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## Bullying victimisation and paranoid ideation in people at ultra high risk for psychosis



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#### ABSTRACT

*Background:* Bullying victimisation has been suggested to contribute to paranoid ideation in general population samples and recent evidence found that individuals with an ultra high risk (UHR) for psychosis are twice as likely to have been bullied than controls.

*Aims*: This study sought to examine whether a history of bullying would be associated with higher levels of paranoid ideation in individuals with an UHR and in healthy controls (HCs).

*Method:* The study included 64 UHR and 43 HC participants. Following the baseline assessment, participants entered a Virtual Reality (VR) London Underground train. Paranoid ideation was measured immediately after the end of the VR experience.

Results: Compared to HCs, UHR participants described higher levels of childhood bullying (OR 5.19, 95% CI = 2.21–12.19, p < .001) and experienced more paranoid ideation during VR ( $\chi^2_{(1)} = 21.06$ , p < .001). Childhood bullying was associated with paranoid ideation during VR in both groups ( $\chi^2_{(1)} = 5.931$ , p = .021) but prolonged exposure to bullying was not associated with increased paranoid ideation.

Conclusion: A history of bullying in childhood is particularly common in young adults at high risk for psychosis. However bullying is associated with paranoid ideation in later life, independent of clinical status, consistent with dimensional models of psychotic phenomena.

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#### 1. Introduction

A number of recent studies and a meta-analysis indicate that there is an association between bullying and psychotic symptoms in general population samples (Campbell and Morrison, 2007; Kelleher et al., 2008; Schreier et al., 2009) and bullying in childhood has been found to be a strong risk factor in longitudinal studies for the development of psychotic disorders in adulthood (Arseneault et al., 2010). The nature of this relationship is less clear in cross-sectional studies of patients with an established psychotic disorder. One study has reported a correlation in patients with first episode psychosis (Trotta et al., 2013), but a metaanalysis of data from clinical samples was not conclusive (van Dam et al., 2012). Furthermore, previous studies have shown an association between paranoid ideation and early adverse experiences, including bullying, and suggested that developing psychotic symptoms after childhood bullying appears to be related to the frequency, severity and duration of the bullying (Pickering et al., 2008; Varese et al., 2012; Lopes, 2013; Kraan et al., 2015). The ultra high risk (UHR) state is

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associated with a clinical syndrome that is evident in young adults and typically involves psychotic symptoms and a recent decline in function (Fusar-Poli et al., 2013). Psychotic symptoms in people who meet the UHR criteria are qualitatively similar to those seen in psychotic disorders. Although the psychotic symptoms are less severe, they are usually distressing, leading the individual to seek clinical care. Individuals at UHR for psychosis are usually treatment-naïve, and thus provide an ideal group in which to examine this relationship. A recent study suggests that people at UHR for psychosis are twice as likely to have been bullied than controls (Addington et al., 2013), but the relationship between bullying and the severity of psychotic symptoms in this population has yet to be investigated.

The severity of psychotic symptoms is usually assessed by asking the participant to provide a retrospective description of their beliefs and experiences. Psychotic symptoms can be evaluated in a more standardised way by using a Virtual Reality (VR) environment, which provides an ecologically valid and controlled setting that can elicit paranoid experiences (Freeman et al., 2005; Valmaggia et al., 2007). VR environments such as a busy train carriage have been shown to induce paranoid ideation in healthy participants (Freeman et al., 2003; Green et al., 2011), people at UHR for psychosis (Valmaggia et al., 2007), and individuals with persecutory delusions (Fornells-Ambrojo et al., 2008; Veling et al., 2014). The environmental stimulus is identical in all participants,

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and their response can be evaluated as soon as they exit the environment, maximising the likelihood of obtaining an accurate assessment of their experiences.

In the present study, we used VR to assess paranoid ideation in young adults at UHR for psychosis. We then related their responses to their history of bullying in childhood, assessed using the Retrospective Bullying Questionnaire (RBQ). We tested the following hypotheses: First, that a history of bullying would be more common in UHR participants than in controls. Second, that a history of bullying would be associated with increased levels of paranoid ideation in the VR environment.

#### 2. Method

#### 2.1. Design

This study employed a cross-sectional, between participants independent design, which compared participants at UHR for psychosis to a matched healthy control group (HC).

#### 2.2. Participants

Sixty-five UHR participants were recruited via Outreach and Support in South London (OASIS), a specialised service for young people at risk of psychosis (Fusar-Poli et al., 2012). All participants recruited to the study were over 18 years old and had never experienced a psychotic episode. The participants were managed clinically at OASIS. The catchment area includes the boroughs served by South London and Maudsley NHS Foundation Trust. UHR individuals were assessed by the OASIS service using the Comprehensive Assessment of At-Risk Mental States (CAARMS) assessment tool (Yung et al., 2005) prior to participation in the research to establish that they met the one of more of the following PACE (Personal Assessment and Crisis Evaluation clinic) criteria for UHR: Attenuated psychotic symptoms group: patients have experienced subthreshold, attenuated positive psychotic symptoms during the past year; Brief limited intermittent psychotic symptoms group: patients have experienced episodes of frank psychotic symptoms that have not lasted longer than a week and have spontaneously remitted; or Trait and state risk factor group: patients have schizotypal personality disorder or have a first-degree relative with a psychotic disorder and have experienced a significant decrease in functioning during the previous year.

Conferral of an at-risk status was established by two experienced clinicians and a consensus meeting of the OASIS clinical team.

Local advertisements were used to recruit 45 HC participants who came from the same geographic region. All participants received a payment for their time and travel expenses and provided written informed consent prior to commencement of the study. The Prodromal Questionnaire (PQ) (Loewy et al., 2005) was used to screen HC for possible UHR symptoms. The PQ comprises four symptom subscales (positive symptoms, negative symptoms, disorganized symptoms, and general/affective symptoms). A positive symptom subscale score in excess of 18 indicates that further investigation of potential clinical symptomatology may be required (Loewy et al., 2005).

In the current study, one HC participant was excluded from subsequent analysis due to a score in excess of 18 on the PQ positive symptom subscale. The VR equipment failed while testing one HC participant and one UHR participant so their data were also excluded from the final analysis. This resulted in a total of 64 UHR and 43 HC participants.

#### 2.3. Ethical approval

Research ethics approval was obtained from the National Research Ethics Service (Ethics REC number 08/H0722/45).

#### 3. Materials

#### 3.1. Socio-demographic information

Socio-demographic information was collected, which included age, gender, medical history, ethnicity, family history of psychiatric illness, years of education. Social class was estimated using information on parental occupation according to the National Readership Survey (http://www.nrs.co.uk) social grades classification to give two broad categories of "working class background" and "middle class background".

#### 3.2. Retrospective Bullying Questionnaire (RBQ)

The Retrospective Bullying Questionnaire (RBQ) examines self-reported experiences and appraisals of bullying. The questionnaire contains several sections with a total of 44 items (Schafer et al., 2004). Participants are asked to answer questions about their experiences during primary school and secondary school/college. The questions on bullying are divided into physical, verbal, and indirect forms. The questions focus on the frequency and intensity of the bullying experience (all 5 point scales), the duration of the bullying, the gender of the bully, and the number of aggressors involved. Frequency is assessed by asking the participant how often this happened (never to constantly); intensity is assessed by asking the participant how serious they considered the bullying attacks to be (not at all to extremely serious).

Participants were classified as victims according to their responses about the frequency and intensity of bullying (Hunter et al., 2004) using three criteria:

- They indicated that they had been bullied in any way (physically, verbally, or indirectly) at any stage during school (primary, secondary, or both).
- 2. This happened 'sometimes' or more often.
- 3. They perceived the experience to be at least 'somewhat severe' and if they reported never having bullied others.

Prolonged bullying was defined as lasting 'weeks or months' or 'even longer' (Schafer et al., 2004).

#### 3.3. State Social Paranoia Scale (SSPS)

The State Social Paranoia Scale (SSPS) (Freeman et al., 2007) is a 20-item self report questionnaire examining paranoia, specifically paranoid ideation about VR avatars. Each of the 20 items is rated on a five point scale from 1 = 'do not agree' to 5 = 'totally agree', with higher scores indicating higher endorsement. In addition to examining paranoid (10 items, range 10–50), neutral (5 items, range 5–25) and positive (5 items, range 5–25) ideation about the avatars is explored. A higher score reflects higher levels of ideation. The SSPS examines recent thinking within a controlled social situation rather than assessing stable, trait paranoia. Convergent validity was also shown with levels of paranoia in day-to-day life (Freeman et al., 2007). Based on the dataset, responses were grouped into four ordinal categories (corresponding to scores <10; 11–15; 16–25; >26).

#### 4. Procedure

#### 4.1. Virtual Reality environment

The VR scenario was modelled on a London Underground tube train ride (developed by the Department of Computer Science at University College London), as used in previous studies (Fornells-Ambrojo et al., 2008; Freeman et al., 2008; Valmaggia et al., 2007). The environment was displayed in colour via a lightweight headset; the display used was a Virtual Research VR 1280 (Virtual Research Systems, Aptos, California), with a resolution of 1280 × 1024 pixels, 60° diagonal field

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