Subtypes of psychotic-like experiences are differentially associated with suicidal ideation, plans and attempts in young adults

Carina Capra [a,b], David J. Kavanagh [a,*], Leanne Hides [a], James G. Scott [c,d]

[a] *Institute of Health and Biomedical Innovation and School of Psychology and Counselling, Queensland University of Technology, Kevin Grove, Qld 4059, Australia*
[b] *Metro South Addiction and Mental Health Service, Rehabilitation Academic Clinical Unit PAH, Woolloongabba, Qld 4102, Australia*
[c] *The University of Queensland Centre for Clinical Research (UQCCR), Herston, Qld 4029, Australia*
[d] *Metro North Mental Health RBWH, Herston, Qld 4029, Australia*

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ABSTRACT

Psychotic-like experiences (PLEs) have been associated with increased risk of suicidality, but it is unclear whether the level of risk varies with different types of PLE. A cross-sectional online survey was completed by 1610 university students. Respondents completed the Community Assessment of Psychic Experiences-15 (CAPE-P15) assessing PLEs on three subscales: Perceptual Abnormalities (PA), Persecutory Ideation (PI) and Bizarre Experiences (BE). Lifetime suicidal ideation, plans and attempts, cannabis, ecstasy and methamphetamine use and family history of mental disorder were also assessed. Multinomal logistic regression was used to examine unique determinants of lifetime suicidality, defined as any history of (i) suicidal ideation or plans and (ii) any attempt, relative to no lifetime history of suicidality. A lifetime history of PA and PI provided significant unique contributions to the prediction of suicide risk, after control for other significant predictors. BE were not associated with any suicide variable demonstrating the variation in risk of suicidality with different types of PLEs. Perceptual abnormalities and persecutory ideation as measured by the CAPE-P15 are the PLEs associated with a higher risk of lifetime suicidality.

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1. Introduction

Suicidal behaviour is one of the leading causes of death worldwide, and is projected to become an even greater contributor to the future global burden of disease (Nock et al., 2008; Pelkonen and Marttunen, 2003). Data reviewed from multiple countries, and on different forms of suicidal risk, demonstrate the complex interaction of biological, psychological, social and environmental factors that contribute to suicidality (Bruffaerts et al., 2011; Nock et al., 2008). In young people, individual static and dynamic factors such as mental illness, substance misuse, impulsiveness and prior suicide attempts are all implicated, as are variables such as parental mental illness and poverty (Bruffaerts et al., 2011; Nock et al., 2008; Pelkonen and Marttunen, 2003). Timely recognition and effective treatment of emerging psychiatric disorders provide an important component in the reduction of suicide risk in young populations (De Silva et al., 2013; van der Feltz-Cornelis et al., 2011).

Psychotic-like experiences (PLEs) are subclinical delusional ideas and perceptual disturbances that lie on a phenotypic continuum with psychotic symptoms and disorders. Positive PLEs, such as hallucinations and delusions, are relatively common among healthy children, adolescents and adults with 12-month prevalence rates of 6–28% in community samples of adolescents and young adults (Kelleher and Cannon, 2011; van Os et al., 2009). PLEs are risk factors for the emergence of later mental health disorders, including psychosis, depressive, anxiety and substance use disorders (Dhossche et al., 2002; Fisher et al., 2013; Welham et al., 2008).

Several recent studies have shown the presence of subclinical hallucinations and delusions have been associated with an increased risk of suicidal ideation, plans and attempts (Fisher et al., 2013; Kelleher et al., 2014a; Martin et al., 2015; Nishida et al., 2008; Saha et al., 2011). Furthermore, these studies have shown a dose–response relationship, with greater risks of suicidality as more PLEs are endorsed. However, not all types of PLEs have been associated with high levels of distress and mental health problems (Armando et al., 2010; Wigman et al., 2011; Yung et al., 2009). Armando et al. (2010) showed that those with high scores on the Bizarre Experiences (BE) and Persecutory Ideation (PI) subscales of the Community Assessment of Psychic Experiences positive symptom scale (CAPE-P) had significantly higher levels of psychological distress, depression and poorer functioning compared to those with high scores on the Perceptual Abnormality (PA) scale. Furthermore,

* Corresponding author.
E-mail address: david.kavanagh@qut.edu.au (D.J. Kavanagh).

there was no association between the Grandiosity scale and mental health problems.

Therefore, whilst one study showed that different PLEs are associated with varying levels of mental health problems, to the best of our knowledge, none has examined if different types of PLEs are differentially associated with the level of suicide risk. Accordingly, the current study aimed to examine the relationship between PLE subtypes and lifetime suicidality, and whether any association remains after controlling for other risk factors such as family history of mental illness, age, sex and substance use. While we noted the differential relationship of the subscale scores with distress in Armando et al. (2010), we hypothesised that all forms of PLEs would be associated with suicidal ideas, plans and attempts, even after adjusting for confounding factors.

2. Method

2.1. Sample and recruitment

Participants were recruited between June 2011 and June 2012 via student emails at the Queensland University of Technology, Australia as well as by snowballing recruitment methods, which involved participants forwarding the survey onto their contacts via multimedia platforms (e.g., facebook and email). All University heads of school were first approached to circulate a student email requesting participation in an online survey of 'odd or unusual thoughts and experiences'. If they agreed to distribution through their school, an email containing a description of the study, a copy of the consent form and a link to the online survey was sent.

They were required to provide Informed consent and indicate they met the following inclusion criteria via a tick box prior to obtaining access to the online survey: (i) aged over 17 (ii) able to read and understand English; (iii) able to access and navigate the internet;(iv) not diagnosed, or being treated for, a psychotic illness. Participants were offered the chance to go in a random draw to win an iPad2© as an incentive. Ethical approval was obtained from the University's Human Research Ethics Committee (No. 1100000187).

2.2. Materials and method

The Community Assessment of Psychic Experiences—Positive scale (CAPE-P) is a 20-item self-report measure of lifetime PLEs including perceptual abnormalities, persecutory ideation, bizarre experiences, magical thinking and grandiosity rated on a 4-point Likert scale ("never" "sometimes" "often" "nearly always") (Brenner et al., 2007; Yung et al., 2009). It represents a selection of positive symptom-like features from the original 42-item CAPE (Stefanis et al., 2002)—the subset that was most predictive of later psychosis (Welham et al., 2008). However, the concurrent validity of its Magical Thinking and Grandiosity subscales with other indicators of mental health has been shown to be low in several studies (Armando et al., 2010; Capra et al., 2013; Wigman et al., 2011). To address this issue, a 15-item revision, the CAPE-P15, was recently developed by the authors (Capra et al., 2013). The

CAPE-P15 showed high internal consistency ($\alpha=0.79$) and a stable internal structure comprising three subscales: PI (5 items), BE (7 items) and PA (3 items), which had a more optimal factor structure than the 20-item CAPE-P (Brenner et al., 2007). The revised factor structure is provided in Supplementary Table 1.

Questions from the Australian National Survey of Mental Health and Wellbeing (Australian Bureau of Statistics, 2008) assessed for suicidality. The questions were: "Have you ever (in your lifetime): (i) seriously thought about committing suicide? (ii) made a plan for committing suicide? (iii) attempted suicide? The survey also asked about similar experiences during the previous month.

Substance use was assessed using 7 items from the Youth Risk Behaviour Survey (YBRS; (Brener et al., 2002)). This included items measuring the frequency of *lifetime* cannabis, ecstasy and methamphetamines use and *recent* (past 30 days) cigarettes, alcohol, cannabis, ecstasy and methamphetamines use.

Demographic (age, gender, relationships status and income of family of origin) information was also obtained. Four categories for relationship status included (i) single (ii) partnered (iii) married (iv) divorced and the four categories for family of origin income included (i) < 50K AUD (ii) 50–100K AUD (iii) 100–150K AUD (iv) > 150K AUD. Family history of treated mental health problems was assessed by a single question requiring a dichotomous 'yes/no' response, 'Has anyone in your family ever been treated for a mental illness?'.

The study also included the Kessler Distress Scale (K10; Kessler et al., 2002), but it was not included in the analyses below, because of its focus on current distress.

2.3. Data analysis

Analyses used IBM SPSS 22©. The frequency of recent suicidal ideation, plans and attempts (Table 1) were too low for predictive analyses, so the primary analyses in the study focused only on lifetime risk. Given potential problems with distinguishing retrospectively between ideation and suicide plans, in the primary analyses the lifetime suicidality was indexed as an ordinal variable with three categories: (i) no suicidality, (ii) suicidal ideation or a plan (but no attempt) and (iii) suicide attempt. In doing so, we do not imply the presence of a single underlying continuum, but merely order the severity of the reported phenomena.

Lifetime cannabis, ecstasy and methamphetamine use was divided into six categories from no use, 1–2 times, 3–9 times, 10–19 times, 20–39 times and ≥ 40 times. The correlations between lifetime suicidality and age, sex, years of education, relationship status, family history of mental illness, family of origin income, lifetime drug use and the CAPE-P15 total and subscale scores were examined using Spearman rank for continuous variables and phi for categorical variables. A multinomal logistic regression was then conducted to determine whether the variables which were significantly correlated with lifetime suicidality made an independent contribution to the level of lifetime suicide risk. All variables were entered simultaneously into the multivariate analysis. No lifetime suicide risk was used as the reference variable. Nagelkerke Pseudo-R^2 was used to indicate the extent that the model improves the prediction in comparison with estimating scores from the mean of the predicted variable ('null'). It varies from 0 (no improvement) to 1 (perfect prediction).

3. Results

3.1. Demographics

Of the 1791 who consented to undertake the survey, 1610 (90%) provided suicidality data. The mean age was 22.1 (S.D.=5.1) years, and 76% (1218) were female. Nearly all (1583, 99%) had completed 12 years of education and just over half said they had a partner (815, 52%). Lifetime suicidal ideation, plan or attempts were reported in a third of the sample, but only 1.5% (24) reported any of these experiences in the previous 30 days (Table 1). Table 2 identifies the reported amount of lifetime use of cannabis, ecstasy and methamphetamines, highlighting that 11–35% of the sample had used illicit substances, with cannabis being the most frequent.

3.2. Correlations

Most of the tested variables had significant but small correlations with lifetime suicidality (See Table 3). The CAPE-P15 and its subscales, specifically PA and PI had the highest correlations with lifetime suicidality. Sex, education and relationship status were not significant univariate correlates, and the latter two predictors were omitted from further analysis. However, because of the frequent association of sex with suicidality in previous research, it was retained as a predictor in the multivariate prediction.

Table 1
Sample characteristics.

Variable	*M* (S.D.) or *n* (%)
Family history of mental health disorder	741 (46%)
Annual family income (AUD)	
< $50K	483 (27%)
$50–100K	601 (37%)
$100–150K	348 (22%)
> $150K	211 (13%)
CAPE-P15	
Total scale	6.80 (4.31)
PA subscale	0.46 (0.934)
PI subscale	4.27 (2.17)
BE subscale	2.08 (2.38)
Lifetime suicidality	
None	1108 (69%)
Ideation or plan, no attempt	385 (24%)
Attempt	117 (7%)
30-day suicidality	
None	1587 (99%)
Ideation or Plan, no attempt	19 (1.2%)
Attempt	5 (0.3%)