



## Cognitive, affective, and social factors maintaining paranoia in adolescents with mental health problems: A longitudinal study



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### ABSTRACT

Paranoia may be a significant concern during adolescence, but there has been little research on excessive mistrust in young people. In this longitudinal study we set out to test the predictive ability of a number of cognitive, affective, and social factors in the early development of paranoia in a clinical adolescent population. Thirty four help-seeking adolescents, aged 11–16 years, reporting paranoid thoughts and attending mental health services were recruited. Self-report and interview assessments of paranoia were conducted at baseline. Measures relating to a cognitive model of persecutory delusions were completed. Paranoia was reassessed after three months with thirty three participants. Significant predictors of paranoia persistence were anxiety, depression, worry, negative self-beliefs, perceptual anomalies, insomnia, affective reactivity, bullying, and cyber victimization. No effect was found for reasoning bias or negative perceptions of academic ability, social competence, and physical appearance. In conclusion, many of the maintenance factors implicated in adult paranoia are likely to prove important in the early development of paranoia in young people. Further experimental and treatment studies are now needed to examine the causal role of these factors in the occurrence of paranoia in adolescents.

### 1. Introduction

Paranoia, the unfounded fear that others are intentionally trying to harm you (Freeman, 2016), may be a particular concern during adolescence. At this age rates of non-clinical paranoia are especially high (Freeman et al., 2011; Wigman et al., 2011) and such feelings of persecution are associated with anxiety, depression, low self-esteem, and conduct problems (Ronald et al., 2014; Wong et al., 2014). Furthermore, excessive mistrust during this sensitive developmental period may influence an adolescent's emerging social relationships, self-identity, and successful transition into adulthood. Paranoia represents a distinct clinical entity existing on a continuum in youth (Ronald et al., 2014), ranging from mild suspiciousness and mistrust to persecutory delusions at the extreme (Freeman, 2016). This spectrum of experiences share an underlying aetiology, supported by evidence of a consistent heritability between mild and severe paranoia (Zavos, 2014). With the emergence of psychosis commonly occurring in youth (Kessler et al., 2007), persistent paranoid ideation at this age will likely precede the onset of delusions. Understanding the causal mechanisms in the early progression of paranoia may therefore prove important for early intervention.

In the past fifteen years there has been a significant advance in the understanding of paranoia in adults (Freeman, 2016). It is well established that the onset of persecutory delusions is influenced by a range of biopsychosocial risk factors theorised to increase an individual's sensitivity and affective reactivity to stressful life events (Freeman et al., 2002; Gibson et al., 2014; Palmier-Claus et al., 2012). However, paranoid ideation is common within the general population (Bebbington et al., 2013), leading to our view that paranoia is rooted within adaptive concerns about trust, vulnerability, and social evaluation. Within this framework we conceptualise persecutory delusions as unfounded threat beliefs, maintained by a range of cognitive and affective factors including low self-esteem, worry, sleep dysfunction, perceptual anomalies, and reasoning biases (Freeman, 2016).

Arguably no age is more characterised by perceived social vulnerability and threat than adolescence. Heightened social processing and catastrophic appraisal of perceived rejection follows from the social reorientation away from family and towards peer acceptance, and the neurodevelopmental changes in social cognition and affect regulation (Blakemore and Mills, 2014; Nelson et al., 2016; Sebastian et al., 2010). The stressful social world of adolescence, including online media, also provides a constant source of social comparison, ambiguous

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information, and opportunity for criticism and victimization (Best et al., 2014; Volk et al., 2006). Consequently, adolescence may provide the psychological conditions on which unfounded attributions of threat from others may flourish.

Very few studies have specifically examined paranoia in adolescents. However, a small number of cross-sectional studies with non-clinical youth show associations between paranoia and anxiety, depression, low self-esteem, insomnia, and hallucinatory experiences (Galbraith et al., 2014; Raes and van Gucht, 2009; Ronald et al., 2014; Taylor et al., 2015; Wong et al., 2014). For example, in a large study across the UK and Hong Kong, Wong et al. (2014) found children with high mistrust had significantly more internalising and externalising problems than peers with low mistrust. In the few clinical studies with adolescents, paranoia has also been associated with the presence and severity of social anxiety disorder (Pisano et al., 2015), negative life events, and emotional problems, although not reasoning biases (Ruffell et al., 2016).

The aim of this longitudinal study was to test if cognitive, affective, and social factors established in adult research (Freeman, 2016; Freeman et al., 2002) also contribute to the early development of persecutory ideas in help-seeking adolescents. Our first hypothesis was that key cognitive processes outlined by Freeman (2016) including negative affect, worry, negative self-beliefs, perceptual anomalies, sleep dysfunction, and reasoning bias (jumping to conclusions) would predict the persistence of paranoia. Negative self-beliefs was expanded to include core beliefs, self-esteem, and perceived academic ability, social competence, and physical appearance. Second, based on a stress-vulnerability framework of paranoia (Freeman et al., 2002), we hypothesised that heightened affective reactivity to stress (i.e. perceived stress and social media affective experience) and negative social experiences (i.e. peer bullying and cyber victimization) would also predict the persistence of paranoia in young people.

## 2. Design and methods

This was a longitudinal observational study. Participants completed a baseline assessment in which paranoia and predictor variables were measured, and after three months paranoia was reassessed.

### 2.1. Participants

A clinical sample of adolescents aged 11–16 years were recruited from specialist child and adolescent mental health services (CAMHS) within Oxford Health NHS Foundation Trust. Clinicians were approached to identify patients with suspected paranoid ideation, irrespective of psychiatric diagnosis. Thirty eight adolescents agreed to be contacted. Eligibility was established by self-reported paranoia, using the Green et al. Paranoid Thoughts Scale (GPTS; Green et al., 2008) and validation in a brief clinical interview. A GPTS inclusion threshold of 26 was set, based on data that less than 20% of the general adult population have this level of paranoia (Freeman et al., 2014). Participants were excluded if they scored below this threshold ( $n = 2$ ) or showed no evidence of unfounded paranoia in the interview (e.g. reporting genuine hostility;  $n = 2$ ). Further exclusion criteria were an established diagnosis of Autism Spectrum Disorder, moderate or severe learning disability, or inability to complete questionnaires in English. Thirty four eligible participants were recruited. Informed parental consent and child assent was obtained prior to participation and all young people were reimbursed for their time. Full ethical approval from the Health Research Authority was obtained.

### 2.2. Measures

#### 2.2.1. Paranoia

The Green et al. Paranoid Thoughts Scale (GPTS; Green et al., 2008) Part B was the primary outcome in this study. The GPTS includes 16

self-report items assessing persecutory thoughts over the past month. Each item is rated on a 1–5 scale (1 = *not at all*, 5 = *totally*) with higher scores indicating greater paranoia. The scale has high test-retest reliability (intra-class correlation = 0.87) and internal consistency in adults with persecutory delusions ( $\alpha = 0.90$ ) and has been used in adolescents with psychosis (Korver-Nieberg et al., 2013). In the baseline assessment the suspiciousness/persecution item of the Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987) was used to clinically validate the presence of paranoia. The PANSS is an interview rating scale assessing the severity of schizophrenia symptoms over the past week. Symptoms are scored on a 1–7 scale (1 = *absent*, 7 = *extreme*) where higher scores indicate increased severity. The suspiciousness/persecution item has adequate internal consistency ( $\alpha = 0.69$ ; Peralta and Cuesta, 1994).

#### 2.2.2. Affective symptoms

The Revised Children's Anxiety and Depression Scale (RCADS; Chorpita et al., 2000) is a 47-item, self-report questionnaire of affective symptoms over the last month. The depression subscale and the total anxiety score (consisting of separation anxiety, social phobia, generalized anxiety disorder, panic disorder, and obsessive compulsive disorder) were used for this study. Items are scored on a 0–3 scale (0 = *never*, 3 = *always*), with higher scores indicating greater symptoms. The RCADS demonstrates good internal consistency ( $\alpha = 0.78 - 0.88$ ) in clinical samples of youth (Chorpita et al., 2005).

#### 2.2.3. Worry

The Penn State Worry Questionnaire for Children (PSWQ-C; Chorpita et al., 1997) is a 14-item measure of trait worry. Items are rated on a 0–3 scale (0 = *never*, 3 = *always*) with higher scores indicating greater worry. The PSWQ-C has good internal consistency ( $\alpha = 0.89$ ) in clinical samples of youth (Pestle et al., 2008).

#### 2.2.4. Negative self-beliefs

The 6-item negative-self subscale of the Brief Core Schema Scales (BCSS; Fowler et al., 2006) was used as a measure of negative core self-beliefs. Each item is scored on a 0–4 scale (0 = *not at all*, 4 = *totally*) with higher scores indicating greater negative self-beliefs. The subscale has good internal consistency ( $\alpha = 0.84$ ) and has been used in adolescents in CAMHS (Noone et al., 2015). The 10-item Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) was used as a self-report measure of global self-esteem. Items refer to general feelings about the self and are rated on a 0–4 scale (0 = *strongly disagree*, 3 = *strongly agree*), with lower scores indicating lower self-esteem. The RSES has good internal consistency ( $\alpha = 0.86$ ; Sinclair et al., 2010) and has been used in adolescents with paranoia (Raes and Van Gucht, 2009). Finally, the social competence, academic competence, and physical appearance subscales of the Self-Perception Profile (SPP; Harter, 2012) were used to measure adolescent self-concepts. Each subscale consists of five items where participants choose whether they are most like one of two polarised descriptions using “*sort of true*” or “*really true*”. Items are scored on a 0–3 scale where higher scores reflect more positive self-judgements. The scales display good internal consistency ( $\alpha = 0.78 - 0.92$ ) with adolescents.

#### 2.2.5. Perceptual anomalies

The 9-item hallucinations subscale of the Specific Psychotic Experiences Questionnaire (SPEQ; Ronald et al., 2014) was used to measure how frequently participants experience a range of perceptual anomalies. Each item is rated on a 0–5 scale (0 = *not at all*, 5 = *daily*) with higher scores indicating greater perceptual anomalies. The authors report good internal consistency ( $\alpha = 0.87$ ) with adolescents.

#### 2.2.6. Insomnia

Insomnia Severity Index (ISI; Bastien et al., 2001) is a 7-item self-report questionnaire assessing the severity of insomnia over the past

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