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Interpersonal beliefs related to suicide and facial emotion processing in psychotic disorders

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ABSTRACT

Deficits in social cognition are present in psychotic disorders; moreover, maladaptive interpersonal beliefs have been posited to underlie risk of suicidal ideation and behavior. However, the association between social cognition and negative appraisals as potential risk factors for suicidal ideation and behavior in psychotic disorders has not been assessed. In a pilot study, we assessed accuracy and error biases in facial emotion recognition (Penn ER-40), maladaptive interpersonal beliefs as measured by the Interpersonal Needs Questionnaire (INQ), and current suicide ideation and history of past attempts in a sample of 101 outpatients with psychotic disorders (75 schizophrenia/schizoaffective; 26 bipolar disorder). INQ scores were positively associated with history of suicide attempts and current ideation. INQ scores were inversely related with emotion recognition accuracy yet positively correlated with bias toward perceiving anger in neutral expressions. The association between biases pertaining to anger and INQ scores persisted after adjusting for global cognitive ability and were more evident in schizophrenia than in bipolar disorder. The present findings suggest that maladaptive beliefs are associated with a tendency to misperceive neutral stimuli as threatening and are associated with suicidal ideation and behavior. Although better cognitive ability is associated with higher rates of suicide attempts in psychotic disorders, biases in misinterpreting anger in others may be a specific deficit related to formation of maladaptive beliefs about others, which, in turn, are associated with history of suicide attempts.

1. Introduction

About 5% of people with psychotic disorders die by suicide (Palmer et al., 2005) and a third attempt suicide in their lifetimes (Pompili et al., 2007), with a standardized mortality rate 3.9 times that in the general population (Olfson et al., 2015). Despite the exceptionally high risk for lifetime suicidal ideation and behavior in psychotic disorders (schizophrenia, schizoaffective disorder, bipolar disorder), the illness specific mechanisms underlying risk for suicide are not well understood (Kasckow et al., 2011).

Although several of the risk factors associated with histories of suicide attempts in people with psychotic disorders parallel that in the general population (e.g., history of prior attempts, the presence of depressive symptoms; Pompili et al., 2007), some risk factors differ. In the general population, educational attainment and cognitive ability are negatively associated with histories of suicidal ideation and behavior (Kosidou et al., 2014), whereas a number of studies indicate history of attempts are associated with higher cognitive ability in schizophrenia (Kim et al., 2003; Nangle et al., 2006; Villa et al., 2018). A recent meta-analysis found a stronger link between the presence of ideation and suicidal behavior in psychotic disorders than in mood disorders (Chapman et al., 2015), as well as more lethal attempts (Kelleher et al., 2013). Within the illness, the symptom clusters of psychotic disorders appear to be differentially correlated with suicide - positive symptoms (e.g., paranoia and hallucinations) can be associated with increased suicide risk (Castelein et al., 2015), whereas negative symptoms are associated with decreased risk (Hawton et al., 2005). Therefore, due to the elevated risk associated with psychotic disorders and the evidence

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for somewhat unique determinants of suicide both within the illness and in comparison with other psychiatric disorders, it is important to evaluate potential mechanisms underlying suicidal ideation and behavior in psychotic disorders.

One area that has received comparatively little attention as associated with suicide risk in psychotic disorders is social cognition. Nonetheless, many theoretical accounts of the psychological mechanisms underlying suicide in psychosis (Johnson et al., 2008), and in the general population, feature the presence of maladaptive interpersonal beliefs as central to risk (e.g., the Interpersonal-Psychological Theory of Suicidal Behavior; Joiner et al., 2009; Van Orden et al., 2010). These include perceptions of rejection and ostracization from others, social defeat, experiencing oneself as a burden, and low appraisals of belonging and availability of support/rescue from distress (Johnson et al., 2008; Van Orden et al., 2010). The Interpersonal Needs Questionnaire (INQ) was developed to assess two of these constructs (thwarted belongingness, perceptions of being a burden to others), but to our knowledge, this measure has had limited usage in psychotic disorders (Silva et al., 2015; Taylor et al., 2016).

At a more basic level, one aspect of social cognition commonly associated with psychiatric disorders is the aberrant processing of emotions in others (Green et al., 2015; Kohler et al., 2010; Lee et al., 2013), in particular biases in identification of threats such as anger (Pinkham et al., 2011; Ruocco et al., 2014). In the few studies that have investigated social cognitive ability and suicide risk in psychosis, patients displayed deficits on social cognitive tasks relative to comparative groups, with impairment specific to patients with past suicide attempts (Duño et al., 2009; Harenski et al., 2017; Lakimova et al., 2016). In particular, Lakimova et al. (2016) found a negative association between the number of suicide attempts and accurate recognition of anger and disgust in schizophrenia. In a study of facial affect recognition in a sample of persons with schizophrenia, with and without paranoia, Pinkham et al. (2011) found that paranoia was associated with misperception of threat to neutral stimuli. Using ecological momentary assessment, in which a sample of patients with schizophrenia responded to questions about social activities and appraised these activities, we found that patients with recent suicidal ideation were more likely to perceive social interactions as “not worth the effort” (Depp et al., 2016). Participants with recent suicidal ideation were also twice as likely to predict being alone in the near future as compared to patients without recent ideation, despite spending approximately the same amount of time in social interactions and with others, suggesting no real differences in social activity. As such, these preliminary data indicate that aberrant social cognition and appraisals may have bearing on suicidal thoughts and behavior in schizophrenia.

To address these gaps in the literature, we evaluated the associations between maladaptive interpersonal beliefs related to suicidality, as measured by the Interpersonal Needs Questionnaire (INQ), and facial emotion processing, as measured by the Penn Emotion Recognition Test (ER-40). We also evaluated associations between INQ and ER-40 scores with history of past suicide attempts and current suicidal ideation severity. We hypothesized that INQ would be associated with ER-40 scores, and with greater bias in perceiving anger in neutral faces as a measure of social threat, as in a prior study associating this bias with current paranoia (Pinkham et al., 2011) and in the deleterious effects of loneliness (Cacioppo et al., 2015). Additionally, we hypothesized that INQ and ER-40 total scores and bias toward angry facial emotions would be associated with severity of current suicide ideation and a higher rate of past suicidal behavior. We also examined the specificity of these effects after adjustment from other clinical variables, in particular whether these associations persisted after adjusting for general cognitive ability, given that greater cognitive ability is associated with suicidal ideation and behavior in schizophrenia (Kim et al., 2003; Nangle et al., 2006; Villa et al., 2018) and with global estimates of current psychopathology.

2. Method

2.1. Participants

Data from this study included baseline data from an ongoing randomized controlled trial evaluating the effectiveness of different mobile-health augmented interventions in serious mental illnesses. Baseline data was recorded prior to randomization. For the current study, we included data from 101 adults aged 18 and older with a diagnosis of schizophrenia or schizoaffective disorder (N = 75) and bipolar I disorder (N = 26). The total sample recruited was 255 patients, and supplemental funding was received partway through the study to include measures of facial emotion recognition and interpersonal beliefs. Participants were recruited from the users of the San Diego County Adult and Older Adult Mental Health System. The clinical trial was designed to be inclusive of users of the mental health system and therefore other exclusion criteria were kept minimal. Some of the data on non-social cognition (MCCB scores) and suicidality have been previously reported (Villa et al., 2018), but the data including the INQ and ER-40 have not been previously reported and are the focus of this paper.

To enroll in the clinical trial, participants must have met DSM-IV criteria for schizophrenia or schizoaffective disorder or bipolar disorder with psychosis. Participants must have had at least a minimum level of impairment on at least one of the target outcomes, defined as a moderate score (≥ 3) on at least one of the BPRS depression, mania, hallucinations, or emotional withdrawal items. Diagnoses were formed based on a combination of the Mini-International Neuropsychiatric Inventory (MINI; Lecrubier et al., 1997) and medical records obtained with participant consent. Participants needed to be able to read and speak English, willing to sign a release of information for their provider, and provide informed consent, as well as pass the University of California, San Diego Brief Assessment of Capacity to Consent (UBACC) test (Jeste et al., 2007). Participants were excluded if they were currently enrolled in psychotherapy or had received cognitive behavioral therapy within the past 5 years, had been diagnosed with dementia, had experienced head trauma with loss of consciousness for more than 20 min, or current participation in a psychosocial/pharmacological clinical trial. This trial was approved by the University of California, San Diego's Human Research Protections Program, and all patients signed an informed consent form.

2.2. Procedures

During the baseline visit, participants completed cognitive testing, symptom assessments, facial emotion recognition as well as interpersonal beliefs assessments, and suicide attempt history and current ideation assessments in a research facility or in the community, depending upon their preference. Raters were trained in administering interview-based measures and needed to achieve a 0.90 inter-rater reliability kappa with gold-standard raters in order to administer tests.

2.3. Measures

2.3.1. Interpersonal needs questionnaire-15

The Interpersonal Needs Questionnaire (INQ)-15 is a 15-item self-report measure assessing interpersonal beliefs underlying the desire for suicide (Van Orden et al., 2012), which is based upon key constructs from the Interpersonal-Psychological Theory of Suicidal Behavior comprising 2 subscales (Van Orden et al., 2010). The “perceived burdensomeness” subscale consists of 6 items measuring patients' unmet need for social connectedness (e.g., “These days, I think my death would be a relief to the people in my life”), and the “thwarted belongingness” subscale consists of 9 items measuring patients' unmet need to belong (e.g., “These days, I rarely interact with people who care about me”). In a normative population of adults, average scores on the