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The role of dysfunctional attitudes in models of negative symptoms and functioning in schizophrenia

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ABSTRACT

Neurocognitive impairment is associated with negative symptoms and poor real world functioning in schizophrenia. Dysfunctional attitudes (e.g., “If I fail partly, it is as bad as being a complete failure”) have been found to mediate these relationships between neurocognition and negative symptoms and functioning. In this study, these relationships were examined in 179 participants with schizophrenia or schizoaffective disorder using structural equation modeling. Defeatist attitudes were found to mediate the relationship between neurocognition and negative symptoms but not the relationships between neurocognition and performance-based or self-reported functioning. A full model with the best fit showed mediation between neurocognition and self-reported functioning through two different pathways: One from neurocognition to functional skill capacity to real-world functioning, and a second from neurocognition to defeatist attitudes to negative symptoms to real-world functioning. These results may implicate skill deficits and defeatist attitudes as a separate treatment targets for negative symptoms and functioning in schizophrenia.

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1. Introduction

Schizophrenia leads to profound deficits in real world functioning, but the causes of functional impairment in schizophrenia are not fully understood. It is now well-established that neurocognitive impairment is associated with poor functioning and decreased quality of life in schizophrenia (Green, 1996; Green et al., 2004), but the relationship between neurocognitive impairment and functioning is mediated by several factors. For example, neurocognitive impairment is associated with negative symptoms, and negative symptoms have been found to mediate the relationship between neurocognitive impairment and functioning (Bowie et al., 2006; Harvey et al., 2006; Ventura et al., 2009; Lin et al., 2013). In addition, strong relationships have also been found between neurocognition and functional skill capacity, which in turn is associated with real world functioning (Twamley et al., 2002; Bowie et al., 2006, 2008). Social cognition abilities, such as perceiving and interpreting the facial affect and intentions of other people, have also been found to mediate the relationship between neurocognition and functional outcome (Green et al., 2008; Schmidt et al., 2011).

In a promising new theoretical model, Beck and colleagues (Rector et al., 2005; Beck et al., 2009; Grant and Beck, 2009) proposed that dysfunctional attitudes mediate the relationships between neurocognition and negative symptoms and functioning in schizophrenia. In their model, neurocognitive deficits can contribute to failure experiences and difficulties in performing daily living tasks, which may lead to the development of dysfunctional attitudes and negative appraisals about one's self and one's ability to perform goal-directed tasks. These attitudes and negative appraisals may contribute to negative symptoms, such as amotivation, apathy, and social disinterest, as well as a lack of engagement in goal-directed functioning tasks. Perivoliotis and Cather (2009) discussed the role of neurocognition in the development of defeatist performance beliefs. Their case formulation suggests that neurocognitive impairment might lead to repeated failure experiences which in turn can lead to the development of dysfunctional attitudes as a coping mechanism in which the individual has a low level of expectation for themselves and for their experience of pleasure (Perivoliotis and Cather, 2009).

Dysfunctional attitudes (e.g., “Why bother, I'll just fail again”) have typically been measured using the Defeatist Performance Attitude Scale (DPAS; Cane et al., 1986), a subscale of the Dysfunctional Attitude Scale (DAS; Weissman, 1978). Several studies have found significantly greater severity of defeatist beliefs on the DPAS in individuals with schizophrenia relative to healthy controls, as well as significant moderate correlations between severity of defeatist beliefs and neurocognition,

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negative symptoms and functioning (Rector, 2004; Grant and Beck, 2009; Horan et al., 2010; Couture et al., 2011). Furthermore, using Path analysis in participants with schizophrenia or schizoaffective disorder ($N = 55$) selected for high negative symptoms, Grant and Beck (2009) found that severity defeatist beliefs on the DPAS mediated the relationship between neurocognitive abilities and negative symptoms, as well as the relationship between neurocognitive abilities and subjective quality of life.

These results from Grant and Beck (2009) were only partially replicated in subsequent modeling studies. Using structural equation modeling (SEM) in consumers with schizophrenia or schizoaffective disorder ($N = 111$), Horan et al. (2010) found that defeatist beliefs on the DPAS mediated the relationship between functional capacity and negative symptoms, but not the relationship between functional capacity and interviewer-rated real world functioning. In a global model with the best fit, Horan et al. (2010) found that the link between defeatist attitudes and functioning was mediated by severity of negative symptoms. Using SEM in a large sample of individuals with schizophrenia or schizoaffective disorder ($N = 191$), Green et al. (2012) also found that the link between defeatist attitudes and functioning was mediated by negative symptoms, and the model with the best fit was a single pathway model from visual information processing (backward masking), to social cognition abilities, to defeatist beliefs (DPAS), to experiential negative symptoms (amotivation/asociality), and finally to interviewer-rated functioning.

The present study attempted to replicate and extend prior modeling research on the role of defeatist attitudes as a mediator in the relationships between neurocognition and negative symptoms and functioning in schizophrenia in a large sample of consumers with schizophrenia or schizoaffective disorder ($N = 179$). All models included only experiential negative symptoms, because prior research found stronger associations between defeatist attitudes and experiential, relative to expressive, negative symptoms (Couture et al., 2011; Green et al., 2012). All models tested were a priori models based on prior research. First, following the original models presented by Grant and Beck (2009), models were tested to examine whether defeatist attitudes (DPAS) mediated the relationships between neurocognition and negative symptoms and between neurocognition and functioning, using performance-based and self-report measures of functioning. Two global models were then tested. First, a dual-pathway model with two mediational paths between neurocognition and real-world functioning was tested: One well-replicated pathway from neurocognition to functional skill capacity to real-world functioning (Twamley et al., 2002; Bowie et al., 2006), and a second pathway following the Beck model from neurocognition to defeatist attitudes to negative symptoms to real-world functioning. This dual-path model was compared with the single-path model reported by Green et al. (2012). Based on the prior modeling research reviewed above, we hypothesized that defeatist attitudes would mediate the relationship between neurocognition and negative symptoms, but not the more objective functioning measures in this study, and that the link between defeatist attitudes and functioning would be mediated by experiential negative symptoms. We also predicted that the single-path model would result in a better fit than the dual-path model, since Green et al. (2012) found that a similar single-path model could not be improved by adding additional paths.

2. Methods

2.1. Participants

This study was approved by the Human Research Protections Program of the University of California, San Diego, and written informed consent was obtained from all participants or their legal guardians. Participants were consumers ($N = 179$) with a diagnosis of schizophrenia ($N = 127$) or schizoaffective disorder ($N = 52$) based on the Structured Clinical Interview for DSM-IV (SCID; First et al., 1994) and available record review, as determined by a Ph.D. level clinical psychologist.

Participants were stable, community-dwelling outpatients. Acutely ill participants who could not participate in outpatient psychotherapy in the parent trial were excluded. The measures used in this study were collected during the baseline assessment in psychosocial clinical trials (Granholm et al., 2013, in press). Participants were at least 18 years old (range = 18–78) and were excluded for comorbid medical conditions or active current substance abuse that would interfere with assessments or participation in outpatient group therapy, non-fluent in English, or receiving cognitive-behavioral therapy in the past five years ($N = 39/495$, or 7.8% of screened patients were excluded for prior CBT). Nearly all (97%) participants reported taking at least one antipsychotic medication, and 26% reported taking an antidepressant or mood stabilizer. Demographic and symptom characteristics of the sample are provided in Table 1. Written informed consent was obtained from all participants, or for persons under conservatorship ($N = 12$; 6.7%), consent was obtained from participants and their conservator/legal guardian.

2.2. Measures

2.2.1. Negative symptoms

Based on factor analytic studies (Sayers et al., 1996; Blanchard and Cohen, 2006) two factor scores were created from the Scale for Assessment of Negative Symptoms (SANS; Andreasen, 1984): Experiential Negative Symptoms (mean of Avolition/Apathy – Item 17- and Anhedonia/Asociality – Item 22-global scores) and Expressive Negative Symptoms (mean of Affective Flattening – Item 8- and Alogia – Item 13-global scores). These items are scored from 0 (not at all) to 5 (severe). The global score for Attention was dropped due the fact that attention is now considered to overlap with domains of neurocognition and thought disorder dimensions (Sayers et al., 1996; Blanchard and Cohen, 2006). Inter-rater reliability (ICC) was .83 for the SANS. Consistent with a prior research (Couture et al., 2011; Green et al., 2012), we focused on Experiential Negative Symptoms in the models.

2.2.2. Defeatist performance attitudes

A subscale of the Dysfunctional Attitudes Scale (DAS; Weissman, 1978), the Defeatist Performance Attitude Scale (DPAS), was administered. The original DAS has shown good internal consistency in an adult population of .85 (Oliver and Baumgart, 1985), and good test-retest reliability of .84 over a 2 month period (Cane et al., 1986). The DPAS

Table 1
Demographic information and descriptive statistics.

Variable	Mean (SD)
Age	46.4 (11.0)
Years of education	12.3 (1.9)
Caucasian, %	59
Male, %	63
Assisted living, %	65
Duration of illness	20.9 (12.1)
PANSS total	68.3 (18.8)
PANSS Positive	19.0 (6.5)
PANSS Negative	15.6 (6.1)
Expressive negative symptoms	3.4 (2.3)
Experiential negative symptoms	4.2 (2.3)
Defeatist beliefs (DPAS)	52.2 (17.2)
Speed of processing	35.8 (8.4)
Working memory	39.6 (8.7)
Verbal learning	28.6 (10.6)
Frontal/executive functioning	39.3 (8.5)
MASC verbal	3.29 (1.08)
MASC non-verbal	3.32 (1.06)
MASC effectiveness	3.33 (1.17)
ILSS	0.666 (.098)

Note: PANSS = Positive and Negative Syndrome Scale; DPAS = Defeatist Performance Attitude Scale; MASC = Maryland Assessment of Social Competence; and ILSS = Independent Living Skills Scale.

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