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The relationship between psychotic symptoms and social functioning in a non-clinical population of 12 year olds

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ABSTRACT

Background: Psychotic symptoms are common in adolescents in the general population but it is unknown whether they are associated with poor social functioning.
Aims: To investigate whether adolescent psychotic symptoms are associated with poor social functioning measured by peer relationships.
Method: Data from the Avon Longitudinal Study of Parents and Children cohort was used. Logistic regression was used to explore the relationship between psychotic symptoms at 12.9 years detected using a semi-structured interview and poor social functioning at 13.2 years using parent-reported peer problems from the Strengths and Difficulties Questionnaire.
Results: There was strong evidence ($p < 0.001$) of an unadjusted association between psychotic symptoms and poor social functioning (OR 1.41, 95% CI 1.24–1.61). The association was attenuated after adjusting for earlier social functioning, socio-demographic variables, bullying status and IQ (OR 1.28, 95% CI 1.09–1.50). The majority of the crude association was explained by additional adjustment for emotional problems including depression at age 12, emotional symptoms, hyperactivity and conduct problems at age 11 (OR 1.07, 95% CI 0.89–1.29).
Conclusion: Adolescents with psychotic symptoms may be no more likely to have poor social functioning than other adolescents, once other emotional problems have been taken into account. The discussion addressed two explanations. First, emotional problems may be on the causal pathway from psychotic symptoms to poor social functioning. Alternatively, emotional symptoms may act as a confounder, suggesting that medical intervention may be inappropriate. It is the impact of psychotic symptoms on the individual that should dictate whether any intervention is required.

1. Introduction

Psychotic symptoms are common in children (Bartels-Velthuis et al., 2010), adolescents (Dhossche et al., 2002; Yoshizumi et al., 2004; Laurens et al., 2007; Horwood et al., 2008; Scott et al., 2009; Yung et al., 2009) and adults (van Os et al., 2000; Verdoux and van Os, 2002; Johns et al., 2004; Hanssen et al., 2005; Wiles et al., 2006; Shevlin et al., 2007) in the general population. A meta-analysis of 19 population-based studies found that the median prevalence of psychotic symptoms was 17% among children aged 9–12 years and 7.5% among adolescents aged 13–18 years (Kelleher et al., 2012).

The significance of this phenomenon is yet to be determined. It has been proposed that these symptoms represent normal variations in personality (Yung et al., 2009), a benign transitory experience (Bartels-Velthuis et al., 2012) or an underlying vulnerability to psychotic disorder (van Os et al., 2009; Yung et al., 2009). Psychotic symptoms in adolescents in the general population may predict onset of psychotic disorders (Poulton et al., 2000; Welham et al., 2009; Dominguez et al., 2011; Zammit et al., 2013) and non-psychotic disorders (Dhossche et al., 2002) in adulthood. Yet, irrespective of an increased risk, most young people in the community with psychotic symptoms will not go on to develop psychotic illness (Yung et al., 2007). The most appropriate response of health services to this group therefore remains unclear.

One way to understand the significance of psychotic symptoms for young people is to examine the association with social functioning. If

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psychotic symptoms are leading to problems this is likely to be reflected in poor social functioning. This in turn could indicate that it may be appropriate to intervene in order to reduce any impairment in functioning. Two community-based surveys of adolescents found an association between certain psychotic symptoms (bizarre experiences and persecutory ideas) and poor functioning (Yung et al., 2009; Armando et al., 2010). However these studies were limited by the cross-sectional design; the relationship between problems with social functioning and psychotic symptoms could work in either direction. Adolescents with unusual behaviours may be more likely to be bullied and have difficulties forming friendships (Jones et al., 1994). Alternatively problems with social functioning could be part of a constellation of social adversities that have themselves precipitated psychotic symptoms (Bartels-Velthuis et al., 2012).

The aim of this study is to investigate whether adolescent psychotic symptoms are associated with poor social functioning as measured by peer relationships using a longitudinal design.

2. Methods

2.1. Sample

The baseline sample was the 6356 singleton children from the ALSPAC cohort who attended the psychosis-like symptoms semi-structured interview (PLIKSi) (Horwood et al., 2008) at a mean age of 12.9 years. The study population for this analysis comprises the 5250 children who also had social functioning data (Strengths and Difficulties Questionnaire (SDQ)) collected at a mean age of 13.2 years. The initial ALSPAC cohort (www.alspac.bris.ac.uk) consisted of 14,062 children born to residents of the former Avon Health Authority area with expected delivery dates between 1st April 1991 and 31st December 1992. The cohort was set up to examine genetic and environmental determinants of health and development, and has been described in detail previously (including efforts to minimise attrition) (Boyd et al., 2013). The parents have completed regular postal questionnaires about their child's health and development since birth. The children, since the age of 7, have been invited to attend annual assessment clinics where they participate in a range of face-to-face interviews. Due to wave non-response, sample sizes in the analyses differ according to exposures and data-sets examined.

2.2. Outcome

Parents (over 97% mothers) completed the parent-report version of the SDQ (Goodman, 1997) when the children were age 11.7 years (mean) and age 13.2 years (mean). The Peer Problems subscale was used as a measure of social functioning and includes five statements, two with a positive framing "*Has at least one good friend*"; "*Generally liked by other children*"; and three with a negative framing "Rather solitary, tends to play alone"; "Picked on or bullied by other children"; and "Gets on better with adults than with other children". Responses to each item are scored 0, 1 or 2 (the allocation depending on whether the statement is positive – in italics – or negative) to give a total score from 0 to 10, with 10 signifying more peer problems. Bandings of 'Abnormal', 'Borderline' and 'Normal' have been established for each subscale, with roughly 10% of a community sample falling into the 'Abnormal' category (www.sdqinfo.com)(Goodman, 1997; Melzter et al., 2000). A cut-off of ≥ 4 ('Abnormal' category for the Peer Problems subscale) was used to indicate poor social functioning. The parent-reported SDQ has satisfactory internal reliability, test–retest stability and validity in 11–16 year olds (Goodman, 2001).

Although they are only one aspect (John, 2001; Ballon et al., 2007), we feel peer relationships represent one of the most valuable measures of social functioning in children. Other measures used amongst adults, such as employment, are less applicable.

2.3. Psychotic symptoms

The PLIKSi consists of 12 core questions covering the past 6-month occurrence of hallucinations (visual and auditory); delusions (of being spied on, persecution, thoughts being read, reference, control, grandiose ability and other unspecified delusions); and experiences of thought interference (thought broadcasting, insertion and withdrawal). For these 12 core items, 7 stem questions were derived from DISC-IV (Shaffer et al., 2000) (modified slightly after piloting), and 5 stems from section 17 of the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) version 2 (WHO, 1994). The PLIKSi has been described previously (Horwood et al., 2008) and further details are available on request (ZammitS@cardiff.ac.uk). Definitions of all items followed the glossary definitions for SCAN, and clinical cross-questioning and probing were used to establish the presence or absence of symptoms. Interviewers rated symptoms as either not present, suspected or definitely present. Unclear responses after probing were always 'rated down', and symptoms only rated as definite when a credible example was provided. The 13 interviewers were psychology graduates trained by experienced clinicians and SCAN trainers. We included symptoms in our analyses only if they were not attributable to effects of sleep, fever or substance use; see (Horwood et al., 2008). The average kappa value for inter-rater reliability was 0.72. We examined the presence of any suspected or definite symptoms.

2.4. Potential confounders and other adjustments

In Model A we adjusted for peer problems at age 11, allowing us to examine the longitudinal relationship between psychotic symptoms at 12 years and social functioning at age 13.

Model B included adjustment for the following socio-demographic variables, as they were considered possible confounders: gender, maternal social class (using the 1991 OPCS classification; coded as I–V (lowest)), maternal marital status, housing type, and maternal education (4 categories up to degree level). As peer victimization at age 8 (measured by the Bullying and Friendship Interview Schedule) (Schreier et al., 2009), IQ at age 8 (measured by the Wechsler Intelligence Scale for Children-III (WISC-III)) (Horwood et al., 2008), family psychiatric history (Zammit et al., 2008), and maternal smoking (Zammit et al., 2009b) have previously found to be associated with psychotic symptoms in the ALSPAC cohort, these variables were also adjusted for as potential confounders.

In Model C we adjusted for emotional and behavioural problems including depression at age 12 (Short Moods and Feelings Questionnaire (SMFQ) (Thapar and McGuffin, 1998)) and the conduct problems, hyperactivity and emotional symptoms scales of the parent-reported SDQ at age 11. The self-reported 11-item SMFQ has been validated to detect clinical depression in children and adolescents (Thapar and McGuffin, 1998). Although emotional and behavioural symptoms may be on the causal pathway, the impact of these adjustments was explored as these symptoms could alternatively be regarded as confounders. This is because emotional and behavioural symptoms are known to be associated with both poorer social functioning (Katz et al., 2011) and non-clinical psychotic symptoms (Scott et al., 2009; Yung et al., 2009; Armando et al., 2010; Barragan et al., 2011) in adolescents.

2.5. Ethical approval

Ethical approval for the study was obtained from the ALSPAC Law and Ethics Committee and the Local Research Ethics Committees. Informed consent was obtained from the parents of the children after explanation of the study.