



Positive symptoms, substance use, and psychopathic traits as predictors of aggression in persons with a schizophrenia disorder

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ABSTRACT

It is still not clear what the unique contribution of particular psychopathological factors is in explaining aggression in schizophrenia. The current study examined whether persecutory ideations, psychopathy and substance use are associated with different measures of aggressive behavior. We expected that persecutory ideations are associated with reactive aggression, and psychopathic traits are more associated with proactive aggression of inpatients. 59 inpatients with schizophrenia were included. Persecutory ideations were assessed using the Persecutory Ideation Questionnaire (PIQ), psychopathic traits with the revised version of Psychopathic Personality Inventory (PPI-R) and substance use was assessed using the Comprehensive Assessment of Symptoms and History (CASH). In addition, aggression was measured with the Reactive and Proactive Aggression Questionnaire (RPQ), in an experimental task using the Point Subtraction Aggression Paradigm (PSAP) and on the ward using the Social Dysfunction and Aggression Scale (SDAS). Results showed that psychopathy explains most of the variance in self-reported proactive and reactive aggression. In contrast, persecutory ideations explain most of the variance in observed aggression on the ward. Results implicate that it is important to acknowledge comorbid factors in patients with schizophrenia for more precise risk assessment and appropriate treatment for aggressive patients with schizophrenia.

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1. Introduction

Previous studies found that there is a small but significant relation between psychosis and aggressive behavior (see Bo et al., 2011; Douglas et al., 2009; Fazel et al., 2009 for reviews). There are several factors that can explain this relation including decreased mentalizing abilities (i.e. mentalizing; Bo et al., 2015) Cognitive dysfunctions (see Reinharth et al., 2014 for a meta-analysis), and personality pathology (e.g. Bo et al., 2013b). In a recent review, Lamsma and Harte (2015) described the complex interrelation between these different factors, but also conclude that the exact (casual) relation between these factors and aggression in schizophrenia is still not clearly understood. In this paper we focus on particular psychopathological risk factors that are found to play an important role. Firstly, psychotic symptoms of the schizophrenia disorder can play a role. Taylor (1985) found that offenses were motivated in 90% of offenses. Delusions, especially persecutory

delusions, seem to account for most of the (violent) offending of persons with a psychotic disorder (Cheung et al., 1997; Swanson et al., 2006; Taylor, 1998). Secondly, comorbidity of substance use in patients with schizophrenia is related to an increased risk of violent and even homicidal behavior (Erkiran et al., 2006; Goethals et al., 2008; Soyka, 2000), and may even be a mediator in this relation (Fazel et al., 2009). Thirdly, among persons with schizophrenia, dissociative personality (Bo et al., 2013b) and psychopathic traits (Bo et al., 2013a; Tengström et al., 2000) have been shown to be related to both violent and non-violent crime. Moreover, some studies conclude that psychopathy (as measured with the Psychopathy Checklist-Revised; PCL-R; Hare, 1991) is the best single predictor of future violence in those with a mental illness (Salekin et al., 1996; Tengström et al., 2000). Despite the large amount of literature concerning the role of positive symptoms, substance use, and psychopathic traits in the relation between schizophrenia and violence, it is not clear what the unique contribution is of each of these factors in different measures of aggression and violence.

Although aggression can be defined in different ways and a dichotomy might be somewhat simplistic (Bushman and Anderson, 2001), in the current paper we use reactive and proactive

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aggression as a distinction in aggression type (Crick and Dodge, 1996). Reactive aggression (i.e. impulsive aggression) is a form of aggression as a reaction on a provocation and most often characterized by hostility (Dodge and Coie, 1987). Information processing deficits are implicated in this type of aggression and may be associated with cognitive and perceptual features of the psychotic illness that lead to reactive aggression. Proactive (i.e. instrumental or premeditated) aggression is a so called cold-blooded form of aggression and often motivated by external reward (Raine et al., 2006). Therefore, besides its association with reactive aggression, psychopathy is also associated with proactive aggression (Bo et al., 2013a; Cornell et al., 1996).

The main aim of the present study was to examine the unique contribution of psychopathic traits, substance use, and persecutory ideations in the relation between these factors and different measures (and types) of aggression in inpatients with schizophrenia or related disorder. Based on the literature outlined above, we expected that psychopathic traits are associated to reactive aggressive behavior. Since substance use can be related to both reactive aggression (while intoxicated) and to proactive aggression (when used for acquiring substances), no direct predictions are formulated for the relation between substance use and aggression.

2. Methods

2.1. Participants

The sample consisted of 59 male inpatients hospitalized in two different general psychiatric hospitals. All patients were diagnosed according to the DSM-IV-TR criteria (American Psychiatric Association, 2000). Inclusion criteria were diagnosis of a schizophrenia spectrum disorder present for at least 2 years, and age between 18 and 60 years of age. Patients who had cognitive deficits or had intellectual disabilities (as indicated in the patient file) or/and had another neurological disorder, other than the schizophrenia, were excluded.

Of the total patient sample, 83.3% met the diagnostic criteria for schizophrenia, 11.7% of the patients were diagnosed with a schizoaffective disorder, and 5% had a psychotic disorder Not Otherwise Specified (NOS). 43.3% of the patients had a comorbid substance use disorder. All patients received prescribed medication. Haloperidol (23.3%) was most common, but also zuclopentixol (18.3%), clozapine (16.7%), and risperidon (15.5%) were often prescribed. Average age of the inpatients was 33.58 ($SD=9.81$, range 19–58). 41.7% of the participants were Dutch, 8.3% were from other West-European countries, 11.7% were from the Dutch Antilles, 15% from Suriname, 15% were African, and 8.4% from other countries.

2.2. Measures

2.2.1. Diagnostics and positive symptoms

The Mini International Neuropsychiatric Interview (MINI-Plus; Sheehan et al., 1998; Van Vliet et al., 2000) section M for psychotic disorders was used as a check for the presence of a psychotic disorder in the patients. The MINI-Plus is a short structural diagnostic interview, consisting of 26 modules assessing Axis-I disorders according to the DSM criteria.

The Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987; De Ruiter and Hildebrand, 1999) is a semi-structured interview for the assessment of positive and negative symptoms of psychosis and symptom severity. The interview consists of 30 items scored on a 7-point scale with a range between 1 (*absent of symptom*) tot 7 (*extreme severity*). Next to Total scores, scores on three subscales can be determined: positive subscale (7 items), negative subscale (7 items), and general psychopathology subscale

(16 items).

The Persecutory Ideation Questionnaire (PIQ; McKay et al., 2006; Van Dongen et al., 2011) consists of 10 items scored on a 5-point Likert scale ranging from 0 (*not true*) to 4 (*true*). This scale measures the level of persecutory ideation, and is suitable to be used as a measure of persecutory ideation in the general population (McKay et al., 2006; Van Dongen et al., 2011). Total scores range from 0 to 40, and a higher score refers to more persecutory ideations. Reliability of this measure in the current sample, as determined by its internal consistency was good ($\alpha=.89$).

2.2.2. Psychopathic traits

The Psychopathic Personality Inventory-Revised (PPI-R; Lilienfeld and Widows, 2005; Uzieblo et al., 2006), is a questionnaire which measures psychopathic personality traits on a 4-point Likert scale ranging from 1 (*not true*) to 4 (*true*). The PPI-R consists of 154 items and consists of three different factors: Fearless-Dominance (PPI-R-I), Impulsive-Antisociality (PPI-R-II), and Coldheartedness (PPI-R-III). Reliability as determined by internal consistency for the whole scale was good ($\alpha=.80$), as well as for the subscales (α ranged from .70 to .87).

2.2.3. Substance use

The Comprehensive Assessment of Symptoms and History (CASH; Andreasen, 1987) is a semi-structured diagnostic interview. The CASH section on substance use was administered to assess past and current substance use of the patient. The section consists of 35 items on the use of alcohol, soft drugs (e.g. cannabis) hard drugs (e.g. amphetamines, cocaine), nicotine and caffeine. For the current study, use of any substance in the previous month was used as a dichotomous variable in the prediction of aggression.

2.2.4. Aggressive behavior

Self-reported reactive and proactive aggression was measured using the Reactive Proactive Aggression Questionnaire (RPQ; Raine et al., 2006; Cima et al., 2013). The RPQ consists of 23 items scored on a 3-point Likert scale ranging from 0 (*never*) to 2 (*often*). Twelve items make up the proactive subscale, and 11 items make up the reactive subscale. Earlier studies have shown good internal reliabilities for total RPQ, reactive and proactive subscales (Raine et al., 2006; Cima et al., 2013). In the current sample internal consistency for the whole scale ($\alpha=.76$), and for the subscales reactive aggression ($\alpha=.72$) and proactive aggression ($\alpha=.74$) was acceptable.

Experimentally induced aggressive responding was measured using the Point Subtraction Aggression Paradigm (PSAP; Cherek, 1992). The PSAP is a well validated measure of aggression in a laboratory setting (e.g. Cherek et al., 1997). The version we used in the current study is a one session version of the PSAP which has shown to be a valid measure (see Golomb et al., 2007 for details). The session duration was 25 min. The participant was told that he could earn money based on his performance on a computer task, during which he would be paired with a (fictitious) opponent. The goal was to gain as many points as possible because these points would be exchangeable for money at the end of the experiment.

Observed aggression on the ward was measured with the Social Dysfunction and Aggression Scale (SDAS; Wisted et al., 1990; Van der Werf and Staverman, 1999). Using this scale, dysfunctional behavior of the patient is registered. The scale is filled out by the staff members/nurses on the ward. It consists of 11 items scored in a 5-point Likert scale ranging from 0 (*not present*) to 4 (*severely present*). The two items regarding self-harm were excluded so that we only assessed externally oriented aggressive tendencies.

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