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Associations of independent living and labor force participation with impairment indicators in schizophrenia and bipolar disorder at 20-year follow-up

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ABSTRACT

Background: Since the Iowa 500 study, residential and occupational status have been frequently used as indicators of everyday achievements in research on schizophrenia and bipolar disorder. The relationships of residential and occupational status with impairment in multiple domains including physical health indicators across these two diagnoses, however, have rarely been studied. We examined these relationships at the 20-year follow-up assessment of a first-admission sample.
Methods: We included 146 participants with schizophrenia and 87 with bipolar disorder with psychosis who participated in the 20-year follow-up of the Suffolk County Mental Health Project. In addition to interviewer-based ratings of employment and residential independence, we examined self-reported impairment derived from the WHODAS, standard measures of current psychopathology, indicators of obesity, as well as performance-based measures of physical and cognitive functioning.
Results: Participants with bipolar disorder were more likely to live independently and be gainfully employed; they also performed significantly better on each indicator of impairment apart from balance ability. In both groups, unemployment, but not residential independence, was associated with greater self-reported disability on the WHODAS. Residential independence, gainful employment, and subjective disability were also associated with better physical functioning. Across the two groups, psychiatric symptoms and physical functioning were the major determinants of subjective disability.
Discussion: People with psychotic bipolar disorder were more likely to be gainfully employed and living independently than participants with schizophrenia but as a group, much less frequently than population standards. Interventions aimed at physical fitness may have the potential to improve both objective functioning and perceived disability.

1. Background

Severe and persistent mental illnesses, including schizophrenia and bipolar disorder, are among the leading causes of disability (Murray and Lopez, 1997; Gonzalez-Medina et al., 2012). Despite the striking nature of psychotic and manic symptoms, the most significant impairments that arise after the acute phase include limitations in critical areas of everyday functioning, such as the ability to live and work independently (Morrison et al., 1972; Bowie et al., 2006; Tabarés-Seisdedos et al., 2008; Harvey and Strassnig, 2012). Global impairments in functioning are thought to be less severe in bipolar disorder when compared to schizophrenia but significant enough to have important adverse long-term implications (Bowie et al., 2010; Mausbach et al., 2010). Specifically, 70–90% of individuals with schizophrenia and 40–60% of those with bipolar disorder have been reported to have challenges with independence in residence and gainful employment (Huxley and Baldessarini, 2007; Leung et al., 2008; Marwaha et al., 2013; Twamley et al., 2002; Lee et al., 2015) despite generally successful treatment of psychosis and mood dysregulation during the earliest phases of illness (Tohen et al., 2003; Robinson et al., 2004).

The known components of impairment in schizophrenia and bipolar disorders include psychiatric symptoms, cognition, and functional skills (Bowie et al., 2010). Impairments in everyday functioning, specifically the ability to maintain a residence and gainful employment are

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predicated by different skill sets and may be further differentiated by the influence of a diagnosis of schizophrenia or bipolar disorder (Bowie et al., 2010; Harvey et al., 2012; Strassnig et al., 2015). Moreover, even with psychiatric symptoms, cognition and functional skills accounted for, large proportions of the predictive variances for reaching independence in residence and employment are unknown (Harvey and Strassnig, 2012), including potential similarities and differences between schizophrenia and bipolar disorder. To that end, we recently introduced physical health limitations, prevalent in schizophrenia and bipolar disorder 18, as novel impairment indicators: we showed that health limitations, particularly increased waist circumference and simple measure of physical functioning are associated with physical limitations that can impinge on the ability to carry out everyday activities (Strassnig et al., 2017). Whether physical limitations, such as obesity and reduced physical capacity and skills, are associated with other aspects of disability including self-reported impairment as measured by the WHODAS 2.0 and whether there are any differences between the schizophrenia and bipolar disorder groups in self-reported outcome when accounting for the range of possible impairment indicators is currently unknown.

The purpose of this report is to understand the relationships of 1) residential and employment status with multiple aspects of disability including physical limitations and secondarily 2) the associations among the various indicators of impairment with these outcomes across assessment strategies. Also, the availability of self-reported disability data allowed us to examine the association between objective functional outcomes and subjective evaluations of disability. The objective impairment indicators were also examined for their correlations with subjective disability. The data were derived from a well-characterized sample of individuals with bipolar and schizophrenia spectrum disorders assessed 20 years after their first hospitalization for psychosis. Most available cohort studies, especially those with durations over 10 years, have focused on aspects of everyday functioning in schizophrenia only (Hegarty et al., 1984; Harrison et al., 2001; Hill et al., 2012; Jaaskelainen et al., 2008). Only a small number have examined other psychotic disorders, such as bipolar disorder (Hegelstad et al., 2012; Morgan et al., 2014; Harrow et al., 2005) and generally not with a comparative focus on schizophrenia.

2. Methods

The sample is part of the Suffolk County Mental Health Project, a county-wide treatment sample recruited during their first admission for a psychotic disorder between 1989 and 1995 (for details, see Bromet et al., 1992; Bromet et al., 2005; Kotov et al., 2017). Baseline inclusion criteria were age 15–60 years, residence in Suffolk County NY, and psychosis not due to a medical condition or substance abuse; exclusion criteria were a psychiatric hospitalization >6 months before the index admission, low intellectual ability (IQ < 70), incapacity to provide informed consent, and being a non-English speaker. The data for the current analyses were obtained at a follow up assessment 20 years after the index admission. The Institutional Review Board of Stony Brook University approved the study annually. Written informed consent was obtained at follow-up assessment. On the basis of the SCID interviews, medical records information, and interviews with the subjects' relatives, DSM-IV consensus diagnoses were reached for each participant. For the current analysis, we used the 10-year follow up diagnosis (the most recent diagnosis on file) and we selected participants with schizophrenia/schizoaffective disorder (SCZ) ($n = 146$) and bipolar disorder (BP) ($n = 87$). We excluded patients with psychosis related to depression, substance use, and 'other' psychoses. A flowchart of participation in the larger study is available; attrition was random, that is, the number of assessments was not associated with age, sex, negative symptoms, positive symptoms, employment, independence in living, homelessness, or baseline diagnosis. Nonresponse was primarily accounted for by refusal to participate and loss to follow up (Velthorst et al., 2017).

2.1. Measures

2.1.1. Diagnosis

The Structured Clinical Interview for DSM-III-R (Spitzer et al., 1990) was administered at the baseline, 6 month, and 2-year follow-ups, and the SCID for DSM-IV was administered at year 10 (Bromet et al., 2011). Based on the SCIDs, medical record information, and interviews with significant others, longitudinal DSM-IV consensus diagnoses were reached by study psychiatrists for each participant. For the current analysis, we used the 10-year diagnosis.

2.1.2. Everyday functioning

Background information about residential and occupational status was obtained during the SCID Overview and in a separate assessment of quality of life. Interviewers then coded two measures: independence in residence (defined here as living fully independently without external support vs. living in households of relatives, group homes, or supported settings) and gainful employment (defined as competitively obtained part- or full-time employment vs. not employed in a steady job or participating in supported employment). Spouses of employed individuals were coded as living independently. Individuals living with their parents were coded as not living independently as the average age of the participants was in their 40's.

2.1.3. Self reported disability

The self-report WHODAS-12 (World Health Organization Disability Assessment Schedule 2.0) (Üstün et al., 2010) assesses six areas: understanding and communication, self-care, mobility, interpersonal relationships, work and household roles, and community participation. The WHODAS 2.0 has good internal consistency, test-retest reliability, and concurrent validity (Andrews et al., 2009). A WHODAS total score was derived by adding the 12 individual item scores.

2.1.4. Symptoms, cognitive performance, and physical functioning

Mental health symptom measures included: the Scale for Assessment of Negative Symptoms and Scale for Assessment of Positive Symptoms (Andreasen, 1984a, 1984b); the Brief Psychiatric Rating Scale (Woerner et al., 1988), the Hamilton Depression Rating Scale (Hamilton, 1960), a composite cognitive measure (see below); waist circumference, an indicator of obesity/metabolic syndrome; and two physical functioning measures, chair rises and balance. The latter tasks are part of the Short Physical Performance Battery (Guralnik et al., 1994; Guralnik et al., 1996) a widely used test in aging research (Rikli and Jones, 1999). The tests were modified to account for potential ceiling effects: for chair stands, a measure of lower extremity strength, participants were asked to rise from a chair ten times as fast as possible with their arms folded across their chests (instead of five times as required in the original SPPB). The total time required to rise from the chair ten times was recorded as a continuous score. Tandem stands, used to assess postural balance skills, were extended to 30 s (instead of 10 s in the original SPBB).

With regard to the composite cognitive measure, participants completed a cognitive test battery at the 20-year assessment. Eight major areas were assessed: general verbal ability (Wechsler Adult Intelligence Scale-Revised [WAIS-R]) Vocabulary and Information subtests; verbal declarative memory (Wechsler Memory Scale-Revised [WAIS-R]) Verbal Paired Associates I and II; visual declarative memory (WMS-R Visual Reproduction I and II); executive function (Stroop Color-Word Test and Trail Making Test, Part B); working memory (Letter Number Span and digit span); processing speed (Trail Making Test, Part A); visual processing (Facial Recognition Test); language ability (Letter Fluency). The raw scores were converted to standardized (z) scores in the current sample, and an overall summary measure was computed (statistical methods).

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