Baseline social amotivation predicts 1-year functioning in UHR subjects: A validation and prospective investigation

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Abstract
Social amotivation and diminished expression have been reported to underlie negative symptomatology in schizophrenia. In the current study we sought to establish and validate these negative symptom domains in a large cohort of schizophrenia subjects (n=887) and individuals who are deemed to be Ultra-High Risk (UHR) for psychosis. Confirmatory factor analysis conducted on PANSS item domains demonstrate that the dual negative symptom domains exist in schizophrenia and UHR subjects. We further sought to examine if these negative symptom domains were associated with functioning in UHR subjects. Linear regression analyses confirmed that social amotivation predicted functioning in UHR subjects prospectively at 1 year follow up. Results suggest that the association between social amotivation and functioning is generalisable beyond schizophrenia populations to those who are at-risk of developing psychosis. Social amotivation may be an important dimensional clinical construct to be studied across a range of psychiatric conditions.

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1. Introduction

Negative symptoms have been identified as a feature of schizophrenia as early as Kraepelin (1919) and Bleuler’s (1950) conceptualizations of the illness. Indeed, three major symptom domains have been identified in schizophrenia and other psychotic disorders: positive, cognitive and negative symptoms (APA, 2000; Mueser and McGurk, 2004). Negative symptoms include blunted affect, alogia, asociality, avolition and anhedonia (Andreasen, 1982; Kirkpatrick et al., 2006a, 2006b). Psychometric evaluations of symptomatology in schizophrenia have provided robust evidence for the existence of negative symptoms as a distinct symptom domain in schizophrenia and psychotic disorders (Blanchard et al., 2006; Van der Gaag et al., 2006a, 2006b). Further, recent work focused on understanding the sensitivity and dimensionality of negative symptoms as a construct has confirmed that a continuum perspective of negative symptoms holds true for individuals at-risk for psychosis, first degree relatives of schizophrenia probands, other neuropsychiatric conditions and the general population (Blanchard et al., 2005; Foussias et al., 2014; Galderasi et al., 2013; Kaiser et al., 2011; Strauss et al., 2010, 1974).

Negative symptoms are typically measured by clinical rating scales administered by clinicians, researchers or allied health staff. They are captured in a number of commonly used scales such as the Brief Psychiatric Rating Scale (Overall and Gorham, 1962), Scale for the Assessment of Negative Symptoms (SANS; Andreasen, 1982), Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987), and Schedule for the Deficit Syndrome (SDS; Kirkpatrick et al., 1989a, 1989b). Recent work by our group (Jiang et al., 2013) and those of Liemburg et al. (2013) continue to support the existence of the negative symptom domain in cohorts of schizophrenia subjects.

The case for subclassifying negative symptoms, for example (i) Diminished Expression and (ii) Social Amotivation (Foussias et al., 2014; Foussias and Remington, 2010; Kelley et al., 1999; Kimhy et al., 2006; Mueser et al., 1994; Peralta and Cuesta, 1999; Sayers et al., 1996). More recently, the DSM-V has proposed a two-subdomain model of negative symptoms that includes (i) expressive deficits and (ii) avolition for social activities. Such dimensional constructs could have important implications for research, diagnostics and treatment (Blanchard and Cohen, 2006; Kirkpatrick and Fischer, 2006a, 2006b; Messinger et al., 2011). Though evidence suggests a common underlying pathogenic process for negative symptoms, Amotivation and Diminished Expression deficits continue to be psychometrically and phenomenologically separable (Foussias and Remington, 2010; Mueser et al., 1994; Peralta and Cuesta, 1999; Sayers et al., 1996). Recent evidence confirms the existence of these two domains of negative symptoms, evident based on PANSS administration in early episode schizophrenia and other milder psychotic disorders (Liemburg et al., 2013; Messinger et al., 2011), as well as in patients with established schizophrenia (Fervaha et al., 2014). Preliminary reports indicate that expressive deficits tend to associate with neuropsychological function, while social amotivation is more strongly linked to self-reported symptoms, quality of life and social cognitive deficits (Bell et al., 2013; Foussias and Remington, 2010; Liemburg et al., 2013).

Schizophrenia is a disorder marked by poor functional outcomes (Jobe and Harrow, 2005; McGlashan, 1988). Negative symptoms broadly defined have also been implicated in worse functional outcomes (Hovington et al., 2012; Kirkpatrick et al., 2001; Pinkham et al., 2003; Strauss et al., 2013, 2010; Blanchard et al., 2005; Ho et al., 1998; Milev et al., 2005; Rosenheck et al., 2006). Links with impairment in specific functional domains have included occupational functioning, household integration, social functioning, engagement in recreational activities and quality of life (Blanchard et al., 2005; Ho et al., 1998; Hunter and Barry, 2012; Leffiker et al., 2009; Maia and Payne, 2005; Milev et al., 2005; Rabinowitz et al., 2012; Rosenheck et al., 2006; Verma et al., 2012). It has been argued that amotivation makes a unique contribution to the variance of functioning in schizophrenia subjects (Foussias and Remington, 2010) with evidence that there is a significant relationship between the amotivation subdomain of negative symptoms and functional outcomes in schizophrenia cross-sectionally as well as longitudinally (Faerden et al., 2010, 2009; Foussias and Remington, 2010; Foussias et al., 2009; Green et al., 2012; Kiang et al., 2003; Konstantakopoulos et al., 2011; Sayers et al., 1996).

Negative symptoms have been frequently reported in individuals at-risk of psychosis, and are thought to predate psychosis onset (Cornblatt et al., 2003; Gourzis et al., 2002; Yung and McGorry, 1996). The manifestation of negative symptoms early in the developmental course of schizophrenia includes symptoms of avolition, diminished emotional expression, decreased ideation richness as well as social isolation and withdrawal (Demjaha et al., 2012; Hawkins et al., 2004; Yung and McGorry, 1996). In line with findings in schizophrenia, negative symptoms in individuals at-risk of psychosis are consistently associated with impaired functioning (Corcoran et al., 2011; Demjaha et al., 2012; Niendem et al., 2006; Svirskis et al., 2007). Though negative symptoms have been recognised across the schizophrenia spectrum and in the early prodromal phases of the illness (Foussias et al., 2014), it remains less clear as to whether negative symptoms in this early stage of schizophrenia reflect the same two-domain constellation that characterizes later stages of the illness.

In the current study, we sought to validate the negative symptom structure in a large cohort of individuals with schizophrenia, and subsequently in a sample of Ultra High-Risk (UHR) individuals. It was hypothesised that similar substrates that give rise to negative symptom manifestations exist in both UHR and schizophrenia samples, thus we would expect to observe two negative symptom domains (i) Social Amotivation and (ii) Diminished Expression and that the former would be associated with functional impairment in UHR individuals.

2. Experimental procedures

2.1. Subjects

Two cohorts of subjects are reported in the current study. The first consisted of 887 schizophrenia subjects, the second consisted of 173 UHR subjects (See Lim et al., 2015; Lee et al., 2013, 2010; Jiang...
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