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Psychotic experiences in a mental health clinic sample: implications for suicidality, multimorbidity and functioning

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Abstract

Background: Recent community-based research has suggested that psychotic experiences act as markers of severity of psychopathology. There has, however, been a lack of clinic-based research. We wished to investigate, in a clinical sample of adolescents referred to a state-funded mental health service, the prevalence of (attenuated or frank) psychotic experiences and the relationship with (i) affective, anxiety and behavioural disorders, (ii) multimorbid psychopathology, (iii) global functioning, and (iv) suicidal behaviour.

Method: Clinical case – clinical control study using semi-structured research diagnostic psychiatric assessments in 108 patients newly referred to state adolescent mental health services.

Results: Psychotic experiences were prevalent in a wide range of (non-psychotic) disorders but were strong markers of risk in particular for multimorbid psychopathology (Z=3.44, p=0.001). Young people with psychopathology who reported psychotic experiences demonstrated significantly poorer socio-occupational functioning than young people with psychopathology who did not report psychotic experiences, which was not explained by multimorbidity. Psychotic experiences were strong markers of risk for suicidal behaviour: stratified analyses showed, that there was a greatly increased odds of suicide attempts in patients with a major depressive disorder (OR=8.89, CI95=1.59-49.83), anxiety disorder (OR=15.4, CI95=1.85-127.94), or behavioural disorder (OR=3.24, CI95=1.01-10.41) who also had psychotic experiences compared to patients who did not report psychotic experiences.

Conclusions: Psychotic experiences (attenuated or frank) are an important but under-recognized marker of risk for severe psychopathology, including multimorbidity, poor functioning and suicidal behaviour in young people who present to mental health services.

Declaration of interest: none

Introduction

Hallucinations and delusions, the classic symptoms of psychosis, are more prevalent in the general population than previously considered (Freeman *et al.*, 2002, Scott *et al.*, 2009, van Os *et al.*, 2009, Bartels-Velthuis *et al.*, 2011, Mackie *et al.*, 2011, Laurens *et al.*, 2012, van Os and Murray, 2013). These symptoms may be frankly psychotic in nature but more commonly occur in an attenuated form – that is, experiences that are hallucinatory or delusional in nature but where reality testing remains intact. They are commonly referred to as 'psychotic experiences' or 'psychotic-like experiences'. A meta-analysis of community-based studies of psychotic experiences showed a median population prevalence of 17% in children aged 9 to 12 years and 7.5% in adolescents aged 13 to 18 years (Kelleher *et al.*, 2012a). Initial research focused largely on the finding that psychotic experiences in youth predicted an increased risk for psychotic disorder in adulthood (Poulton *et al.*, 2000), a finding that has been replicated a number of times

(Welham *et al.*, 2009, Kaymaz *et al.*, 2012). More recent community research, however, has found that psychotic experiences are associated with a broad spectrum of (non-psychotic) symptoms of psychopathology (Scott *et al.*, 2007b, Yung *et al.*, 2007, Varghese *et al.*, 2011, Kelleher *et al.*, 2012b, Werbeloff *et al.*, 2012, Wigman *et al.*, 2012, Fisher *et al.*, 2013), and with suicidal thoughts and behaviour (Saha *et al.*, 2011, Kelleher *et al.*, 2012c, Kelleher *et al.*, 2013a). In a recent multicentre community-based study, we found that the majority of young people who reported psychotic experiences met criteria for at least one (non-psychotic) Axis-1 psychiatric disorder (Kelleher *et al.*, 2012b). Psychotic experiences were associated with a range of disorders but, interestingly, were particularly predictive of multimorbidity, that is, the presence of more than one psychiatric diagnosis. Furthermore, young people with Axis-1 disorders who reported psychotic experiences were found to have a greatly increased odds of suicidal behaviour even compared to individuals with the same diagnosis who did not report psychotic experiences (Kelleher *et al.*, 2012c). In fact, in a community-based population study, more than one third of young people with psychopathology who reported psychotic experiences at baseline had at least one suicide attempt by 12 month follow up (Kelleher *et al.*, 2013a), demonstrating that these experiences are an important marker of risk for suicidality. Data on psychotic experiences in clinical populations, however, are lacking.

In the clinic setting, research on attenuated psychotic experiences has focused mainly on 'at risk mental states' (ARMS) for psychosis (Yung *et al.*, 1996, McGlashan *et al.*, 2001, Addington *et al.*, 2011). It is important to note, however, that ARMS account for only a proportion of individuals with psychotic experiences. In community-based research, for example, we found that only one in three to one in twenty five adolescents who reported psychotic experiences met formal ARMS criteria (depending on the specific ARMS criteria used) (Kelleher *et al.*, 2012d). Similarly, Schimmelmann et al reported, in a predominantly adult sample, that just one in twelve who reported psychotic experiences met formal ARMS criteria (Schimmelmann *et al.*, 2011). Despite the high prevalence of psychotic experiences compared to ARMS, there has been relatively little clinic-based research investigating the clinicopathological significance of psychotic experiences in general. Chambers et al reported that 40% of a clinical sample of children diagnosed with major depressive disorder (MDD) also experienced psychotic experiences, demonstrating that psychotic experiences are common in the clinic (Chambers *et al.*, 1982). What, then, is the clinical significance when a young person reports psychotic experiences to a clinician? The current study aimed to systematically address this question from a number of clinical perspectives. First, we wished to investigate the prevalence of psychotic experiences (attenuated or frank) in a general child and adolescent mental health clinic sample and to examine the association between these symptoms and global functioning. Second, we wished to examine the association between psychotic experiences and psychopathology in general and multimorbid psychopathology in particular. Third, we wished to investigate the relationship between psychotic experiences and suicidal behaviour and test if young people with psychiatric illness who report psychotic experiences have a high risk of suicidal behaviour compared to young people with psychiatric illness who do not report psychotic experiences. Fourth, we wished to investigate, using multivariate modelling, if multimorbid psychopathology could explain a relationship between psychotic experiences and suicidal behaviour.

Method

Setting

The study was carried out in a large child and adolescent mental health outpatient service (CAMHS) in Ireland. CAMHS in Ireland are government funded and are organized on a geographical area basis. They are available at no cost to all those under 16 years of age who live in their catchment area. The catchment area of the service

has a population of approximately 380,000, of whom approximately 73,000 are under the age of sixteen years. It is divided into five sectors, each served by a multi-disciplinary team. The study involved two of these multi-disciplinary teams. The area served by these two teams includes pockets of severe inner city deprivation, large suburban housing estates and more affluent areas of private housing.

Participants and Procedures

This was a 'clinical case – clinical control' study, with the patients of interest (those with psychotic experiences) being compared to patients in the same clinic who did not have psychotic experiences (as opposed to being compared with healthy controls). The participants were 108 adolescents with at least one current DSM-IV psychiatric disorder in the 12 to 16 year age range, newly referred to the service between 2008 and 2009. Each newly referred adolescent was discussed at the weekly clinical team meeting, and provided a clinician could see them within a four week period of their research assessment, they were deemed suitable for the study. Their parent was then contacted by telephone, informed of the study, asked to discuss it with their son/daughter, and invited to participate in the research assessment, which was carried in the adolescent's home or in the clinic. The requirement that a clinician be available to see them within a four week period was part of the study protocol for ethical reasons, as it was considered not to be in the best interests of adolescents and their families to expose them to a detailed research assessment, unless a clinical service could be guaranteed within a reasonable period. The study was approved by the Mater University Hospital's Research Ethics Committee. During the study period 274 adolescents in the 12 to 16 year age range were referred to the study teams. One hundred and twelve adolescents were not approached to take part in the study because it was not possible to offer a clinical service within a four week period of their research assessment, leaving a possible sample of 162 adolescents. Twenty adolescents or their parents refused to participate, with 142 (88%) agreeing to take part. Following clinical assessment, 34 of these adolescents did not have a current diagnosable psychiatric disorder, leaving a total sample of 108 participants on whom the analyses were conducted Ten percent of interviews were randomly selected to test for inter-rater reliability of the KSADS-PL. This involved a second interviewer (a psychiatric registrar) sitting in and independently rating the selected interviews. Inter-rater reliability for the K-SADS was > 90%.

Measures

The interview instrument used was the Schedule for Affective Disorders and Schizophrenia for School-aged Children, Present and Lifetime versions (K-SADS) (Kaufman *et al.*, 1996). Children and parents were interviewed separately, both answering the same questions about the child. Interviews were conducted by one psychiatrist and one psychologist trained in the use of the interview schedules. The exposure measure for the current study was a positive report at clinical interview of psychotic experiences. Outcome measure 1 was a DSM-IV diagnosable lifetime affective (major depressive disorder and bipolar affective disorder), anxiety (panic disorder, separation anxiety disorder, social phobia, specific phobia, generalized anxiety disorder, obsessive compulsive disorder, post-traumatic stress disorder) or behavioural disorder (attention deficit/hyperactivity disorder, oppositional defiant disorder, conduct disorder). Outcome measure 2 was socio-occupational functioning as measured by the Children's Global Assessment Scale (CGAS). Outcome measure 3 was a history of suicidal behaviour. See Table 1 for details of measures. The methods used by the K-SADS to assess psychotic experiences in children are described in detail elsewhere. Briefly, to rate a hallucination as positive, the experience must occur in clear consciousness (i.e., not hypnopompic or hypnagogic, or associated with drug/alcohol use or physical illness). Hallucinations are distinguished from hallucination-like phenomena, such as illusions, elaborate fantasies and imaginary friends. Three categories of hallucinations are considered. First, non-diagnostic hallucinatory experiences are symptoms which are considered to have little pathological significance.

These include hearing one's name being called without any other verbal hallucinations and hearing non-verbal noises, such as footsteps or creaking floorboards. These were not classified as psychotic experiences in the current study. The second category, diagnostic auditory hallucinations, includes experiences of hearing one or more voices saying at least one word other than one's own name (with or without insight that the voice was a product of one's own mind – i.e., attenuated or frank symptoms). These experiences were classified as psychotic experiences in the current study. The third category, non-auditory hallucinations, involves hallucinatory experiences affecting the other senses, predominantly visual hallucinations (attenuated or frank). These experiences were also classified as psychotic experiences in the current study. A range of delusional thoughts are also assessed in the K-SADS, including delusions of reference, control or influence, persecution, grandiosity and nihilism. Delusions made up the other major category classified as psychotic experiences in the current study. Magical thinking was not classified as a psychotic experience. The interviewers recorded notes of any potential psychotic phenomena during the interview. A clinical consensus meeting was held following the interviews (with IK, AM and MC) to classify these phenomena as psychotic experiences (or not), blind to diagnoses and all other information on the participants.

Statistical analyses

Statistical analyses were conducted using STATA version 11.0 for Windows. First, we calculated the prevalence of current Axis-1 disorders and of psychotic experiences in the sample. We then calculated the percentage prevalence of psychotic experiences for each of the three major Axis-1 disorder domains (affective, anxiety and behavioural disorders). Next, we calculated the percentage prevalence of psychotic experiences across increasing levels of current Axis-1 disorders (1, 2 and 3 or more diagnoses) and, in order to test for a linear increase (or decrease) in diagnoses with the prevalence of psychotic experiences, we used the STATA command *nptrend*, which is an extension of the Wilcoxon rank-sum test and performs a nonparametric test for trend across ordered groups. We then used ordered logistic regression to look at the relationship between psychotic experiences and socio-occupational functioning on the CGAS. Then, in order to test whether multimorbidity might be responsible for the relationship between psychotic experiences and socio-occupational functioning, we conducted a multivariate regression analysis including both psychotic experiences and multimorbidity in the same model.

In terms of suicidal behaviour, we calculated the prevalence of suicidal ideation, plans and attempts and used logistic regression to assess the relationship with psychotic experiences. We then conducted a series of stratified analyses to investigate if affective, anxiety and behavioural disorders interacted with psychotic experiences in terms of risk for suicidal behaviour. Using logistic regression, we assessed the odds of suicide plans and attempts in individuals with affective disorders who reported psychotic experiences compared to those with affective disorders who did not report psychotic experiences. We repeated this for anxiety and behavioural disorders. Finally, in order to test whether the relationship between psychotic experiences and suicidal behaviour was explained by multimorbidity, we conducted a multivariate regression analysis, including the number of disorders in the model. Chi squares were used to test associations between sex and the outcome and exposure variables, with sex included as a covariate in regression analyses where there was a significant association.

Results

Study diagnoses

Current DSM-IV affective, anxiety and behavioural diagnoses were as follows: Affective disorders: MDD (34%) (zero cases of bipolar affective disorder). Anxiety disorders: generalised anxiety disorder (34%), separation anxiety

disorder (23%), social phobia (21%), specific phobia (8%), obsessive compulsive disorder (12%), post-traumatic stress disorder (8%), and panic disorder (2%). Behavioural disorders: oppositional defiant disorder (37%), attention deficit/hyperactivity disorder (36%) and conduct disorder (11%). Two patients were diagnosed with a psychotic disorder. Additional diagnoses are listed in eTable 1. Multimorbidity (i.e., more than one diagnosis) was common: 37% (n=40) had one current disorder, 31% (n=33) had two current disorders and 32% (n=34) had three or more disorders.

Psychotic experiences, psychopathology and socio-occupational functioning

Psychotic experiences were reported by 46% (n=52) of the total clinical sample, including 68% of individuals with an affective disorder, 60% of individuals with an anxiety disorder and 41% of individuals with a behavioural disorder. Sex did not show a statistically significant association with psychotic experiences (χ^2=3.3, p>0.05) or with multimorbidity (χ^2=1.1, p>0.05) and so was not included as a covariate in the analyses. Fifty percent (n=26) reported auditory hallucinatory experiences, most commonly hearing voices talking when no one was present (73%). The commonest auditory vocal hallucinatory experiences included hearing voices commenting on behaviour (53%) and hearing voices giving commands (26%). In terms of visual hallucinatory experiences, 29% (n=15) reported seeing people or faces where none really existed. In terms of delusional-type experiences, the most common experiences included beliefs about being followed or spied upon (63%, n=33), beliefs that they had interacted with ghosts (39%, n=19) and thought withdrawal or broadcast (21%, n=11).

Psychotic experiences were associated with increased risk of multimorbidity: 78% of young people who reported psychotic experiences had 2 or more current disorders compared to 49% of young people without psychotic experiences, while 46% of young people who reported psychotic experiences had three or more disorders, compared to 19% of young people without psychotic experiences (OR=2.35, CI95=1.43-3.87; test for linear trend: Z=3.44, p=0.001).

Patients who reported psychotic experiences demonstrated significantly poorer socio-occupational functioning than patients who did not report psychotic experiences (OR=0.31, CI95=0.15-0.62). Poorer functioning was also associated with increasing numbers of diagnosable disorders (i.e., multimorbidity) (OR=0.35, CI95=0.22-0.55). In order to test whether poorer functioning in individuals with psychotic experiences was a result of the relationship between psychotic experiences and multimorbidity, we conducted a multivariate regression analysis including both psychotic experiences and multimorbidity. Multimorbidity did not explain the relationship between psychotic experiences and poorer functioning, with both variables demonstrating independent main effects on functioning (psychotic experiences: OR=0.45, CI95=0.22-0.95; increasing levels of multimorbidity: OR=0.64, CI95=0.50-0.88).

Suicidal behaviour

Twelve percent of the total sample (n=14) reported isolated suicidal ideation (without suicide plans or acts), 34% (n=37) had a history of specific suicide plans and 27% (n=30) had a history of suicide attempt. There was a statistically significant association between sex and suicide plans (χ^2=12.98, p<0.001) and attempts (χ^2=14.79, p<0.001); therefore, sex was included as a covariate in the analyses on suicidal behaviour. Psychotic experiences were not associated with isolated suicidal ideation (OR=1.35, CI95=0.43-4.26) but were associated with a 3-fold increased odds of suicide plans (OR=3.35, CI95=1.39-8.08) and attempts (OR=2.70, CI95=1.06-6.89). Multimorbidity did not explain the relationship between psychotic experiences and

suicide plans (adjusted OR=3.25, CI95=1.27-8.33) or suicide attempts (adjusted OR=3.13, CI95=1.11-8.79).

The relationship between psychotic experiences and affective, anxiety and behavioural disorders is shown in Table 2. In order to examine for potential interactions between affective, anxiety and behavioural disorders and psychotic experiences in terms of risk for suicidal behaviour, we conducted a series of stratified analyses (see Table 3). Eighteen patients with a diagnosis of MDD had a suicide attempt, 16 of whom (89%) reported psychotic experiences. Fifteen patients with an anxiety disorder had a suicide attempt, 14 of whom (93%) reported psychotic experiences. Sixteen patients with a behavioural disorder had a suicide attempt, 10 of whom (63%) reported psychotic experiences.

Discussion

Using a child and adolescent mental health clinic sample we found a number of clinically significant results. First, psychotic experiences were relatively common and were prevalent in a wide range of non-psychotic psychiatric disorders. Second, psychotic experiences indexed particularly high risk for multimorbidity, that is, having multiple DSM diagnoses. Third, young people with psychopathology who also reported psychotic experiences demonstrated significantly poorer socio-occupational functioning compared to young people with psychopathology who did not report psychotic experiences, even when controlling for levels of multimorbidity. Fourth, psychotic experiences were a marker of high risk for severe suicidal behaviour, that is, suicide plans and attempts, even when controlling for levels of multimorbidity.

The prevalence of psychotic experiences reported in the current study is similar to prevalence findings of 48% reported by Chambers et al (Chambers *et al.*, 1982) and 40% reported by Altman et al (Altman *et al.*, 1997) in child and adolescent mental health services. Ulloa et al reported a prevalence of approximately 9% for 'definite' or 'probable' psychotic experiences in a clinical sample of young people (Ulloa *et al.*, 2000). The reason for the lower prevalence in the Ulloa et al sample is not clear, although it is important to note that the age range of participants in their study was up to 21 years, since we have previously shown that, in community samples at least, psychotic experiences are less common in late compared to early childhood and adolescence (Kelleher *et al.*, 2012a).

Psychotic experiences were common across a range of disorders but demonstrated a particularly strong relationship with multimorbid psychopathology, with prevalence of psychotic experiences increasing in a dose-response manner with the number of diagnosable disorders – 28% of patients with 1 disorder reported psychotic experiences, compared to 48% of patients with 2 disorders and 68% of patients with 3 or more disorders. This is in line with community-based research, which also showed a dose-response relationship between the prevalence of psychotic experiences and number of diagnosable disorders (Kelleher *et al.*, 2012b). Clinical need is at a premium in these cases as patients with multimorbidity are at very high risk for a wide range of poor outcomes, even when compared to other patients with psychopathology. Angst et al, for example, showed that multimorbidity predicts greater work impairment, poorer social functioning, more relationship breakdown and higher levels of subjective distress (Angst *et al.*, 2002). This was evident in the current study, with multimorbidity predicting poorer socio-occupational functioning compared to single disorder psychopathology. Interestingly, however, psychotic experiences were an even stronger predictor of poor socio-occupational functioning, and multivariate analysis demonstrated that this relationship was not explained by the effect of multimorbidity. Psychotic experiences reported in the clinic, then, should alert the clinician to high risk for multimorbid psychopathology (patients with psychotic experiences in the current study had an average of three Axis-1 disorders) and poorer socio-occupational

functioning (beyond that predicted by multimorbidity itself).

Psychotic experiences were associated with a significantly increased prevalence of suicide plans and attempts. There was no relationship, however, between psychotic experiences and isolated suicidal ideation (in the absence of suicide plans or attempts), indicating that these symptoms are a marker of risk for more severe suicidal behaviour. The prevalence of suicidal behaviour was relatively low in individuals with affective, anxiety or behavioural disorders who did not report psychotic experiences but high in those with psychotic experiences. These findings highlight that a report of psychotic experiences in a young person with psychopathology should alert clinicians to risk for suicidal behaviour, even relative to other patients with a disorder. The finding of a high prevalence of suicidal behaviour in the sample with major depressive disorders who reported psychotic experiences demonstrates interesting overlap with established findings on the (narrower) diagnosis of major depressive disorder with psychotic features. Unlike MDD with psychotic features, however, which is considered to be an uncommon illness (of note, none of the current sample were diagnosed with MDD with psychotic features), psychotic experiences were common among young people in the current sample who had a diagnosis of MDD. Furthermore, it is important to recognise that most of the individuals who reported psychotic experiences in this sample had attenuated symptoms (i.e., they did not have true hallucinations or delusions, but, rather, attenuated symptoms) and, thus, diagnostically, could not be considered to have major depressive disorder with psychotic features. Our findings suggest, however, that there is a much broader spectrum of (attenuated) psychotic experiences associated with MDD and that, as with the narrower diagnosis of 'MDD with psychotic features', this group is at high risk for suicidal behaviour. It is also important to note that the relationship between suicidal behaviour and psychotic experiences was not limited to major depressive disorders with psychotic experiences; this relationship was also evident in anxiety and behavioural disorders with psychotic experiences, which do not have a 'with psychotic features' subcategory in the DSM.

There are a number of possible explanations for the relationship between psychotic experiences and suicidal behaviour. The strong relationship between psychotic experiences and multimorbidity may be part of this explanation; however, the fact that psychotic experiences remained a strong marker of risk for suicidal behaviour even when multimorbidity was included in the multivariate model means that multimorbidity can be, at best, only part of the mechanistic explanation linking psychotic experiences and suicidal behaviour. Other potential mechanisms might include shared risk factors for suicidal behaviour and psychotic experiences. Childhood traumatic experiences, such as physical and sexual abuse, predict a higher prevalence of suicidal behaviour (Dube *et al.*, 2001, Evans *et al.*, 2005, Afifi *et al.*, 2008) and are also more prevalent among individuals who report psychotic experiences (Scott *et al.*, 2007a, Kelleher *et al.*, 2008, Freeman and Fowler, 2009, Arseneault *et al.*, 2011, Bebbington *et al.*, 2011, Fisher *et al.*, 2012, Kelleher *et al.*, 2013b). There is also research to suggest that individuals who endorse psychotic experiences on questionnaires have stronger emotional reactivity to daily stressors (Lataster *et al.*, 2009) and poorer coping skills (Lin *et al.*, 2011) which may in turn put them at increased risk for suicidal behaviour. Further research will be necessary to understand the mechanisms underlying the relationship between psychotic experiences and both multimorbidity and suicidal behaviour.

Strengths and limitations:

Strengths of the current study include the use of gold standard assessment of psychiatric disorders (full semi-structured Axis-1 diagnostic interviews) and the use of highly trained professionals to conduct the interviews (one psychiatrist and one psychologist). While clinical service limitations meant that a significant proportion of patients

referred to participating clinics could not be invited to participate in the study, consent to take part among eligible patients was high (88%). Because part of the study requirements meant that participation was limited to patients who would receive a prompt clinical service (within 4 weeks of referral), it is likely that participants in the current study had more severe illness than might be seen in a fully representative clinical sample (for example, an individual who reports suicidal behaviour is likely to receive a more prompt clinical service than one who does not). Thus, severe psychopathology (including multimorbidity and suicidal behaviour) and psychotic experiences may have been more prevalent in the current study than would be the case in the total sample of patients in a clinic. However, this 'enrichment' for psychopathology severity was beneficial in terms of testing the study hypotheses because it allowed us to test the relationship between the exposure and outcome measures with maximal statistical power. Our findings are all the more striking because, rather than comparing our cases to a sample of healthy community controls as is usually reported, we compared our cases to an unwell clinical sample (who did not, however, have psychotic experiences). The fact that large differences emerged in our cases compared to our clinical controls illustrates the significance of a report of psychotic experiences in the clinic. Because this was not a longitudinal study, the issue of temporality cannot be addressed, i.e., which arose first: psychotic experiences, psychopathology, or both together. However, this does not detract from the clinical importance of understanding the contemporaneous relationship between psychotic experiences and non-psychotic psychopathology. As with any in-depth clinical interview study, its strength is its weakness: it is not possible to conduct this type of in-depth diagnostic research with very large numbers of participants in the same way as can be done with questionnaire or lay interview studies. As a result, subgroup analyses involved smaller groups and, because of this, confidence intervals are wide in some cases. However, despite this, the results demonstrated a clear dose-response effect in terms of the prevalence of psychotic experiences and increasing levels of multimorbidity and, in terms of suicidal behaviour, even the lower ranges of confidence intervals for significant interactions between psychotic experiences and psychopathology were well in excess of one.

Conclusions:

The current paper posed the question: what does it mean when a young person reports psychotic experiences to a clinician? The results of this study suggest a number of answers. First, beyond thinking about the primary diagnosis for which the individual was referred, the clinician should consider that, based on our findings, most of these individuals will have no fewer than three Axis-1 diagnoses. These individuals are also likely to have poorer socio-occupational functioning, even compared to individuals with the same level of multimorbidity who do not have psychotic experiences. Of particular clinical importance, a report of psychotic experiences points to a very strong relationship with suicidal behaviour. From a research point of view, these findings also highlight the importance of including assessments of psychotic experiences in future studies of suicidal behaviour and in research on multimorbid psychopathology. The current study also highlights the fact that so called 'psychotic' experiences are, in fact, symptoms that occur in a wide range of disorders and should not, when reported by adolescents, be mistaken to indicate incipient risk for psychotic disorder. It is also important to note that there is a lack of evidence that the presence of these symptoms indicates the need for treatment with antipsychotic medication; treatment should be targeted at the underlying diagnoses (e.g., MDD, generalized anxiety disorder, ADHD etc.), though recognising that this may be a more severe case than the same diagnosis in someone without psychotic experiences. Inherent to all of this, of course, is the assumption that all patients will be assessed for psychotic experiences; anecdotal evidence, unfortunately, suggests this is not the case in many youth mental health services. Our own clinical experience is that young people will rarely volunteer information on psychotic experiences in the context of a routine psychiatric assessment unless they are directly (and

sensitively) asked about them. When they are asked, however, young people are usually willing to discuss these symptoms and are, in fact, often greatly relieved to share these experiences with a calm (unflinching) clinician who can explain that these symptoms are not uncommon and do not indicate that she or he is at the precipice of psychotic disorder. In light of the findings of the present study, greater recognition of the importance of routine assessment for (attenuated and frank) psychotic experiences by clinicians working with young people, and greater understanding of the pathological significance of these symptoms, is urgently needed.

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Table 1: Description of study measures

Variable	**Instrument**	**Description of the Measure**
Psychopathological diagnoses	K-SADS (Kaufman *et al.*, 1996)	Semi-structured research diagnostic interview for the assessment of DSM Axis-1 psychiatric disorders in children and adolescents
Psychotic experiences	K-SADS (Psychosis section)	Assesses for attenuated and frank hallucinations and delusions (see main text)
Suicidal behaviour	K-SADS (Suicidal behaviour section)	Assesses for suicidal ideation (thoughts of suicide but in the absence of a specific plan or method), suicide plans (recurrent suicidal ideation with a formulated plan as to the method of suicide)
Global functioning	CGAS (Shaffer *et al.*, 1983)	The CGAS was developed based on the Global Assessment Scale for Adults (Shaffer *et al.*, 1983) and is divided into 10 levels, with the lowest (scored between 1 and 10) indicating very severe impairment ('needs 24-hour care/supervision') and the highest (scored 91 to 100) indicating a very healthy level of functioning ('superior functioning in all areas')

K-SADS, Schedule for Affective Disorders and Schizophrenia for School-aged Children, Present and Lifetime versions; CGAS, Children's Global Assessment Scale

Table 2: Association between major diagnoses and suicidal behaviour

Diagnosis	% with suicidal plans	OR (CI95)	% with suicide attempts	OR (CI95)
Affective disorder (n=37)	59%	**5.24 (2.08-13.18)**	49%	**4.40 (1.66-11.65)**
Anxiety disorder (n=57)	37%	1.47 (0.62-3.45)	26%	0.94 (0.38-2.33)
Behavioural disorder (n=66)	24%	0.79 (0.33-1.90)	29%	1.04 (0.40-2.68)

Table 3: Stratification of disorder groups into those with and without psychotic experiences and association with suicide attempts

Diagnosis	No psychotic experiences (% with a suicide attempt)	Psychotic experiences (% with a suicide attempt)	OR (CI95)
Affective disorder (n=37)	12 (17%)	25 (64%)	**8.89** **(1.59-49.83)**
Anxiety disorder (n=57)	23 (4%)	34 (41%)	**15.40** **(1.85-127.94)**
Behavioural disorder (n=66)	39 (15%)	27 (37%)	**3.24** **(1.01-10.41)**

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The authors report no conflicts of interest.

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