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# The interactive effects of negative symptoms and social role functioning on suicide ideation in individuals with schizophrenia

Danielle R. Jahn <sup>a,b</sup>, Melanie E. Bennett <sup>a,b</sup>, Stephanie G. Park <sup>a,b</sup>, Raquel E. Gur <sup>c</sup>, William P. Horan <sup>d,e</sup>, Ann M. Kring <sup>f</sup>, Jack J. Blanchard <sup>g,\*</sup>

- a VA Capitol Health Care Network (VISN 5) Mental Illness Research, Education, and Clinical Center, VA Maryland Health Care System, 10 N. Greene St. (Annex Room 723A), Baltimore, MD 21201, USA
- b Department of Psychiatry, University of Maryland School of Medicine, 737 W. Lombard St., Suite 551, Baltimore, MD 21201, USA
- <sup>c</sup> Department of Psychiatry, Perelman School of Medicine, University of Pennsylvania, 10th Floor Gates Building, Philadelphia, PA 19104, USA
- d Department of Psychiatry & Biobehavioral Sciences, University of California, Los Angeles, Jane & Terry Semel Institute for Neuroscience & Human Behavior, 760 Westwood Plaza, Los Angeles, CA 90095, USA
- e VA Greater Los Angeles Healthcare System, 11301 Wilshire Blvd., Bldg, 210, Mail Code: 210A, Rm. 115, Los Angeles, CA 90073, USA
- f Department of Psychology, University of California, Berkeley, 3210 Tolman Hall, Berkeley, CA 94720-1650, USA
- g Department of Psychology, University of Maryland, 1147 Biology/Psychology Building, College Park, MD 20742, USA

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#### ABSTRACT

Findings regarding the protective effect of social role functioning on suicide ideation in individuals with schizophrenia have been mixed. One reason for such inconsistencies in the literature may be that individuals with prominent negative symptoms of schizophrenia may not experience a desire for social closeness, and therefore social role functioning may not influence suicide risk in these individuals. The aim of this study was to examine the moderating effects of self-reported desire for social closeness and interviewer-rated negative symptoms on the relationship between social role functioning and suicide ideation. Our sample consisted of 162 individuals who had been diagnosed with schizophrenia-spectrum disorders; all participants completed self-report questionnaires and clinician-administered interviews, and moderation hypotheses were tested with a nonparametric procedure. The results indicated that motivation and pleasure-related negative symptoms moderated the relationship between social role functioning and suicide ideation; self-reported desire for social closeness and negative symptoms related to expression did not have such a moderating effect. Specifically, better social role functioning was associated with less suicide ideation only in those individuals who had low motivation and pleasure-related negative symptoms; no significant relationship was observed between social role functioning and suicide ideation among those with elevated motivation and pleasure-related negative symptoms. These findings suggest that assessing for negative symptoms and social role functioning may inform suicide risk assessments in individuals with schizophrenia, and improving social role functioning may reduce suicide ideation among those with few motivation and pleasure-related negative symptoms.

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#### 1. Introduction

Suicide is a significant public health problem and ranks as the 10th leading cause of death in the United States, with a rate of approximately 13 deaths per 100,000 people (Centers for Disease Control and Prevention, 2015). Among individuals with schizophrenia, risk for death by suicide is substantially higher than the general population (Hawton et al., 2005); research suggests that individuals with

E-mail addresses: danielle.jahn@va.gov (D.R. Jahn), mbennett@psych.umaryland.edu (M.E. Bennett), stephanie.park3@va.gov (S.G. Park), raquel@upenn.edu (R.E. Gur), horan@ucla.edu (W.P. Horan), kring@berkeley.edu (A.M. Kring), jblancha@umd.edu (J.J. Blanchard).

schizophrenia are at nearly 13 times higher risk for suicide than individuals without schizophrenia (Bushe et al., 2010), suggesting that it is critical to characterize risk factors for suicide among individuals with schizophrenia. One important and common risk factor for death by suicide among individuals with schizophrenia is suicide ideation (Hor and Taylor, 2010; Kasckow et al., 2010; Montross et al., 2005). Because of its proximal nature as a risk factor for death by suicide, suicide ideation is often used as an outcome in studies of suicide risk among individuals with schizophrenia (e.g., Kasckow et al., 2014; Yan et al., 2013).

Therefore, it is essential to identify variables that are associated with suicide ideation, as such variables can possibly be targeted to reduce suicide risk. One set of variables that has been linked to suicide risk in individuals with schizophrenia, as well as other populations, can be characterized as social functioning (e.g., poor or unstable social support, social isolation, and withdrawal from others; Balhara and Verma, 2012;

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<sup>\*</sup> Corresponding author at: 1147 Biology/Psychology Building, University of Maryland, College Park, MD 20742, USA.

Caldwell and Gottesman, 1992; Heila et al., 1999; Koeda et al., 2012; Lyu and Zhang, 2014; Saarinen et al., 1999). The assumption in studies of social functioning and suicide risk appears to be that individuals desire social support, and when this desire is not met, suicide ideation may be elevated. The interpersonal theory of suicide (Joiner, 2005) indicates that a sense of thwarted belongingness (i.e., lack of reciprocal caring relationships and belonging with valued others) is a proximal risk factor for suicide. Variables such as social isolation and size of social network are indicators of thwarted belongingness, which leads to suicide ideation (Joiner, 2005; Van Orden et al., 2010).

Individuals with prominent negative symptoms of schizophrenia may not experience this desire for social belonging and closeness (Kring et al., 2013). Social anhedonia is a core negative symptom of schizophrenia (Blanchard et al., 2011; Horan et al., 2006) that it is consistently elevated in clinical samples (Blanchard et al., 1998) and is stable across time and psychiatric symptom status (Blanchard et al., 2001). Importantly, Kring et al. (2013) found that individuals with experiential deficits in motivation and pleasure were less likely to endorse a desire for close relationships and social engagement. Moreover, multiple studies have identified a positive correlation between negative symptoms (assessed broadly through the negative symptoms subscale of the Positive and Negative Syndrome Scale Kay et al., 1987) and suicide ideation (Tarrier et al., 2004; Umut et al., 2013; Yan et al., 2013). Though there have been mixed findings regarding the role of negative symptoms and risk for suicide attempts or death by suicide (e.g., Luckhoff et al., 2014; McGirr et al., 2006; Umut et al., 2013; Yan et al., 2013), the extant literature consistently provides evidence that negative symptoms may be an important consideration in risk for suicide ideation among individuals with schizophrenia.

As noted above, many studies have found relationships between social functioning and suicide risk in schizophrenia (e.g., Koeda et al., 2012; Lyu and Zhang, 2014). However, negative symptoms and related lack of desire for social closeness may provide an explanation for other studies that have not identified relationships between suicide risk and indicators of social support (e.g., positive evaluations of social role functioning, social support, recent loss; Gooding et al., 2013; Heila et al., 1999; Lopez-Morinigo et al., 2014; Yan et al., 2013). It could be that individual differences in negative symptoms and the desire for social affiliation explain prior inconsistent findings regarding social functioning and suicide ideation among individuals with schizophrenia. Individuals with schizophrenia who do not desire social closeness or who have elevated negative symptoms may not experience social support as a protective factor against suicide ideation. However, those with schizophrenia who desire social closeness or have few negative symptoms may find social support to be protective against suicide ideation, similar to individuals without schizophrenia. These interactions have not yet been investigated. Additionally, it is unclear whether self-reported desire for social closeness or interviewer-rated negative symptoms more globally may be more important in these interactions.

As is evident from the literature, social support and functioning can be defined in numerous ways. Of particular relevance to individuals with schizophrenia, social role functioning can be used to capture various aspects of social support, including frequency of interactions, size of network, and closeness of relationships (Goodman et al., 1993). Consequently, we hypothesized that self-reported desire for social closeness and interviewer-rated negative symptoms would each moderate the relationship between social role functioning and suicide ideation in a sample of adults with schizophrenia. We expected that clinician-rated negative symptoms would show a stronger effect, as negative symptoms may affect social functioning more globally and would be less reliant on participant insight. Additionally, we anticipated that this interaction would indicate that those who valued social closeness or had few negative symptoms and had good social role functioning would endorse the lowest levels of suicide ideation; however, we anticipated that social role functioning would not significantly influence suicide ideation among those who did not value social closeness or had elevated negative symptoms.

#### 2. Methods

#### 2.1. Participants

We utilized data from 162 participants diagnosed with schizophrenia or schizoaffective disorder (based on the Structured Clinical Interview for DSM-IV; First et al., 2001) collected as part of a larger study validating a new instrument for the assessment of negative symptoms (Kring et al., 2013); a complete description of the methods has been reported elsewhere (Kring et al., 2013; Reddy et al., 2014). The sample was 57.4% male, with a mean age of 46.84 (SD=9.48, Range = 23–65). Participants were primarily Black/African-American (50.3%) or White/Caucasian (40.3%), and not married (73.5%). Most participants were not employed (76.4%), and about one-third of the sample resided in supervised living situations (19.2%) or transient/short-term housing (14.9%).

#### 2.2. Measures

The 24-item expanded version of the Brief Psychiatric Rating Scale (BPRS; Overall and Gorham, 1962; Ventura et al., 1993) was used to measure clinical symptomatology. Items were rated by interviewers on a 7-point scale, ranging from "not reported" to "very severe," based on symptom frequency and severity during the past week. For the current study, the BPRS suicidality item was used to assess suicide ideation. This item is rated based on the frequency and severity of reported thoughts of death or suicide, as well as suicidal intent and plans. Additionally, depression items, anxiety items, and the positive symptoms subscale (Kopelowicz et al., 2008) were used as covariates.

Social role functioning was assessed with the Role Functioning Scale (RFS; Goodman et al., 1993), a four-item clinical interview that has been found to provide reliable and valid assessments of patient role functioning (e.g., Edmondson et al., 2012; Yamada et al., 2010). In the present analysis, we summed items assessing functioning in family relationships and functioning in friendships as our measure of social role functioning.

The Social Closeness Scale from the Multidimensional Personality Questionnaire (MPQ-SC; Tellegen and Waller, 2008) is a true-false self-report trait questionnaire used to measure desire for social affiliation. The 22-item MPQ-SC reflects the following characteristics: sociable, values close relationships, warm/affectionate, and welcomes support. The MPQ-SC has been shown to have high internal consistency (i.e., alphas above .80) and good convergent validity (Aday and Cornelius, 2006; Llerena et al., 2013).

The Clinical Assessment Interview for Negative Symptoms (CAINS; Kring et al., 2013) is a widely-used interview that was employed to assess negative symptoms in two domains: (1) expression and (2) motivation and pleasure (MAP). CAINS items are rated on a scale of 0 to 4 by an interviewer, and higher scores reflect greater impairment related to each negative symptom. The MAP subscale consisted of nine items (e.g., assessing expected and past-week pleasure derived from various activities, family relationships), whereas the expression subscale consisted of four items (e.g., assessing facial expression as well as speech characteristics). Cronbach's alpha suggests strong internal consistency reliability, and correlations with related measures suggest good convergent and divergent validity (Kring et al., 2013).

#### 2.3. Procedures

Participants were recruited from community mental health centers at four geographically diverse sites (see Kring et al., 2013 for a complete description). All participants provided informed consent and then completed self-report measures, clinical rating scales, and functional

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