asked participants to indicate their spinning direction. Together with information about the "veridical" orientation of the 3D walker, we inferred perceived facing direction from participants' responses (Jackson et al., 2008). All SFWs were based on biological motion point-light walkers and consisted of 15 dots (depicting the centre of major skeletal joints) with connecting lines (Troje, 2008, 2002). The main dependent variable in this study was participants' FTV biases elicited by the SFW task (see Supplementary material 1).

2.2.2. Confederate

A confederate conversed with participants while portraying behaviours that are characteristic of individuals with schizophrenia. The presentation of symptoms in an individual with schizophrenia can have substantial variation day-to-day, making it difficult to standardize which symptoms to display. Using a confederate allowed us to standardize the portrayal of schizophrenia across participants and thus carefully assess the differential effects of diagnostic labels and symptoms on perceived threat (see Supplementary material 2).

2.2.3. CAMI

Participants completed the Community Attitudes Toward the Mentally Ill questionnaire (CAMI; Taylor and Dear, 1981; Taylor et al., 1979). This questionnaire consists of 40 statements regarding attitudes towards persons with mental disorders and produces subscales on four dimensions: authoritarianism (the belief that people are responsible for their own mental health), benevolence (the belief that people with mental disorders deserve help), tolerance of rehabilitation in the community, and social restrictiveness (the belief that people with mental disorders should be restricted from social experiences such as voting or unsupervised community participation). We modified items so that they specifically pertained to those with schizophrenia.

2.2.4. Conversation Ratings Questionnaire

For the purpose of this study, we designed a questionnaire to assess participants' ratings of their conversation with the confederate (see Supplementary material 3). The items on this scale were divided into three subscales that required participants to 1) rate their own abilities during the conversation, 2) rate their partner's abilities during the conversation, and 3) rate how they thought their conversation partner (i.e., the confederate) would rate them.

2.3. Procedure

Upon arriving at the lab, participants sat 90 cm in front of a laptop computer. The experimenter instructed participants to indicate whether they saw stimuli rotating clockwise or counter-clockwise by clicking the appropriate 'button' on the screen using a computer mouse. Participants then completed the initial SFW task.

Next, the experimenter told participants that they would be conversing with another student. Participants either interacted with the confederate who was: (1) labelled as a peer and displayed no symptoms, (2) labelled as a peer but displayed symptoms of schizophrenia, (3) labelled as a person diagnosed with schizophrenia but displayed no symptoms, or (4) labelled as a person diagnosed with schizophrenia and displayed symptoms of schizophrenia. The experimenter communicated this to each participant according to a predetermined script (see Appendix A). Depending on the condition, participants were either told that the other student had schizophrenia (i.e., Schizophrenia Label) or that the student was studying engineering (i.e., peer label). Then, the confederate entered the room after a random wait time of 30 to 120 s and sat in a chair across from the participant, positioned within view of the video camera. The experimenter introduced the participant and confederate to each other and asked them to get to know one another.

After 10 min, the experimenter interrupted the conversation between the confederate and the participant and then escorted the confederate out of the room. The participant then completed the conversation ratings questionnaire and the SFW task again.