



## Perceived ethnic discrimination and persecutory paranoia in individuals at ultra-high risk for psychosis



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### ABSTRACT

Despite a consensus that psychosocial adversity plays a role in the onset of psychosis, the nature of this role in relation to persecutory paranoia remains unclear. This study examined the complex relationship between perceived ethnic discrimination and paranoid ideation in individuals at Ultra High Risk (UHR) for psychosis using a virtual reality paradigm to objectively measure paranoia. Data from 64 UHR participants and 43 healthy volunteers were analysed to investigate the relationship between perceived ethnic discrimination and persecutory ideation in a virtual reality environment. Perceived ethnic discrimination was higher in young adults at UHR in comparison to healthy controls. A positive correlation was observed between perceived ethnic discrimination and paranoid persecutory ideation in the whole sample. Perceived ethnic discrimination was not a significant predictor of paranoid persecutory ideation in the VR environment. Elevated levels of perceived ethnic discrimination are present in individuals at UHR and are consistent with current biopsychosocial models in which psychosocial adversity plays a key role in the development of psychosis and attenuated symptomatology.

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### 1. Introduction

Previous studies have shown the importance of social discrimination in increasing the vulnerability to psychosis. Veling et al. (2007) identified a link between migrant status and psychosis, in particular for people immigrating from developing countries. However, they found that it was not necessarily due to the social factors of adjusting to another culture that created a vulnerability to psychosis; rather it was associated with the level of discrimination experienced in the host country. With respect to psychosis a prospective population study by Janssen et al. (2003) demonstrated that a chronic experience of discrimination may eventually lead to a paranoid attributional style and consequently increase the likelihood of psychotic-like experiences. They identified age, sex, appearance, sexual orientation and disabilities as significant discriminating factors associated with risk of paranoid delusions (Janssen et al., 2003). Additional studies have demonstrated significant associations between perceived discrimination

and psychosis in ethnic minority and immigrant groups, with the incidence of psychosis being higher when groups perceive more discrimination (Karlsen et al., 2005; Veling et al., 2007). Furthermore, incidence rates of psychosis have been shown to be equal among first and second-generation immigrants, indicating that post immigration stressors are equally as important as pre-migration (Morgan and Hutchinson, 2009; Seeman, 2011).

Perceived ethnic discrimination encompasses the subjective experience of differential treatment based on appearance, language, religious or socio-cultural characteristics (Brondolo et al., 2005; Westhoff, 1993). As it emphasises appraisal, perceived ethnic discrimination is not limited to “objective” discriminatory occurrences but may also include more subtle experiences that outside observers might not identify as discrimination (Clark et al., 1999). Perceived ethnic discrimination has been found to be associated with a number of negative health outcomes for ethnic minorities and immigrant groups (Pascoe and Smart Richman, 2009). In a review of more than 47 studies, Williams and Mohammed (2009) found that increased levels of perceived racial discrimination were associated with poorer mental health outcomes. In terms of risk, perceived racial discrimination is associated with increased risk for any mental disorder (Berger and Sarnyai, 2015; Moomal et al., 2009). In recent years, the focus of

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research has shifted to the understanding of mechanisms of the relationship between perceived ethnic discrimination and psychological functioning. A recent study has suggested perceived discrimination is indirectly linked to psychiatric disorders via transdiagnostic factors (Rodriguez-Seijas et al., 2015). In particular, the concepts of social defeat (Selten and Cantor-Graae, 2005) and stress-vulnerability (Lataster et al., 2013; Myin-Germeys et al., 2005) highlight how individual difference variables may influence how people perceive, respond to, and are affected by discrimination.

Individuals presenting with sub-threshold clinical features, such as attenuated or brief intermittent psychotic symptoms, or a significant decline in global functioning in the presence of genetic risk factors, are clinically grouped under the term 'ultra-high risk (UHR)', although other terms such as 'clinical high risk (CHR)' or 'at-risk mental states (ARMS)' are also used interchangeably (Fusar-Poli et al., 2013; Yung et al., 2003). Although the experience of different types of adversity in general can be a strong predictor of the development of psychosis, perceived ethnic discrimination is one type of adversity in particular that has not attracted a great deal of attention in the UHR group. To the best of our knowledge there is no published research examining the complex relationship between perceived ethnic discrimination and paranoid ideation, especially in individuals with UHR. This study seeks to assess these factors in a sample of individuals with UHR, compared to healthy control participants using a virtual reality paradigm to objectively measure paranoia. Paranoid or persecutory ideation is a core symptom of psychosis and the most common type of delusional belief recorded by individuals with psychosis (Garety et al., 1988) and it has been defined as "the unfounded fear that others intend to cause you [psychological, physical or social] harm" (Freeman and Garety, 2000; Freeman et al., 2008). Paranoid ideation is also prevalent in 10–15% of the general population (Freeman, 2007), and can present as mild social evaluative concerns (i.e. interpersonal worries and anxieties) and mild ideas of social reference (i.e. people are laughing at me) all the way through to paranoid and delusional beliefs (i.e. the "paranoia hierarchy" (Freeman et al., 2005a, 2005b)). We hypothesised that compared to controls, the UHR group will report higher levels of perceived ethnic discrimination and a positive correlation between higher levels of perceived ethnic discrimination and persecutory paranoid ideation measured via a virtual reality paradigm will be present in the whole sample and in the UHR group. Finally, we tested the hypothesis that the level of perceived ethnic discrimination would predict the severity of persecutory paranoid ideation induced by the VR environment.

## 2. Method

### 2.1. Participants

Sixty-four UHR participants over 18 years old were recruited via the Outreach and Support in South London Service (OASIS), a specialist service for young people at risk of psychosis (Fusar-Poli et al., 2012). UHR participants were assessed by this service prior to participation in the research, using the Comprehensive Assessment of the At-Risk Mental State (CAARMS) assessment tool, which is based on the criteria developed by Yung et al. (1998) to operationally define a set of clinical features that precede a first psychotic episode (Phillips et al., 2000; Yung et al., 2003). Previous studies indicate that around 36 per cent of these individuals deemed to be at risk using the above criteria would develop psychosis within three years (Cannon et al., 2008; Fusar-Poli et al., 2012; Yung et al., 2003). Forty-three controls matched for demographic factors were recruited by advertisements in the local press

and lived in the same area as the patients and self-reported no family or personal history of psychotic disorders. The Prodromal Questionnaire (PQ) (Loewy et al., 2005) was completed by all participants and used to screen healthy controls for possible prodromal symptoms.

An a priori power calculation was conducted to determine sample size. Based on previous studies reporting correlations between paranoia and perceived racism (0.4; Combs et al., 2006) and positive symptoms and discrimination (0.2; Berg et al., 2011), we expected a small-medium effect size (Cohen, 1992). Therefore, a total sample size of 107 was sufficient for > 80% power ( $p < 0.05$ ) to detect small to medium effects.

### 2.2. Virtual reality paradigm

The Virtual Reality (VR) environment (developed by the Department of Computer Science at University College London) used in this study to assess paranoid ideation was identical to that used in previous research (Fornells-Ambrojo et al., 2008; Freeman, 2008; Valmaggia et al., 2007). The environment was designed to be perceived neutral by the majority of the general population and was a tube train ride modelled on the interior of a London Underground train carriage. It was displayed in colour via a light-weight headset; the display used was a Virtual Research VR 1280 (Virtual Research Systems, Aptos, California), with a resolution of  $1280 \times 1024$  pixels,  $60^\circ$  diagonal field of view and a refresh rate of 60 Hz. Participants entered the train and were asked to remain on the train during the first stop, then disembark at the second stop. The journey time was approximately four minutes. Background noises were played using a Creative sound card, mimicking noises associated with a London Underground train ride (e.g., a 'mind the closing doors' announcement when the doors were closing, fragments of passenger conversation, background noise of the moving train). Participants wore a headset and could move through the virtual environment by walking and whole body turning.

### 2.3. Measures

#### 2.3.1. The State Social Paranoia Scale (SSPS, Freeman, 2007)

The SSPS, a 20-item self-report assessment measure of persecutory ideation, was used to assess thoughts about the virtual reality avatars. Each item is scored on a 5-point scale (Do not agree – Totally agree) and higher scores indicate greater levels of persecutory thinking. The scale has three sub-scales: virtual reality-persecution (10 items), virtual-reality neutral (5 items) and virtual-reality positive (5 items). Only the persecution subscale items were used in the current study (e.g. 'Someone had it in for me', 'Someone stared at me in order to upset me', 'Someone was trying to isolate me', 'Someone was trying to make me distressed'). The VR-persecution subscale has been shown to have good convergent validity ( $r=0.55$ ;  $p=0.002$ ) and reliability (Cronbach's  $\alpha=0.66$ ) (Freeman et al., 2005a, 2005b). Reliability in the current UHR sample was excellent (Cronbach's  $\alpha=0.96$ ).

#### 2.3.2. Prodromal Questionnaire (PQ, Loewy et al., 2005)

The PQ was used to assess prodromal or psychotic symptoms, and is a 92-item self-report screening measure developed for people at high clinical risk for psychosis. The PQ comprises four symptom subscales: 1) Positive symptoms (e.g. unusual thinking, perceptual abnormalities and cognitive disorganisation) (45 items), 2) Negative symptoms (e.g. flat affect and social isolation) (19 items), 3) Disorganized symptoms (e.g. odd behaviour) (13 items) and 4) General symptoms (e.g. depression and role functioning) (15 items). Three PQ items specifically address the presence of paranoid ideation and suspiciousness (PQ25: 'I often feel that other people have it in for me'; PQ68: 'I often pick up hidden

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