Psychological predictors of functional outcome in people with schizophrenia

Jacqueline N. Kiwanuka *, Gregory P. Strauss [1], Robert P. McMahon, James M. Gold

Department of Psychiatry, University of Maryland School of Medicine, Maryland Psychiatric Research Center, P.O. Box 21247, Baltimore, MD 21228, United States

ABSTRACT

Background: There is increasing evidence that psychological factors (e.g., defeatist performance beliefs, trait negative affect) contribute to poor functional outcome in people with schizophrenia. In the current study, we evaluated whether multiple psychological factors predict poor functional outcome in individuals with schizophrenia, and whether associations between psychological variables and functional outcome persist even after accounting for neuropsychological impairment and negative symptoms.
Methods: 100 patients meeting diagnostic criteria for schizophrenia or schizoaffective disorder and 78 demographically matched healthy control subjects completed self-report psychological measures, neuropsychological testing, and clinical rating scales.
Results: Self-report scales assessing negative affectivity, defeatist performance beliefs, anhedonia, and behavioral inhibition were significantly correlated with functional outcome in people with schizophrenia. Neuropsychological impairment was associated with vocational outcome, whereas most of the self-report measures were related to social outcome. Defeatist performance attitudes were not correlated with neuropsychological performance.
Conclusions: Self-report measures predict variance in functional outcome beyond measures of clinical symptomatology and neuropsychological impairment. Findings indicate that psychological factors may be meaningful targets for psychosocial interventions aimed at improving functional outcome in schizophrenia.

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1. Introduction

Recent schizophrenia literature has increasingly focused on predictors of functional outcome (Vita et al., 2013; Holhausen et al., 2014). There is well-replicated evidence that cognitive performance is related to a range of functional outcomes, including residential independence and vocational status (Bowie and Harvey, 2006; Nuechterlein and Green, 2006). Impairments in social cognition are related to poor functional outcomes and may mediate the relationship between cognitive impairment and outcome (Grant and Beck, 2009; Horan et al., 2010; Schmidt et al., 2011). However, cognitive deficits are not the only predictors of poor functional outcome. There is growing evidence for the role of dysfunctional attitudes and beliefs in poor functional outcome. In one model, Grant and Beck (2009) have proposed that cognitive deficits are a proximal cause for the experience of failure in the pursuit of instrumental or social goals. These failure experiences then lead to the development of a set of defeatist attitudes (e.g., "If you cannot do something well, there is little point in doing it at all."), which undermine motivation and engagement in social and vocational activities. Grant and Beck (2009) found that defeatist beliefs were mediators in the relationship between cognitive impairment and both functional outcome and negative symptoms. Using structural equation modeling, Horan et al. (2010) found support for the role of psychological factors in functional outcome as evidenced by a significant pathway from functional capacity → dysfunctional attitudes → negative symptoms → real world functioning.

One question that arises from the work on defeatist performance beliefs (DPB) is whether similar relationships to functional outcome might occur with other psychological factors. For example, high negative affectivity is associated with poor functional outcome, reduced quality of life, and heightened stress reactivity (Horan et al., 2008). Self-reported anhedonia is also associated with impaired social and vocational outcomes (Kirkpatrick and Buchanan, 1990; Horan and Blanchard, 2003; Strauss and Herbener, 2011).

Given the associations between multiple psychological factors and functional outcome, the current study aims to build on the model proposed by Grant and Beck (2009) by determining which psychological factors (e.g., DPB, negative affectivity, etc.) are most predictive of poor social and vocational functioning in people with schizophrenia. We also evaluate whether the contribution of psychological factors to poor functional outcome persist after accounting for other predictors of

* Correspondence author at: Maryland Psychiatric Research Center, P.O. Box 21247, Baltimore, MD 21228, United States. Tel.: +1 410 402 7145; fax: +1 410 402 7198.

E-mail addresses: jkiwanuka@mprc.umaryland.edu (J.N. Kiwanuka), gstrauss@binghamton.edu (G.P. Strauss), rmcmahon@mprc.umaryland.edu (R.P. McMahon), jgold@mprc.umaryland.edu (J.M. Gold).

[1] Present Address: Department of Psychology, State University of New York at Binghamton, P.O. Box 6000, Binghamton, NY 13902, United States.

poor functioning, including neuropsychological impairment and clinical ratings of negative symptoms.

2. Methods

2.1. Participants

One hundred patients meeting Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV; American Psychiatric Association, 1994) criteria for schizophrenia (N = 86) or schizoaffective disorder (N = 14), and 78 demographically matched healthy control subjects participated in this study. Patients were recruited from outpatient clinics at the Maryland Psychiatric Research Center and from community mental health centers. Patient diagnosis was established using a best estimate approach in which information from a Structured Clinical Interview for DSM-IV (SCID) (First et al., 1997) was combined with a review of patient medical records at a consensus diagnosis meeting chaired by one of the authors. All patients were clinically stable as determined by their clinician. Additionally, patients were assessed while receiving stable medication regimens (no changes in type or dose of psychotropic medication within 4 weeks prior to study).

Healthy controls were recruited via a combination of random digit dialing and posted advertisements. Controls had no self-reported family history of psychosis, were not taking psychotropic medications, and were free from Axis I and Axis II diagnoses as determined by the SCID (First et al., 1997) and the Structured Interview for DSM-III-R Personality Disorders (SIDP-R) (Pfohl et al., 1989).

Demographic information is summarized in Table 1. Patient and control groups did not significantly differ in age, parental education, sex, or ethnicity. Patients had significantly fewer years of education than controls (p < 0.001).

2.2. Clinical and cognitive assessments

Participants completed the Wechsler Abbreviated Scale of Intelligence (WASI; Wechsler, 1999), the Wide Range Achievement Test Reading (WRAT; Wilkinson and Robertson, 2006), the Wechsler Test of Adult Reading (WTAR; Wechsler, 2001), and the MATRICS Consensus Cognitive Battery (MCCB; Nuechterlein and Green, 2006). The Brief Psychiatric Rating Scale (BPRS; Overall and Gorham, 1962) and Scale for the Assessment of Negative Symptoms (SANS; Andreasen, 1984) were administered to assess global psychiatric and negative symptoms, respectively. Because the SANS Avolition and Anhedonia Scales query similar behaviors to the Level of Function Scale, our primary correlational analyses utilized the sum of the Affective blunting and alogia global items. The Level of Function Scale (LOF; Hawk et al., 1975), a seven-item scale, was used to assess functional outcome. Three scores were calculated from the LOF: 1) a total score (sum of five items, excluding items pertaining to symptom severity), 2) a social outcome score (sum of two items reflecting frequency and quality of social interactions), 3) a vocational outcome score (sum of two items reflecting work status and work quality).

2.3. Self-report measures

The Positive and Negative Affect Schedule-Version X (PANAS-X; Watson and Clark, 1994) was used to assess trait positive and negative emotional experiences. The Behavioral Inhibition System and Behavioral Activation System Scales (BIS/BAS Scales; Carver and White, 1994) were used to assess BIS and BAS sensitivities. Scales for and Physical and Social Anhedonia (Chapman et al., 1976) were used to assess beliefs about pleasure that can be experienced during social and physical activities. The Defeatist Performance Belief Scale (DPB Scale: Grant and Beck,

Table 1
Demographics and clinical characteristics of patients with schizophrenia and healthy control comparison participants.

	Schizophrenia (N = 100)		healthy control (N = 78)		
	Mean	SD	Mean	SD	Group comparison
Demographics					
Age	41.14	10.58	40.68	10.42	F = 0.1; p = 0.77
Gender (%males)	68		70		X^2 (1, N = 178) = 0.1; p = 0.42
Race and ethnicity (%Cauc:%AA: %Other: %His)	56:39:5:5		66:28:6:4		X^2 (6, N = 178) = 9.9; p = .13
Personal education	12.76	2.22	15.01	2.00	F = 49.2; p < 0.001
Mother's education	13.51	2.56	13.91	2.33	F = 1.1; p = 0.29
Father's education	13.66	3.38	13.93	3.05	F = 0.3; p = 0.58
Neuropsychology measures					
WASI	98.69	15.38	117.26	11.15	F = 80.6; p < 0.001
WRAT4	94.27	14.58	109.76	14.49	F = 49.7; p < 0.001
WTAR	96.03	17.07	111.51	11.88	F = 46.5; p < 0.001
MCCB	30.95	13.90	54.06	10.14	F = 152.2; p < 0.001
Clinical ratings					
BPRS	33.60	8.70			
SANS Affective Blunting and Alogia	2.86	2.01			
Functioning					
LOF Total	15.05	6.01			
LOF Work	2.99	2.81			
LOF Social	4.48	2.49			
Self-report measures					
Defeatist performance beliefs (total score)	47.23	15.58	34.08	12.06	F = 37.8; p < 0.001
Chapman Physical & Social Anhedonia Scales					
Physical Anhedonia	16.23	7.25	9.64	5.13	F = 46.2; p < 0.001
Social Anhedonia	12.29	7.10	7.37	5.31	F = 26.0; p < 0.001
PANAS					
Positive Affect	27.51	7.01	32.35	4.82	F = 27.1; p < 0.001
Negative Affect	19.90	7.16	14.69	4.62	F = 31.0; p < 0.001
BIS/BAS					
BIS subscale	21.51	3.50	18.87	3.50	F = 24.7; p < 0.001
BAS subscale	40.88	6.03	49.17	4.39	F = 0.8; p = .38

WASI — Wechsler Abbreviated Scale of Intelligence; WRAT — Wide Range Achievement Test Reading; WTAR — Wechsler Test of Adult Reading; MCCB — MATRICS Consensus Cognitive Battery; BPRS — Brief Psychiatric Rating Scale; SANS — Scale for the Assessment of Negative Symptoms; LOF — Level of Function Scale; PANAS-X — Positive and Negative Affect Schedule-Version X; BIS/BAS — Behavioral Inhibition System/Behavioral Activation System Scales.