Differentiating first episode substance induced and primary psychotic disorders with concurrent substance use in young people.

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Abstract

Objective: Substance use is common in first-episode psychosis, and complicates the accurate diagnosis and treatment of the disorder. The differentiation of substance-induced psychotic disorders (SIPD) from primary psychotic disorders (PPD) is particularly challenging. This cross-sectional study compares the clinical, substance use and functional characteristics of substance using first episode psychosis patients diagnosed with a SIPD and PPD.

Method: Participants were 61 young people (15-24 years) admitted to a psychiatric inpatient service with first episode psychosis, reporting substance use in the past month. Diagnosis was determined using the Psychiatric Research Interview for DSM-IV Substance and Mental disorders (PRISM-IV). Measures of clinical (severity of psychotic symptoms, level of insight, history of trauma), substance use (frequency/quantity, severity) and social and occupational functioning were also administered.

Results: The PRISM-IV differentially diagnosed 56% of first episode patients with a SIPD and 44% with a PPD. Those with a SIPD had higher rates of substance use and disorders, higher levels of insight, were more likely to have a forensic and trauma history and had more severe hostility and anxious symptoms than those with a PPD. Logistic regression analysis indicated a family history of psychosis, trauma history and current cannabis dependence were the strongest predictors of a SIPD. Almost 80% of diagnostic predictions of a SIPD were accurate using this model.

Conclusions: This clinical profile of SIPD could help to facilitate the accurate diagnosis and treatment of SIPD versus PPD in young people with first episode psychosis admitted to an inpatient psychiatric service.

Keywords: Psychosis, Substance use, Substance-induced, First-episode, Youth, Comorbidity.

1.0 Introduction

Substance use and misuse is common among individuals with first-episode psychosis, with between 40 and 70% meeting criteria for a co-occurring substance use disorder, excluding tobacco dependence (Lambert et al., 2005). Despite this, surprisingly little research has sought to differentiate substance-induced psychotic disorders (SIPD) from primary psychotic disorders (PPD) with concurrent substance use, or determine if these disorders have a differential course and outcomes. This is problematic, as misdiagnosis with a PPD may result in stigmatization, and the unnecessary use of long-term medication, while those diagnosed with a SIPD tend to be excluded from appropriate treatment programs (American Psychiatric Association, [APA] 2000; Richie et al., 1994; Schanzer et al., 2006).

Diagnostic and Statistical Manual IV-Text Revision (DSM-IV-TR) criteria for SIPD are difficult to apply in practice due to the similarity of the psychogenic effects of certain substances (e.g. cannabis and amphetamines) with symptoms of psychosis, as well as the lack of sufficient periods of abstinence (4 weeks) to determine if symptoms are substance-induced (Hasin et al., 2006; Rounsaville, 2007; Schuckit, 2006). DSM-IV-TR criteria provide little guidance on the frequency, severity and duration of psychotic symptoms or substance use required for a SIPD (Mathias et al., 2008). While structured clinical interviews such as the Psychiatric Research Interview for DSM-IV Substance and Mental disorders (PRISM-IV) facilitate reliable differentiation of SIPD from PPD, the length and intensive training required precludes its routine use (Caton et al., 2000; Hasin et al., 2006; Mathias et al., 2008).

There is increasing interest in the use of the PRISM and other diagnostic interviews to differentiate substance-induced from primary psychiatric disorders among substance

users recruited from community and treatment seeking samples (Dakwar et al., 2011; Schuckit et al., 2007; Torrens et al., 2011; Torrens et al., 2004). The majority of this research has focused on substance-induced depression, and only two cohort studies examining the differential characteristics and outcomes of psychotic patients diagnosed with SIPD and PPD have been conducted to date (Arendt et al., 2005; Caton et al., 2005). Using the PRISM-IV, Caton et al., (2005) found 44% (N=169) of adults in the early phases of psychosis had a SIPD and 56% (N=217) had a PPD with concurrent substance use. Individuals with SIPD were more likely to report parental substance use, have concurrent drug dependence and visual hallucinations, and a less severe symptom profile compared to those diagnosed with a PPD. A 12 month follow up of this cohort found patients with SIPD were more likely to achieve psychotic symptom remission (Caton et al., 2006). At two years follow up, both groups had improved over time on substance dependence, psychotic symptoms and psychosocial outcomes, despite receiving minimal mental health or substance abuse treatment (Drake et al., 2011). However, the PPD group had consistently more severe positive and negative symptoms and the SIPD group had higher rates of alcohol or drug dependence over time. The only other study reporting the differential outcomes of psychotic patients with a SIPD and PPD used data based on clinical diagnoses extracted from a central psychiatric register (Arendt et al., 2005).

Thus, while there is evidence that individuals in the early-phase of psychosis diagnosed with a SIPD and PPD have distinct characteristics, course and outcomes, research is yet to examine the rates and differential characteristics of SIPD and PPD among young first episode psychosis patients during an acute psychiatric admission. The differential diagnosis of SIPD and PPD is particularly challenging during an

acute admission when psychotic symptoms are the most severe, and the identification of possible markers of these disorders could simplify their recognition and treatment. Young first episode patients are an important group to study due to the high rates and adverse consequences of substance use, misuse or disorder in this population, and the potential prognostic impact of the accurate diagnosis and treatment of psychosis and substance use.

This study examined the differential characteristics of young first episode patients with a SIPD and PPD during an acute admission to a psychiatric inpatient unit. Based on a similar study in adults, we hypothesized that there would be differences in the demographic, clinical, substance use and functional characteristics of young people with a SIPD and PPD (Caton et al., 2005). No specific research hypotheses were proposed, as this was the first study to examine this research question in young

2.0 Method

2.1 Participants

Participants were 61 young people with first episode psychosis and concurrent substance use (≥ 6 occasions in the past 12 months, with most recent use occurring in the last 30 days), admitted to the inpatient unit of the Early Psychosis Prevention and Intervention Centre (EPPIC), a specialist FEP early intervention program for young people (aged 15-24 years) in Melbourne, Australia. Individuals were excluded if their first episode of psychosis commenced over 12 months prior to study enrolment, had an estimated IQ < 70, or were from a non-English speaking background.

2.2 Measures

2.2.1 Diagnostic assessment

Sections 2, 3 and 8 of the PRISM-IV were administered to provide lifetime and current DSM-IV diagnoses of SIPD, PPD and substance use disorders (Hasin et al., 1996). PRISM interviewer instructions and probes assist in determining the etiological timelines for the onset (age) of first and recent (how many months/weeks or days ago) substance use and psychiatric symptoms. To assist with this process, 12 month and lifetime patterns (chronic intoxication/binge use; abstinence/minimal use) of substance use are initially completed, prior to questions about psychiatric symptoms. The PRISM has high levels of test-retest reliability for the differential diagnosis of SIPD and PPD (kappa = .70 - .83) (Torrens et al., 2004). To reduce time, the major depressive and manic episode modules of the Mini International Neuropsychiatry Interview (MINI; Lecrubier et al., 1997) were administered, rather than the equivalent PRISM modules.

2.2.2 Clinical and functional measures

The 24-item Brief Psychiatric Rating Scale (BPRS; Lukoff et al., 1986) measured the severity of positive, negative and general psychopathology symptoms in the last month. This measure has well established reliability and validity in first episode psychosis (Ventura et al., 2000). Information on the patient's personal and family history of psychotic and SUDs and duration of untreated psychosis (time period between the first signs of psychotic symptoms and first contact with psychiatric services) was also collected. .

The Composite International Diagnostic Interview -Trauma List (CIDI-TL; World

Health Organisation, 1997) was used to generate a list of life events meeting DSM-IV criteria A1 and A2 for exposure to a traumatic event. Multiple experiences of a single category of trauma (e.g. rape) were counted as one exposure. The Scale to Assess Unawareness of Mental Disorders (SUMD; Amador et al., 1993) was used to measure level of insight, where lower scores indicate greater insight.

The Global Assessment of Functioning (GAF; APA, 2000) and DSM-IV Social and Occupational Functioning Assessment Scale (SOFAS; APA, 2000) were also administered. The Pre-morbid Adjustment Scale (PAS; Cannon-Spoor, 1982) provided a measure of the participants' level of pre-morbid adjustment in the 6 months prior to first psychiatric hospitalization.

2.2.3 Substance use

The frequency and quantity of ten classes of substance use (tobacco, alcohol, cannabis, amphetamines, ecstasy, cocaine, hallucinogens, inhalants, heroin and valium) in the past month was collected using the time line follow back (TLFB) (Fals Stewart et al., 2000). Information on the age of onset (lifetime and regular) of alcohol and cannabis use was collected from the PRISM.

2.3 Procedure

Ethics approval to conduct the trial was obtained from the Melbourne Health Human Research and Ethics Research Committee. The assessment measures were administered by the first author (a third year Doctor of Psychology [Clinical] student), in a private interview room, once written informed consent was obtained. Only patients who were considered clinically stable enough to provide voluntary informed

consent by their treating nurse or doctor were approached. PRISM-IV training was provided by the second author, a clinical psychologist and certified PRISM trainer. If the PRISM diagnosis was unclear after the 1 – 2 hour interview, a diagnostic consensus process was used. Participants were reimbursed $20 AUD for their time and travel-related expenses.

2.4 Data Analysis

Following examination of the data, the duration of untreated psychosis variable was transformed (log 10) due to positive skewness (Tabachnick and Fidell, 2007). Between-group comparisons across demographic, clinical, substance use and functional variables were made using chi-square and independent t-tests (Statistical Package for Social Sciences [SPSS v16]).

The three historical and clinical variables identified as most significantly related (Spearman ρ [> 0.25] and Chi-square tests) to SIPD diagnosis were entered into separate logistic regression analyses. A final logistic regression was then performed, entering the three strongest predictors of a SIPD into the analysis.

3.0 Results

3.1 Sample

3.1.1 Recruitment

Over 16 months, 296 individuals with first episode psychosis presented to EPPIC. Of these, 61% (n=180) reported comorbid substance use in the previous month. Seventy individuals were approached by the first author (one day a week over the 16 month period) and 61 (87%) consented to participate. Individuals refused due to suspicion

(n=6; 67%), disinterest (n=2; 22%), or were too acutely unwell (n=1; 11%). The average time from admission to interview was 7.5 days (SD=5.3).

Insert Table 1 about here

3.1.2 Sample characteristics

The sample had a mean age of 21 years, and were predominantly male, unemployed with low levels of education (see Table 1). The sample had high rates of substance dependence and severe levels of psychopathology (see Tables 2 and 3). The PRISM indicated 27 (44.3%) of first episode patients had a SIPD, while the remaining 34 (55.7%) had a PPD with concurrent substance use. The mean amount of antipsychotic medication equated to 4.5mg haloperidol per day (including regular and pro re nata [PRN] medication). Antidepressants and mood stabilizers were prescribed to 14.8% (n=9) and 9.8% (n= 6) of patients respectively. Anxiolytics, predominantly benzodiazepines, were widely used as a PRN medication (n=53, 86.9%). Information on the other demographic, historical, substance use and clinical characteristics of the total sample, SIPD and PPD groups are provided in Tables 1 to 3.

Insert Table 2 about here

3.2 Group comparison: SIPD and PPD

There were no significant group differences on demographic variables (see Table 1). Inpatients with a SIPD were significantly more likely to have a forensic history and a current diagnosis of cannabis, stimulant or polysubstance dependence (see Table 2). They also reported significantly higher levels of cannabis and methamphetamine use

in the past month. The PPD group reported a significantly higher number of days abstinent in the past month. There were no differences in the age of onset of first or regular alcohol or cannabis use.

Insert Table 3 about here

Overall the sample had severe levels of psychopathology (see BPRS; Table 3). The SIPD group reported higher levels of hostility and anxiety, and were more likely to have experienced a traumatic event (on the CIDI-TL). However, the PPD group reported their first traumatic event occurred at a significantly younger age. There were no significant group differences in the amount of medications prescribed, types of traumatic events experienced, level of pre-morbid adjustment (PAS), global (GAF), social or occupational functioning (SOFAS).

The SIPD group were significantly more aware about the social consequences of a mental disorder, that they were experiencing a mental illness and/or hallucinations, and were in need of treatment (see Table 3). The PPD group were significantly more likely to attribute delusional symptoms to a mental illness or substance abuse.

3.3 Prediction of a SIPD

3.3.1 Historical variables

Family history of psychosis (χ^2= [1, N=61] = 5.48, p=.02), forensic history (χ^2= [1, N=61] = 5.24, p=.02) and any history of trauma (χ^2= [1, N=61] = 8.52, p=.004) were the historical variables most strongly related to a diagnosis of SIPD. Those with SIPD were less likely to have a family history of psychosis, and more likely to have

forensic and trauma histories. A family history of psychosis and trauma history emerged as significant predictors for SIPD in the logistic regression analysis, accounting for 33.7% (Nagelkerke R squared) of the variance in diagnostic status (see Table 4).

3.3.2 Clinical Variables

The hostility item of the BPRS (N = 61, ρ = .29, p =.02), current cannabis dependence (χ^2= [1, N=61] = 13.46, p<.001) and insight into the mental disorder (N = 61, ρ = -0.30, p = .02) were the clinical variables most strongly related with SIPD. Current cannabis dependence was the only significant predictor of a SIPD in the logistic regression analysis, accounting for 40.8% (Nagelkerke R squared) of the variance in diagnostic status.

Insert Table 4 about here

3.3.3 Combined model

A family history of psychosis, history of trauma and current cannabis dependence were entered into the analysis. All variables predicted the presence of a SIPD and accounted for 50.3% (Nagelkerke R squared) of the variance in diagnostic status. Individuals with a family history of psychosis were 0.18 less likely to have a SIPD than a PPD. Participants with a trauma history were 23 times more likely to have a SIPD and those with current cannabis dependence were 15 times more likely to have a SIPD. Overall 78.7% of diagnostic predictions were accurate using this model.

4.0 Discussion

This study is the first to distinguish the characteristics of young first episode psychosis patients with a SIPD from those with PPD during an acute psychiatric admission. A high rate of SIPD (56%) was found on the PRISM-IV in this sample of 61 FEP patients with concurrent substance use. Individuals with a SIPD were less likely to have a family history of psychosis, had higher levels of insight and more severe hostility and anxiety than those with a PPD. The SIPD group also reported significantly higher levels of recent cannabis and stimulant use, higher rates of cannabis, stimulant and polysubstance dependence, and were more likely to have a forensic history. Logistic regression analysis indicated patients with a family history of psychosis were 0.18 times less likely to have a SIPD, while those with a trauma history or current cannabis dependence were 23 and 15 times more likely to have a SIPD, respectively.

A higher rate of SIPD (56%) was found among first episode patients admitted to an inpatient unit than previously reported by Caton (44%; 2005) among early phase psychosis patients recruited from emergency departments. Individuals with SIPD in both studies had higher rates of substance use disorders and higher levels of insight. However, inconsistent results were found on demographic and symptom variables. These differential findings may reflect the younger mean age of participants in the current study, and the different recruitment criteria, sites and measures of psychopathology used. In addition, patients in the current study were current inpatients with severe levels of psychopathology on the BPRS, whereas those in the Caton study were only required to have at least one psychotic symptom to participate and had mild levels of psychopathology on the Positive and Negative Symptom Scale (PANSS) at baseline. Further research among first episode patients with differing

levels of psychopathology, recruited from a variety of treatment settings is required to further elucidate the characteristics of first episode patients with a SIPD and PPD.

SIPD but not PPD was associated with the presence of a forensic history in the current study. Caton et al. (2005) found higher rates of antisocial personality disorder (ASPD) among individuals with SIPD, but did not find any difference in the imprisonment rates of FEP patients with SIPD versus PPD. While psychotic disorders have been strongly associated with increased rates of aggression and ASPD, further research is required to determine if there are differential rates of ASPD, criminal behavior and imprisonment among individuals with a SIPD and PPD (Dixon et al., 1991; Raja and Azzoni, 2005). Future research could also determine whether a forensic history with and without a history of ASPD is differentially associated with the presence of a SIPD.

This is the first study to determine if a trauma history is differentially associated with a SIPD or PPD in first episode patients. The SIPD group were 23 times more likely to have a trauma history than the PPD group. However, there was no statistical difference in the mean number of traumatic events, and those with PPD experienced their first traumatic event at a significantly younger age. Previous research with first episode patients reported a significantly higher prevalence of substance use disorders among those with a trauma history, which may provide some indication of an individual's coping style (Conus et al., 2010). Similarly, substance use and trauma exposure have been shown to significantly increase the risk of psychotic symptoms beyond that posed by either risk factor independently (Harley et al., 2010). The later age of first trauma in the SIPD group could suggest an increased risk for trauma

exposure when intoxicated. Both substance use and trauma, regardless of causality, may represent significant vulnerability factors that increase the risk for SIPD but further exploration is needed.

Participants with SIPD were less likely to have a family history of psychosis. This is consistent with growing evidence that substance use increases the risk of psychosis in the absence of a family history (van Os et al., 2002; Verdoux et al., 2003). Substance use may result in neurochemical alterations, which precipitate the onset of psychosis in the absence of genetic vulnerability (Bowers et al., 1995; Brady et al., 1991; Caton et al., 2006). Therefore, SIPD and PPD may have different etiological mechanisms. Future research needs to examine the influence of substance-induced psychotic symptoms, rather than treating individuals with substance use and first episode psychosis as a homogeneous group.

4.1 Limitations

The small sample limits the generalizability of the current findings, but is nonetheless sufficient for the analyses conducted (Tabachnick and Fidell, 2007). While confirmation of self-reported substance use through biological measures would have strengthened the study, self-reported substance use provides a more sensitive measure of substance use than collateral reports, laboratory tests (blood, urine, hair and saliva) and medical examinations among individuals with psychosis (McPhillips et al., 1997; Selten et al., 2002; Wolford et al., 1999).

4.2 Clinical implications

This group of first episode patients reported severe levels of psychopathology, serious enough to warrant hospitalization, and the use of high dose antipsychotic medication. The high rates of SIPD identified in the current sample, indicate individuals with SIPD experience severe and distressing psychotic symptoms that require intensive inpatient treatment. Previous research indicates that up to 25% of individuals with a SIPD develop a PPD over the subsequent 12 months (Caton et al., 2007). However, many individuals with a SIPD either don't present to mental health services or only receive emergency treatment without follow-up (Schanzer et al., 2006). Thus, it is an important clinical priority to ensure that this opportunity for early intervention is not missed.

Many young people presenting with a SIPD may be misdiagnosed with a PPD. Such a diagnosis may result in stigmatization, unnecessary prolonged use of antipsychotic medication and adverse effects on social, educational and vocational outcomes. In cases of diagnostic uncertainty, clinicians should conduct a thorough assessment over time and consider delaying antipsychotic treatment while providing psychosocial and symptomatic pharmacological treatment and/or withdrawal management (if required). The extent of trauma exposure in this first episode group also highlights the importance of specialist trauma interventions in this population (Lu et al., 2008).

5.0 Conclusions

Substance-using first episode psychosis inpatients with SIPD can be differentiated by the presence of current cannabis dependence, a history of trauma and the absence of a family history of psychosis. Together these variables correctly identified 78.7% of patients with a SIPD. The early detection, appropriate treatment and follow up of first

episode patients with SIPD in acute care settings may prevent the development of a chronic and debilitating PPD.

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Table 1
Comparison of FEP patients with SIPD and PPD on demographic and historical variables.

Variable	Total sample (n=61)	PPD (n=27)	SIPD (n=34)	p-value
Sex, n (%)				
Male	47 (77.0)	19 (70.4)	28 (82.4)	0.42
Age, M (SD)	20.6 (2.4)	21.3 (2.5)	20.1 (2.0)	0.08
Relationship status, n (%)				
Single	41 (67.2)	19 (70.4)	22 (64.7)	
In relationship	20 (32.8)	8 (29.6)	12 (35.3)	0.85
Education, n (%)				
Year 12	18 (29.5)	8 (29.6)	10 (29.4)	1.00
Employment, n (%)				
Employed	28 (47.5)	14 (52.9)	14 (40.7)	
Unemployed	33 (52.5)	13 (47.1)	20 (59.3)	0.49
Homeless, n (%)	15 (26.6)	6 (22.2)	9 (26.5)	0.93
Living, n (%)				
Alone	13 (21.3)	7 (25.9)	6 (17.6)	0.64
With Others	48 (78.9)	20 (74.1)	28 (82.1)	
Family history, n (%)				
Psychosis	26 (42.6)	16 (59.3)	10 (29.4)	0.03*
Substance use	32 (52.5)	14 (52.9)	18 (51.9)	1.00
Mental illness	52 (85.2)	24 (88.9)	28 (82.4)	0.73
Forensic history, n (%)	39 (63.9)	13 (48.1)	26 (76.5)	0.04*
Trauma				
Trauma history, n (%)	52 (85.2)	19 (70.4)	33 (97.1)	0.01*
Age first trauma, M (SD)	9.4 (6.3)	6.7 (6.3)	11.5 (5.5)	0.00**
Total traumas, M (SD)	3.3 (2.3)	2.7 (2.5)	3.8 (2.1)	0.07

Note: T-tests *p<0.05 **p<0.001

Table 2
Group comparisons of FEP patients with SIPD and PPD on DSM-IV substance dependence.

Variable	Total sample (n = 61)	PPD (n=27)	SIPD (n=34)	p-value
Age onset, M (SD)				
Alcohol use		13.96 (2.43)	12.74 (3.18)	0.10
Weekly use		16.33 (2.67)	15.44 (1.81)	0.76
Cannabis use		14.41 (2.34)	13.26 (2.81)	0.10
Weekly use		15.61 (2.46)	15.85 (3.25)	0.77
Substance use in past month, M (SD)				
Alcohol: SDU/day	6.41 (4.31)	6.83 (5.66)	6.10 (2.97)	0.58
Cannabis: grams/day	1.37 (1.16)	0.64 (0.72)	1.96 (1.13)	0.00**
Ecstasy: pills/day	1.77 (0.97)	1.5 (0.00)	1.83 (1.07)	0.77
Methamph: grams/day	0.64 (0.28)	0.30 (0.16)	0.78 (0.50)	0.02*
Ice: grams/day	0.86 (0.78)	.54 (0.45)	0.95 (0.85)	0.44
Days abstinent	15.60 (8.52)	21.12 (7.31)	11.38 (6.86)	0.00**
DSM-IV dependence, n (%)				
Alcohol	13 (21.3)	13 (22.2)	7 (20.6)	1.00
Cannabis	42 (68.9)	12(44.4)	30 (88.2)	0.00**
Stimulants	19 (31.1)	3 (11.1)	16 (47.1)	0.00**
Heroin	10 (16.4)	5 (14.7)	5 (18.5)	0.96
Hallucinogens	1 (1.6)	-	1 (2.9)	1.00
Polysubstance	25 (41.0)	6 (22.2)	16 (47.1)	0.02*

Note: T-tests *p<0.05 **p<0.001; Methamph: methamphetamines

Table 3
Group comparisons of FEP patients with SIPD and PPD on clinical and functional variables.

Variables	Total sample (n = 61)	PDD (n = 27)	SIPD (n = 34)	p-value
Medication, M (SD) (Haloperidol Equiv. mg)	4.52 (3.61)	5.00 (3.86)	4.13 (3.31)	0.36
DUP†, M (SD)	2.9 (4.4)	3.4 (4.2)	2.4 (4.6)	0.42
[a]BPRS, M (SD)				
Manic excitement	16.4 (7.5)	15.9 (7.0)	16.7 (7.5)	0.66
Positive	18.3 (5.6)	17.7 (5.4)	18.9 (5.8)	0.42
Negative	9.4 (3.9)	9.3 (3.9)	9.5 (4.0)	0.84
Depression/anxiety	12.6 (5.4)	12.1 (5.5)	13.0 (5.5)	0.52
Total score	67.0 (12.8)	64.3 (9.7)	69.2 (14.6)	0.14
[a]BPRS (items), M (SD)	3.8 (1.8)	3.3 (1.5)	4.3 (1.8)	0.02*
Anxiety	4.4 (1.8)	3.9 (1.7)	4.8 (1.8)	0.05*
Hostility	2.7 (1.8)	2.9 (1.9)	2.5 (1.7)	0.48
Suicidality				
Hallucinations, n (%)				
Auditory	34 (55.7)	16 (59.3)	18 (52.9)	0.81
Visual	25 (41.0)	12 (44.4)	13 (38.2)	0.82
[b]Insight, M (SD)				
Awareness				
Mental disorder	2.5 (1.7)	3.1 (1.8)	2.0 (1.4)	0.01*
Needs for meds	2.6 (1.5)	2.9 (1.6)	2.3 (1.4)	0.10
Social consequence	2.6 (1.6)	3.1 (1.8)	1.9 (1.4)	0.05 *
Unawareness				
Hallucinations	2.6 (1.6)	3.3 (1.5)	2.2 (1.4)	0.04 *
Delusions	3.2 (1.6)	3.6 (1.6)	3.0 (1.5)	0.13
Thought disorder	3.7 (1.5)	4.3 (1.4)	3.3 (1.5)	0.07
Misattribution				
Hallucinations	2.3 (1.6)	2.6 (1.7)	2.1 (1.6)	0.56
Delusions	2.1 (1.4)	1.5 (0.9)	2.4 (1.5)	0.05*
Thought disorder	2.3 (1.4)	2.5 (1.9)	2.3 (1.3)	0.78
Functioning, M (SD)				
[c]GAF	37.6 (7.6)	36.3 (6.91)	38.6 (8.0)	0.25
[d]SOFAS	44.2 (9.0)	41.8 (8.9)	46.1 (8.6)	0.06
[e]PAS, M (SD)				
Adolescent	0.39 (0.15)	0.37 (0.13)	0.40 (0.17)	0.40
Adult	0.38 (0.17)	0.39 (0.18)	0.33 (0.17)	0.22
General	0.42 (0.16)	0.42 (0.16)	0.43 (0.16)	0.80

Note. [a]Brief Psychiatric Rating Scale; [b]The Scale to Assess Unawareness of Symptoms; [c]Global Assessment of Functioning; [d]Social and Occupational Functioning Assessment Scale; [e]Premorbid Adjustment Scale; †Duration of Untreated Psychosis - original values reported as no difference in the results for transformed/untransformed variables found; *p<0.05

Table 4
Logistic regression analyses predicting a diagnosis of SIPD.

Variables	B	S.E	Wald	df	p	Odds Ratio	95% CI
Historical							
Trauma hx	2.43	1.13	4.60	1	0.03*	11.35	1.23-104.56
Family hx psych	-1.27	0.61	4.41	1	0.04*	0.28	0.09-0.92
Forensic hx	1.17	0.62	3.52	1	0.06	3.21	0.95-10.89
Clinical							
[a]BPRS hostility	0.35	0.17	3.96	1	0.05	1.41	1.00-1.99
Insight	-0.32	0.20	2.65	1	0.10	0.72	0.49-1.07
Cannabis Dep	2.36	0.72	10.67	1	0.01*	10.60	2.57-43.67
Final model							
Trauma hx	3.14	1.26	6.25	1	0.01*	23.20	1.97-272.58
Family hx psych	-1.70	0.74	5.31	1	0.02*	0.18	0.04-0.78
Cannabis dep	2.97	0.80	11.25	1	0.001**	14.83	3.07-71.71

Note: *p<0.05, **p<0.001; [a]BPRS: Brief Psychiatric Rating Scale; Hx - history; psych - psychosis; dep - dependence; Dependant variable: SIPD diagnosis (vs. PPD) ; Historical model: entered trauma history, forensic history and family history of psychosis as independent variables; Clinical model entered BPRS hostility, hostility, cannabis dependence (current) and insight into having a mental disorder as independent variables; Final model entering family history of psychosis, forensic history and cannabis dependence (current) as independent variables.