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PII: S0165-1781(17)30189-0
DOI: http://dx.doi.org/10.1016/j.psychres.2017.05.050
Reference: PSY10544

To appear in: *Psychiatry Research*

Received date: 15 February 2017
Revised date: 21 April 2017
Accepted date: 30 May 2017

Cite this article as: Manuel Canal-Rivero, J.D. Lopez-Moriñigo, M.L. Barrigón, S. Perona-Garcelán, C. Jimenez-Casado, A.S. David, J.E. Obiols-Llandrich and M. Ruiz-Veguilla, The role of premorbid personality and social cognition in suicidal behaviour in first-episode psychosis: a one-year follow-up study *Psychiatry Research,* http://dx.doi.org/10.1016/j.psychres.2017.05.050

The role of premorbid personality and social cognition in suicidal behaviour in first-episode psychosis: a one-year follow-up study

Canal-Rivero, Manuel[a,b,c,]., Lopez-Moriñigo, J.D[c]., Barrigón, M.L[d]., Perona-Garcelán, S[a,e]., Jimenez-Casado, C[a]., David, A.S[c]., Obiols-Llandrich, J.E[b*]., Ruiz-Veguilla, M[f**].

[a]Virgen del Rocío University Hospital, Seville, Spain.

[b]Department of Clinical and Health Psychology, Universitat Autònoma de Barcelona, Barcelona, Spain.

[c]Department of Psychosis Studies, Institute of Psychiatry, Psychology and Neuroscience, King's College London, London, UK.

[d]Department of Psychiatry, Hospital Fundación Jiménez Díaz and IIS Fundación Jiménez Díaz, Madrid, Spain. Universidad Autónoma de Madrid, Madrid, Spain.

[e]Department of Personality, Evaluation and Psychological Treatment, University of Seville, Seville, Spain.

[f]Grupo Neurodesarrollo y Psicosis Instituto de Biomedicina de Sevilla (IBIS), Hospital Universitario Virgen del Rocío/CSIC/Universidad de Sevilla UGC Salud Mental HVR.

[*]Co-corresponding author
[**]Corresponding author

Abstract

Background:

High suicide attempt (SA) rates have been reported in first-episode psychosis (FEP) patients, particularly during the first year after the illness onset. Despite previous studies establishing several risk factors for suicidal behaviour in FEP, premorbid personality and social cognition have not been sufficiently investigated to date.

Objective:

To test whether personality traits and social cognition are associated with SAs in FEP over a 12-month follow-up.

Method:

Sixty-five FEP patients were evaluated at first contact with mental health services. The presence of SAs was recorded at six and twelve months after first presentation. Bivariate and multivariate analyses explored the influence of a range of sociodemographic and clinical variables, including premorbid personality and social cognition-related Theory of Mind (ToM) measures, on SAs.

Results:

SAs were associated with greater severity of symptoms at first hospitalization with psychotic symptoms (OR=2.18, 95% CI= 1.25-3.82), schizoid personality traits (OR=1.62, 95% CI=1.02-2.57) and impairment in a first-order false belief task (OR=4.26, 95% CI=1.05-17.31) in the multivariate models.

Conclusions:

Symptom severity at illness onset, premorbid schizoid personality traits and ToM impairment emerged as predictors of SA in this FEP sample, which, if replicated, may be useful in identifying high-risk groups and implementing more targeted suicide prevention programs in FEP.

Keywords: Suicide attempts, first episode psychosis, theory of mind, social cognition, personality traits, severity of symptoms.

1. Introduction

The risk of suicide in first-episode psychosis (FEP) patients has been estimated to be 12 times higher than in the general population (Dutta et al., 2010), and the rate of

FEP patients with suicidal ideation has been reported to be from 21% to 50% (Bertelsen et al., 2007; Petersen et al., 2005). The highest risk period of suicidal behaviour is the first year after illness onset (Dutta et al., 2011), particularly the immediate period shortly before and after hospitalization (Ayesa-arriola et al., 2015) Moreover, over 40% of FEP patients will make a suicide attempt (SA) during their lifetime (Harkavy-Friedman, 2006).

A recent meta-analysis found the following risk factors to be associated with deliberate self-harm after FEP: history of deliberate self-harm, expressed suicidal ideation, greater insight, alcohol abuse, substance use, younger age at illness onset, younger age at first treatment, depressed mood and the duration of untreated psychosis (DUP) (Challis et al., 2013). However, other factors such as personality traits (Albayrak et al., 2012), prefrontal cortex dysfunction (Minzenberg et al., 2014), history of sexual abuse (Robinson et al., 2009) and deficits in Theory of Mind (ToM) (Duñó et al., 2009) have also been related to suicidal behaviour in patients diagnosed with schizophrenia.

Premorbid personality traits play a role in the aetiology, course and outcome of psychotic disorders (Hulbert et al., 1996). In addition, personality traits such as fearfulness, social inhibition, shyness, immaturity (Albayrak et al., 2012), impulsivity, aggression (Iancu et al., 2010), vulnerability and lack of coping strategies (Canal-Rivero et al., 2016) and schizotypal characteristics (Teraishi et al., 2014) have been specifically linked with suicidal behaviours in psychotic patients.

Social cognition refers to processes involved in thinking about social interaction, such as understanding, recognizing, processing and using the social stimuli in one's environment (Adolphs, 2009). Perspective taking and ToM reasoning comprise one of the sub-domains of social cognition and include the ability to correctly attribute

feelings, knowledge, intentions and goals to other people (Frith, 2004). Some authors have proposed that ToM deficits could be a schizophrenia vulnerability marker (Sprong et al., 2007) from FEP (Bora and Pantelis, 2013). Perspective taking handicaps have been associated with negative and positive symptoms (Ventura et al., 2015), disorganisation (Vohs et al., 2014), worse psychosocial functioning (Stouten et al., 2014) and lack of insight (Konstantakopoulos et al., 2014). Previous work has also shown significant relationships between ToM deficits and suicidal behaviour in patients with schizophrenia (Duñó et al., 2009).

This study aimed to examine the relationship between baseline factors such as personality traits, ToM and SAs occurred during the first year after FEP, whilst adjusting the analyses for a set of baseline sociodemographic and clinical variables. Based on previous publications cited above we hypothesized that personality traits such as social inhibition, shyness, impulsivity, aggression, vulnerability and lack of coping mechanisms (Albayrak et al., 2012; Canal-Rivero et al., 2016; Iancu et al., 2010), i.e. schizoid, sociopathic and passive-dependant personality clusters, as well as ToM deficits (Duñó et al., 2009) will be associated with an increased risk of SAs.

2. Materials and methods

2.1. Participants

"Sixty-five patients hospitalized from 2003 to 2005 with a first episode of non-organic psychosis were recruited from the Acute Psychiatry Unit of San Cecilio University Hospital Public Mental Health Services Network (Granada, Spain). San Cecilio University Hospital is a general hospital in the metropolitan area of Granada, which provides publicly-funded medical care to a population of 131.251 people.

Inclusion criteria were: 1) at least one of the following symptoms: hallucinations, delusions, disorganized speech, catatonia or disorganized behaviour and negative symptoms: and 2) it was their first contact with mental health services for psychotic symptoms. Exclusion criteria were: 1) previous diagnosis of neurological disease or 2) a history of head trauma with loss of consciousness for > 1 hour. All patients, from 14 to 54 years of age with a first episode of functional psychotic disorder were recruited for this study using a consecutive sampling technique. In particular, all patients were initially screened for the presence of psychotic symptoms by an experienced psychiatrist (MRV) and were subsequently diagnosed using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) (First et al., 1997) with "affective (all manic episodes with psychotic symptoms) and non-affective" psychosis according to the DSM-IV (295-298 psychosis codes)". The first contact with our mental health service due to FEP was confirmed with an interview with family and patients. This clinical interview enquires about the date of the first contact with general and mental health practitioners for psychotic symptoms [21]. Patients who met the above selection criteria and were invited to participate in the study and given. Participants were information on the study protocol. Those who agreed to take part gave written informed consent and the research protocol was approved by San Cecilio´s University Hospital Research Ethics Committee."

2.2. Assessments

All baseline data were collected at first contact with mental health services by psychotic symptoms. At 6 and 12 moths after the first contact with metal health system by psychotic symptoms the presence of suicidal behaviour was re-assessed. Sociodemographic variables such as gender, age and education were recorded using a

proforma. All sociodemographic, psychopathological and clinical assessments were carried out when patients had achieved stability except the Positive and Negative Syndrome Scale (PANSS) which was used as soon as possible after first presentation with psychotic symptoms.

2.2.1. Structured Clinical Interview for DSM-IV Axis I Disorders

The SCID-I was used for the screening of psychotic symptoms and to establish formal diagnoses of psychotic disorders as appropriate (First et al., 1997).

2.2.2. Duration of Untreated Psychosis (DUP)

DUP was defined as the period of time in days from the first psychotic symptom to the start of antipsychotic treatment. DUP was assessed systematically in order to avoid a number of limitations (Norman and Malla, 2001). The date of psychosis onset was ascertained from information gathered from the patient, family interviews and clinical records. Psychosis onset was defined as the presence for 1 week or more of one of the following psychotic symptoms: delusions, hallucinations, thought disorder, marked psychomotor disorder, and bizarre, grossly inappropriate and/or disorganized behaviour with a marked deterioration in function. DUP therefore ended when treatment started, and treatment onset was operationally defined as the date on which antipsychotic medication was administered for the first time with the aim of treating psychotic symptoms (Ruiz-Veguilla et al., 2012).

2.2.3. Depressive episode prior to first episode psychosis

The Schedules for Clinical Assessment in Neuropsychiatry (SCAN) (Wing et al., 1990) enable the interviewer to accurately date symptoms and chart previous episodes of mental illness. The presence of a depressive episode was specifically evaluated for

the 6-month period preceding first contact with mental health system by the presence of psychotic symptoms used sections 6, 7 and 8 of the SCAN (absent/presente).

2.2.4. Positive and Negative Syndrome Scale

The Positive and Negative Syndrome Scale (PANSS) (Kay et al., 1989; Peralta, 1994) is a 30-item scale designed to measure positive (Items P1 to P7) and negative (Items N1 to N7) symptoms in schizophrenic patients, as well as general psychopathology (Items G1 to G16). The five-factor model proposed by Wallwork was used to measure five psychopathological dimensions: positive (Items P1, P3, P5, G9), negative (Items N1, N2, N3, N4, N6, G7), disorganisation (Items P2, N5, G11), mania (Items P4, P7, G8, G14) and depression (Items G2, G3, G6) (Wallwork et al., 2012).

2.2.5. Severity of symptoms

Severity of symptoms was evaluated to indicate the symptomatic level of the patients during most of the time of the hospitalization. Usual symptom severity assessed using an amended version of the WHO Life Chart Schedule (WHO, 1992) and rated according to a Likert rating scale: 3=severe, 2= moderate , 1=mild and 0= recovered (Van Os et al., 1999).

2.2.6. Insight

The Scale of Unawareness of Mental Disorder (SUMD) (Amador et al., 1994, 1993) was used to evaluate insight, particularly the first three items: 1) awareness of mental disorder 2) awareness of the effects of medication and 3) awareness of the social consequences of the disorder. Poor insight was defined as SUMD scores of 5, somewhat aware/unaware as SUMD scores of 2 to 4 and good insight as SUMD scores of 1.

Patients were classified in three groups (aware, partially unaware and unaware), in keeping with previous reports (Lysaker et al., 2003).

2.2.7. Personality

Personality traits were measured using the Personality Assessment Schedule (PAS) (Tyrer and Alexander., 1988; Cuesta et al., 2002), which assesses 24 personality traits on a 9-point scale of severity. This scale was modified in keeping with a previous study (Campos et al., 2011) to provide five personality clusters: schizoid, sociopathic, passive-dependent, anancastic and schizotypy using a standard formula (Campos et al., 2011). The items in the schizoid dimension were introspection, shyness, and aloofness. Sociopathic dimension items were irritability, impulsivity, aggression, callousness, and irresponsibility. Passive-dependent dimension included anxiety, vulnerability, childishness, lack of resources, and dependence. Sensitivity, conscientiousness, rigidity, and hypochondria were the items in the anancastic dimension and suspiciousness and eccentricity were the items in the schizotypy dimension. Scores for each personality dimension were created by summing the item and dividing the sum by the number of items in each cluster.

2.2.8. Substances urine analysis

Urine toxicology screening, particularly the enzyme-multiplied immunoassay technique (EMIT), a form of enzyme immunoassay analysis, was used to detect the presence of illicit substances.

2.2.9. Alcohol consumption

Alcohol use was evaluated with questions from the Systematic Interview of Alcohol Consumption (Gual et al., 2001) and grams of alcohol consumed per day were registered. The period evaluated was the month prior to the study inception.

2.2.10. Theory of mind measures

2.2.10.1. False-belief task

Theory of Mind (ToM) was evaluated using two false-belief tasks. Two stories were read out individually to participants to examine their understanding, including first- and second-order false beliefs. The first-order false belief was evaluated using the "Cigarette Story" and the second-order false belief was measured using "The Burglar Story" (Frith and Corcoran, 1996). The first-order false belief task requires an inference about a false belief about the state of the world, while the second-order false belief task involves the ability to discriminate a false belief about another's belief (Stratta et al., 2007).

Participants were asked two questions. The first question was usually responded on the basis of the mental state of one of the characters (ToM question) and concerned that character´s false belief about the situation. The second question (control question) reflected the subject´s understanding of the stories. Scoring for all questions was 0 for a correct answer and 1 for a wrong or incomplete answer based on a previous report (Mazza et al., 2001)."

2.2.10.2. Hinting task

The Hinting Task (Corcoran et al., 1995; Lahera et al., 2013) is composed of 10 brief stories, which were read out to participants. In all the stories, there were two people and one of them drops a fairly clear hint. The task evaluated the ability to infer the real intentions behind indirect speech. If participants answered the question correctly at first attempt, they received 2 points; if they did not, further information was provided to make the hint clearer. If then the subject responded the question correctly, 1

point was given. An incorrect response was scored 0. Of the original 10 stories, four of them were used to shorten the assessment duration (Janssen et al., 2003). Since the scores distributions were highly skewed, the variable was dichotomized (Janssen et al., 2003). Thus, a final score of 0 indicated good performance and those with any deficits scored 1. The short version of the Hinting task was validated in a Spanish population demonstrating good psychometric properties (Gil et al., 2012).

2.2.11. Suicide attempts

SAs were recorded: i) At baseline (suicidal history), ii) at 6 months and iii) at 12 months. Information on SAs was available for the 65 participants, none of whom was lost to follow-up.

SAs were recorded using the SCAN (Vazquez-Barquero et al., 1994; Wing et al., 1990), which includes the following question about attempted suicide: 'Have you thought about harming yourself or even attempted suicide during (period)? What happened?'. The question was answered by the participants and the responses were classified into four categories: 0) Absent, 1) Deliberately considered suicide or self-injury (intrusive thoughts) but made no attempt, 2) Injured self or made an attempt but without serious harm, 3) As 2 but with serious self-harm. SA was dichotomized as absent/present defined as scores of 2 or 3. These questions contained in SCAN capture the recommendations made by Silverman et al (Silverman et al., 2007a, 2007b) insofar as they appear to be specific, selective and sensitive to clarify what is meant by suicide attempt. The first question answered to what the above-cited authors called a type I suicide attempt while the third question captures what these authors called suicide attempt type 2 (Silverman et al., 2007b).

2.3. Statistical analyses

Statistical analyses were conducted using the Statistical Package for the Social Science (SPSS), version 23 (IBM Corp. Released, 2015). DUP was normalized (log-transformed) because its distribution was skewed.

Mann-Whitney U tests and chi-square were used in the bivariate to analyse differences in sociodemographic and clinical variables as appropriate.

Binary logistic regression analyses were built to test the real influence of the independent variables (baseline demographics, clinical variables, psychopathology, ToM), while considering inter-relationships, on the occurrence of SAs (dichotomous outcome variable, i.e. absent/present). The method used was backward stepwise selection (backward elimination conditional). Removal of the variables included in the analysis was based on the probability of the likelihood-ratio statistic based on conditional parameter estimates. The significant variables ($p \leq 0.05$) in the bivariate analyses were added to the binary logistic regression model. All tests were two-tailed and a significance level was set at 5%.

3. Results

3.1. Sample characteristics

The sample was formed of 65 Caucasian patients (Spanish nationality) suffering from a first episode of psychosis (21 women, 44 men) aged 14-54 (26.2±9.5 years); nine (13.8%) were diagnosed with affective psychosis (296.44 Bipolar Disorder, most recent episode manic, severe with psychotic features, 9 (13.8%)), while 56 (86.2%) were diagnosed with non-affective psychosis (295.90 Schizophrenia, 46 (70.8%);

295.40 Schizophreniform disorder, 6 (9.2%); 298.8 Brief Psychotic Disorder, 3 (4.6%) and 297.1 Delusional disorder, 1 (1.5%)). A total of 20 subjects (30.8%) made at least one SA over the 12-month follow-up. None of the participants died by suicide during the follow-up period. The demographic and baseline clinical characteristics of the study sample are presented in Table 1.

3.2. Bivariate analyses

At baseline, suicide attempters showed significantly more severe symptoms over hospitalization period (1.55±1.19 vs. 0.53±0.97; U=242.50, p=<0.01) and higher scores on schizoid (2.38±1.73 vs. 1.22±1.32; U=271.50, p=0.01) and sociopathic (2.31±1.48 vs. 1.51±1.08; U=302.50, p= 0.04) personality dimensions than non-suicide attempters. Significant differences were also found between suicide attempters and non-suicide attempters in the first (X^2=3.95, df=1, p=0.04) and second-order false belief (X^2=6.27, df=1, p=0.01) tasks. There were no significant differences between-groups in previous suicide attempts (X^2=0.26, df=1, p=0.87). No significant relationships were found between unawareness of mental disorder (1.50±0.69 vs. 1.33±0.71; U=390, p=0.35), presence of substances in urine analyses (X^2=0.65, df=1, p=0.42), DUP (0.05±0.82 vs. -0.02±1.07; U=299.00, p=0.87), age (26.90±9.05 vs. 26.90±10.75; U=427.00, p=0.74) and SA after FEP. There was no significant increase in SAs with alcohol consumed per day or depressed mood, although there was a trend showing a link between lower mood and increased risk of SA. See Table 1.

3.3. Binary regression models

3.3.1. Suicide attempts after first episode of psychosis

The dependent variable was SA versus non-SA. The independent variables included in the analyses were severity of symptoms at first contact with mental health services by psychotic symptoms (p=0.01), schizoid (p=0.01), sociopathic (p=0.04), first-order false belief (p=0.04) and second-order false belief (p=0.01) tasks.

The model was significant (X^2=19.23, p=0.001) and it explained from 28% (Cox and Snell R square) to 40% (Nagelkerke R square) of the variance on SAs. Severity of symptoms (OR=2.18, 95% CI= 1.25-3.82), the schizoid personality dimension (OR=1.62, 95% CI= 1.02-2.57) and first-order false belief errors (OR=4.26, 95% CI= 1.05-17.31) were the significant predictors of SAs after FEP. See Table 2.

4. Discussion

4.1. Main findings

The main findings from this study, which were relatively consistent with our hypotheses, were that i) greater severity of symptoms during the hospitalization period, ii) schizoid premorbid personality and iii) ToM deficits increased risk of suicidal behaviour in our FEP sample over a 12-month follow-up period.

4.2. Severity of symptoms

Several studies reported severity of symptoms to be a suicidal behaviour risk factor in early psychosis (Bakst et al., 2010; Pompili et al., 2011) and non-psychotic

populations (Mitter et al., 2013) consistent with our results. Moreover, early intervention programmes have demonstrated to reduce the rates of suicidal behaviour in FEP (Chang et al., 2014).

4.3. Theory of mind

Theory of mind impairments were associated with suicidal behaviour in borderline personality disorder patients (Williams et al., 2015), late-life depression (Szanto et al., 2012) and patients with psychosis (Duñó et al., 2009; Ofoghi et al., 2012). Our results were in full agreement with this since errors in first-order false belief tasks were related to SAs over the 12-month follow-up.

First-order false belief tasks represent a simple form of social problem solving, whereas the higher level of ToM measured by second-order false belief tasks in this study assesses a more sophisticated interpersonal problem (Roncone et al., 2002). Our findings indicated that while deficits in second-order false belief tasks could be related to suicidal behaviours in FEP, the failures in the simplest forms of social problem solving (first-order false belief task) predicted SAs after FEP regardless of other contributors. However, Duñó's study found second-order false belief task impairments to be linked with suicidal behaviour (Duñó et al., 2009). Indeed, first and second-order false beliefs may represent two different, although overlapping, constructs. In particular, first-order ToM appears to play a crucial role in determining clinical severity, and when first-mentalizing abilities are impaired both symptomatology and psychosocial functioning are worse (Stratta et al., 2011). A possible explanation for the difference between our results and Duñó et al's study might be that the association of suicidal behaviours with ToM tasks performance is stage-related. In particular, it seems that

during the first months after first presentation, SAs are more related to a higher level of ToM reasoning deficits while SAs in later phases may be associated with second-order ToM.

We found a high percentage of first episode patients with failures in ToM1 and ToM2, which may have been due to the influence of residual positive symptoms, in line with previous literature (Pousa et al., 2008). Further prolonged follow-up FEP studies are needed to test the real influence of first and second-order false belief on suicidal behaviour in early psychosis. In addition, it is worth noting that the groups compared in our study (suicide attempters and non-attempters) differed in years of education, which might confound ToM reasoning, especially the more demanding second-order tasks. Specifically, suicide attempters had more years of education than non-attempters.

4.4. Premorbid personality

Premorbid personality traits were reported to contribute to the aetiology, course and outcome of schizophrenia (Hulbert et al., 1996). Specifically, schizoid characteristics were identified as one of the most prominent personality traits in early psychosis patients (Dalkin et al., 1994), leading to social withdrawal (Simonsen et al., 2008). Factors within the schizoid spectrum such as isolation, loneliness and low social support were also associated with suicidal behaviour in psychotic (Pompili et al., 2007) and non-psychotic patients (Joiner, 2012). Impulsivity and personality characteristics such as hostility and aggressiveness had also been linked with suicidal behaviour in psychotic patients (Albayrak et al., 2012; Björkenstam et al., 2014). These features were included in the sociopathic dimension measured by the PAS in our study. Although both the schizoid and the sociopathic dimensions showed significant relationships with SAs

in the bivariate analyses, as postulated, only the schizoid dimension survived the multivariate analyses. Two conclusions can be drawn from these results. First, although characteristics such as aggression and impulsivity can lead to suicidal behaviour in some, but not all, FEP patients, other variables, such as symptom severity and/or ToM deficits, may mediate this association. Second, FEP patients with premorbid schizoid traits appear to be a high-risk group, which should therefore be more closely monitored after first contact with services. Hence, personality assessment may contribute to preventing suicidal behaviour in FEP patients, particularly through the identification of those with schizoid traits.

4.5. History of previous suicide attempts, insight, alcohol abuse, substance use, depressed mood, DUP and younger age.

The vast majority of individuals with suicide risk factors do not die from suicide and those who take their own lives may not have the classic risk factors (Joiner, 2010). In addition, conflicting results have been reported on the relationship between suicidal behaviour and substance misuse (Robinson et al., 2010), DUP (Nordentoft et al., 2002), depressive symptomatology (Sanchez‐Gistau et al., 2015; Upthegrove et al., 2010) and younger age at first contact (Ayesa-Arriola et al., 2015) in schizophrenia. Although we failed to replicate the relationship between previous suicide attempts (and depressive symptoms) and future suicidal events in FEP (Challis et al., 2013), it should be noted that only 20-30% of those who attempt to end their lives had done so previously irrespective of diagnosis (Mann et al., 1999), hence suggesting that our sample may have lacked sufficient power to test for this. Also, our findings were consistent with a recent 3-year follow-up FEP study, which distinguished early attempters (in the acute

stage) and late attempters (Ayesa-Arriola et al., 2015), thus suggesting a potential stage-related effect of previous suicide attempts on future suicidality. In relation to insight, although it is commonly held among clinicians that insight in psychosis may lead to an increased suicide risk, there is no evidence of this (López-Moríñigo et al., 2012; Pompili et al., 2004) which is consistent with our negative results and recent studies (Ayesa-Arriola et al., 2015; Barrett et al., 2015; Bourgeois et al., 2004). Finally, in contrast to previous literature (Challis et al., 2013) we did not replicate the influence of alcohol consumption during the 30 days prior to first contact with mental health services on SA, which may have been due to the different methods used to record alcohol consumption across studies.

4.6. Limitations

This study has some limitations, which should be taken into account when interpreting our results. First, the sample size was relatively small and therefore, the study may have been underpowered for testing some interactions between the variables investigated. Hence, our negative results should be taken cautiously given the risk of type 2 error. However, we managed to follow up suicidal behaviour in the entire original cohort thanks to the close-knit nature of our community. Second, all the independent variables or predictors of SAs were taken at baseline, which may have changed over the 12-month follow-up period. This did not allow us to capture any changes which were likely to have occurred over the 12-month follow-up period. Third, the examiners were not blind to the scales administered in this study. For instance, the psychopathology and insight assessments were not fully independent. Fourth, the personality assessments were not carried out prior to first presentation with psychosis

and they also relied on self-reports, which is subject to bias. Fifth, relevant information such as methods of SAs were not recorded. Finally, other variables, such as brain abnormalities, which were not evaluated in this study, may affect ToM abilities, personality and suicidality.

4.7. Conclusions

To the best of our knowledge, this is the first study analysing the influence of ToM and premorbid personality on SA using a prospective design in a sample of FEP patients. Its main contribution to the field emerges from finding an association between deficits in the first-order false belief tasks and the schizoid personality dimension and SA after FEP.

Social cognition has been proposed as a prerequisite for interpersonal cooperation and empathy. Impairments in subcomponents of social cognition such as ToM may cause miscommunication, disrupt interpersonal relationships and undermine lack of social support, with clear links to suicidality. The lack of social integration (O'Connor et al., 2006) and social isolation (Pompili et al., 2004) can increased risk of suicide. Poor social cognition may contribute to poor social functioning (Bora and Pantelis, 2013). Precisely during recent years therapeutic programs have appeared that taking into account aspects such as social cognition have shown improvements in social functioning (Bartholomeusz et al., 2012; Lindenmayer et al., 2013; Penn et al., 2007).

In keeping with this, personality traits such as introspection, shyness and aloofness have been linked with SA after FEP in previous literature, which is in full agreement with our results. Indeed, patients with ToM impairments tend to feel lack of social support, and the characteristics included in the schizoid dimension of the PAS, which was used in our study, are strongly related to social isolation.

Although recent studies have reported the importance of personality-related variables in other populations (Seo et al., 2014), these variables have been neglected by previous research on suicide in psychosis. However, early intervention programs have been demonstrated to reduce suicide risk (Power et al., 2003). Our results showed the importance of premorbid personality assessment and ToM deficits evaluation as part of the suicide risk assessment in psychosis. Specifically, in the light of our findings it seems that those FEP individuals with poorer ToM performance and schizoid personality traits appear to represent a high-risk group who may benefit from targeted interventions such as metacognitive therapy, although this requires further research (Pijnenborg et al., 2013). Further replication studies are warranted to investigate the role of personality dimensions, severity of symptoms and ToM impairments in suicidal behaviour.

Role of funding source

This study was supported by Ministerio de Ciencia e Innovación grant. ISC PI11/02334.

Author´s contributions

MCR: Conception of the study, study design, analysis, drafting and revising the manuscript. JDLM: Revising of the manuscript. MLB: Collecting data and revising the manuscript. SPG: Revising of the manuscript. CJC: Revising of the manuscript. ASD: Revising of the manuscript. JEOL: Conception of the study, study design, analysis and revising manuscript. MRV: Conception of the study, study design, collecting data, analysis and revising the manuscript. All authors contributed to and have approved of the final version of the manuscript.

Conflict of interest

The authors have declared that there are no conflicts of interest in relation to the subject of this study.

Acknowledgments

We thank the patients for participating in the study. We also thank the Acute Care at Virgen del Rocío University Hospital (Seville), Autonomous University of Barcelona. ASD acknowledges support from the National Institute of Health Research Biomedical Research Centre at the Institute of Psychiatry, Psychology and Neuroscience, King's College London and South London & Maudsley NHS Foundatin Trust.. San Cecilio University Hospital (Granada) for their data collection and administrative support.

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Table 1. Comparison of suicide and non-suicide attempters on baseline measures.

	Total sample (n=65)	Suicide attempters (n=20)	Non-suicide attempters (n=45)	Statistics[a]	p
Age (years), mean ±SD	26.17± 9.53	26.90±9.05	26.90±10.75	U=427.00	0.74
Gender(male), n (%)	44 (67.7%)	13 (65%)	31 (68.89%)	X^2=0.96	0.76
Education (years), mean ±SD	8.34± 3.72	9.95±4.27	7.62±3.24	U=337.00	0.08
DUP in days, mean±DS	4 (0-548)	(-)	(-)	(-)	(-)
lnDUP in days, mean±SD[b]	(-)	0.05±0.82	-0.02±1.07	U=299.00	0.87
Diagnosis (non-affective psychosis), n (%)	56 (86.2%)	16 (80%)	40 (88.89%)	X^2=0.92	0.34
Prodromal depression, n (%)[c]	18 (35.3%)	4 (20%)	14 (31.11%)	X^2=0.01	0.93
PANSS, mean ±SD					
Negative factor	13.22±7.55	13.60±7.69	13.04±7.57	U=425.00	0.72
Positive factor	13.37±4.01	12.70±3.83	13.67±4.10	U=397.50	0.45
Disorganized factor	8.57±3.94	8.25±3.23	8.71±4.24	U=431.50	0.79
Excitement factor	9.09±4.54	7.80±3.47	9.67±4.87	U=352.50	0.16
Depression factor	7.42±3.10	8.05±4.21	7.13±2.46	U=419.00	0.66
Severity of symptoms[d], mean ±SD	0.85±1.13	1.55±1.19	0.53±0.97	U=242.50	0.01
SUMD, n (%)					
Unawareness of mental disorder	33 (50.8%)	1.50±0.69	1.33±0.71	U=390	0.35
Unawareness of effects of medication	34 (52.3%)	1.40±0.68	1.36±0.77	U=446	0.95
Unawareness of social consequences of the mental disorder	29 (44.6%)	1.35±0.75	1.27±0.72	U=419	0.63
PAS, mean ±SD					
Schizoid	1.58±1.60	2.38±1.73	1.22±1.32	U=271.50	0.01
Sociopathic	1.72±1.28	2.31±1.48	1.51±1.08	U=302.50	0.04
Passive-dependent	1.34±0.92	1.58±1.01	1.27±0.82	U=364.50	0.22
Anancastic	1.66±1.46	1.84±1.42	1.47±1.41	U=372.50	0.27
Schizotypy	2.35±1.89	2.65±2.28	1.93±1.58	U=383.50	0.34
Substances urine analyses, n (%)[e]	21 (33.9%)	8 (44.44%)	13 (33.33%)	X^2=0.65	0.42
Grams of alcohol per day, mean ±SD[f]	9.94±15.87	12.55±22.44	8.70±11.70	U=397.00	0.72
ToM					
F-FBT					
Errors, n (%)	23 (38.9%)	10 (50%)	13 (28.89%%)	X^2=3.95	0.04
S-FBT					
Errors, n (%)	30 (50.8%)	13 (65%)	17 (37.78%)	X^2=6.27	0.01
Hinting Task					
Errors, n (%)	38 (58.46%)	15 (75%)	23 (51.11%)	X^2=2.94	0.08
Previous suicide attempt, n (%)	19 (29.2%)	6 (30%)	13 (28.89%)	X^2=0.26	0.87

SD: standard derivation; lnDUP: logarithmic transformation of Duration of Untreated Psychosis; PANSS: Positive and Negative Syndrome Scale; SUMD: Scale of Unawareness of Mental Disorder; PAS: Personality Assessment Schedule; PAS: Premorbid Adjustment Scale; ToM: Theory of Mind; F-FBT: First order False Belief Tasks; S-FBT: Second order False Belief Task; GAF: Global Assessment of Functioning; WHO-DAS-S: World Health Organization Disability Assessment Schedule Short.

[a] Differences between suicide attempters and non-suicide attempters analysed with chi-square and Mann-Whitney U test,

[b] n= 56

[c] n= 51

[d] During hospitalization

[e] n= 57

[f] n= 62

Table 2. Binary regression model in subsequent blocks (backward: conditional) with Suicide attempts (yes/no) as he dependent variable (n=65).

	B	*SE*	*Wald*	*P*	OR	95% CI
Severity of symptoms during hospitalization period	0.78	0.29	7.44	0.01	2.18	1.25-3.82
Schizoid	0.48	0.24	4.21	0.04	1.62	1.02-2.57
F-FBT errors	1.45	0.72	4.11	0.04	4.26	1.05-17.31

$X^2(3) = 19.23$, p=0.01, R^2 Cox and Snell=0.28, R^2 Nagelkerke= 0.40.
F-FBT: First order False Belief Tasks

Highlights

- High rates of suicidal behaviours have been reported in patients who have been diagnosed with psychosis
- Predictors of suicidal behaviours remain unknown
- The results revealed that severity of symptoms at the first contact with mental health services by psychotic symptoms, schizoid traits as well as social cognition impairments predicted suicide attempts occurred over the 12 months after first episode of psychosis.
- The main contribution of this study emerges from the association found between deficits in social cognition as well as schizoid personality traits with suicidal behaviours occurred after first episode of psychosis.