Schizophrenia Research xxx (2016) xxx–xxx

Contents lists available at ScienceDirect

Schizophrenia Research

journal homepage: www.elsevier.com/locate/schres

High-risk diagnosis, social stress, and parent-child relationships: A moderation model

Eryn Bentley [a], Zachary B. Millman [a], Elizabeth Thompson [a], Caroline Demro [a], Emily Kline [a], Steven C. Pitts [a], Jordan E. DeVylder [b], Melissa Edmondson Smith [b], Gloria Reeves [c], Jason Schiffman [a,*]

[a] Department of Psychology, University of Maryland, Baltimore County, 1000 Hilltop Circle, Baltimore, MD 21250, USA
[b] Department of Social Work, University of Maryland, School of Social Work, Baltimore, MD, USA
[c] Department of Psychiatry, University of Maryland, School of Medicine, Baltimore, MD, USA

ARTICLE INFO

Article history:
Received 6 March 2016
Received in revised form 7 April 2016
Accepted 11 April 2016
Available online xxxx

Keywords:
Psychosis
High-risk diagnosis
Social stress
Parent-child relationships
Self-report

ABSTRACT

Stress is related to symptom severity among youth at clinical high-risk (CHR) for psychosis, although this relation may be influenced by protective factors. We explored whether the association of CHR diagnosis with social stress is moderated by the quality of parent-child relationships in a sample of 96 (36 CHR; 60 help-seeking controls) adolescents and young adults receiving mental health services. We examined self-reported social stress and parent-child relationships as measured by the Behavior Assessment System for Children, Second Edition (BASC-2), and determined CHR status from the clinician-administered Structured Interview for Psychosis-Risk Syndrome (SIPS). The social stress subscale, part of the clinical domain of the BASC-2, assesses feelings of stress and tension in personal relationships and the relations with parents subscale, part of the adaptive domain of the BASC-2, assesses perceptions of importance in family and quality of parent-child relationship. There was a modest direct relation between risk diagnosis and social stress. Among those at CHR, however, there was a significant relation between parent-child relationships and social stress ($b = -0.73$, $t[92] = -3.77$, $p < 0.001$, $f^2 = 0.15$) that was not observed among non-CHR individuals, suggesting that a positive parent-child relationship may be a protective factor against social stress for those at risk for psychosis. Findings provide additional evidence to suggest that interventions that simultaneously target both social stress and parent-child relationships might be relevant for adolescents and young adults at clinical high-risk for psychosis.

1. Introduction

Social stress plays an important role in the incidence and course of psychosis. Child maltreatment, urban upbringing, migration, and minority status are all associated with higher incidence of psychosis (van Os et al., 2010; Varese et al., 2012). These factors are thought to relate to the disorder by virtue of their tendency to subject individuals to socially stressful experiences such as social hostility, social fragmentation, and family disintegration (van Os et al., 2010; Zammit et al., 2010). Among those diagnosed with psychosis, regular exposure to social stress is one of the strongest and most replicated predictors of poor clinical outcome, from the time of the first episode, for up to 20 years of follow-up (Alvarez-Jimenez et al., 2012; Cechnicki et al., 2013).

Neurodevelopmental models of psychosis posit that constitutional abnormalities of the hypothalamic-pituitary-adrenal and dopamine systems moderate normative maturation of stress-responsive and dopaminergic brain regions (Holtzman et al., 2013). These models suggest that individuals vulnerable to psychosis, such as those at clinical high-risk (CHR), are especially likely to experience feelings of stress when faced with environmental strain. Accordingly, although far less is known about the effects of social stress among those at CHR compared to those with diagnosable psychosis, evidence suggests that social stress is prominent in those at CHR and is related to worsening symptoms of attenuated psychosis. Individuals at CHR report high levels of family conflict, childhood maltreatment, and general feelings of social stress when compared to healthy controls (Addington et al., 2013; Palmier-Claus et al., 2012; Thompson et al., 2015). This stress is often associated with greater baseline symptom severity, symptom progression, and increased likelihood of conversion to threshold psychosis (Kraan et al., 2015; O'Brien et al., 2006; Schlosser et al., 2010). Notably, evidence suggests that subjective feelings of stress in the CHR period may be more closely related to psychosis symptom severity and progression than exposure to putatively stressful stimuli themselves (Schlosser et al., 2010; Trotman et al., 2014). These findings suggest that individual differences in perceptions of social stress may be an important target for understanding the emergence of psychosis and individual response to emerging psychosis.

Parent-child relationship may be a critical factor in supporting resilience to stress. For those at CHR, a healthy family environment can play

* Corresponding author.
E-mail address: schiffma@umbc.edu (J. Schiffman).

http://dx.doi.org/10.1016/j.schres.2016.04.014
0920-9964/

an important role in social functioning and clinical course. Researchers have found that parental warmth, positive remarks, and appropriate levels of family involvement with individuals at CHR longitudinally predict improvements in symptoms; these factors, as well as constructive social problem-solving behavior among parent-child dyads, are also associated with later improvements in adolescents' social functioning (O'Brien et al., 2006; O'Brien et al., 2009). Conversely, individuals at CHR exposed to high levels of family conflict and criticism fare relatively poorly over time (O'Brien et al., 2006; Schlosser et al., 2010). Interventions shown to reduce perceived maternal criticism, increase positive family interactions, and improve constructive family problem solving have demonstrated efficacy in reducing rates of conversion to psychosis and enhancing social functioning among youth at CHR (Miklowitz et al., 2014; O'Brien et al., 2014; O'Brien et al., 2015). These results suggest that positive family relationships as perceived by the adolescent can impact the course and outcome of illness for some at CHR. Family interventions may be advantageous for youth with CHR psychopathology in particular since these youth often present with symptoms related to social withdrawal and suspiciousness, making it difficult to initiate peer interventions.

Research among typically developing adolescents indicates that positive family relationships can buffer the perception and impact of social stress on youth (Grant et al., 2006). This association, however, has not been specifically studied among those at CHR. Such a relation among youth at CHR would be particularly encouraging due to the deleterious effect of stress on these individuals (Holtzman et al., 2013; Kraan et al., 2015; Schlosser et al., 2010). Additionally, although youth at CHR are believed to be especially sensitive to the family environment, the majority of reports to date compare CHR individuals to their healthy, non-clinical peers. These studies, although essential in establishing differential vulnerability across high-risk and healthy adolescents, are unable to assess how the family environment affects youth at CHR in relation to age-matched youth with non-psychosis mental health difficulties (i.e., psychiatric controls). As a result, it is unknown whether potentially protective effects of the family environment are unique to those with a CHR syndrome or generalize to others with mental health concerns regardless of diagnosis.

This study aimed to investigate the potential moderating effect of the child-perceived parent-child relationship on the association between a CHR diagnosis and self-reported levels of social stress among youth seeking mental health care. We hypothesized that youth at CHR would show elevations in social stress compared to a help-seeking control group. Further, we hypothesized that individuals at CHR reporting positive parent-child relationships would report relatively decreased perceptions of social stress.

2. Method

2.1. Participants

This study was conducted through the Strive for Wellness/Youth FIRST research program at the University of Maryland, Baltimore County (UMBC) and the University of Maryland School of Medicine, Division of Child and Adolescent Psychiatry. Participants ($N = 116$, analysis sample $n = 96$) were recruited through advertisements, referrals from community clinics, and a psychiatric inpatient treatment unit and were considered eligible for the study if they were aged 12–22 years and currently receiving mental health services. The majority of referrals came from community outpatient providers, with no observed systematic differences in referral sources by diagnostic group. Participants <18 years old were required to have stable guardianship for the past six months. Informed consent was completed with all adult participants and parents of minors, and minors (<18 years old) provided written assent. All study procedures were approved by the Institutional Review Board of the University of Maryland, School of Medicine.

Given the focus of this study on those at risk for psychosis, ten individuals were excluded from the final sample who met criteria for a full-threshold psychotic syndrome. Ten additional participants were excluded due to missing data on the BASC-2. Of the 96 eligible participants with complete data, $n = 36$ were CHR-positive based on SIPS criteria and $n = 60$ were CHR-negative. Such high prevalence of CHR-positive individuals was due to the study referral process in which clients were often (but not always) referred by clinicians with concerns about psychosis given the known specialization of our services. Individuals in the CHR-negative group were all receiving mental health services.

2.2. Measures

All diagnostic instruments (Kiddie Schedule for Affective Disorders and Schizophrenia, Present and Lifetime version [K-SADS-PL] and SIPS) were administered by a graduate student or a master's-level or higher clinician and all cases were presented to the research team to ensure clinical consensus. For participants with guardians, the K-SADS-PL was administered first to guardians and then separately to the youth. All youth completed the BASC-2 self-report questionnaire followed by the two clinician-administered interviews: the K-SADS-PL and the SIPS.

2.2.1. Structured interview for Psychosis-Risk Syndromes

The SIPS is a clinician-administered interview designed to assess symptoms associated with the onset of psychosis (Miller et al., 2003). The SIPS evaluates a total of nineteen symptoms (5 positive, 6 negative, 4 disorganized, and 4 general) with each item rated on a scale from 0 (absent) to 6 (extreme or psychotic symptom intensity). The SIPS covers diagnostic criteria for three "psychosis risk syndromes," schizotypal personality disorder, and psychosis (see Table 1).

Study staff were trained in SIPS administration by either attending a two day training with the SIPS creators or through an extensive training process within the research lab involving rating audio tapes, observing SIPS interviews administered by trained staff, and being supervised by experienced interviewers during administration of SIPS interviews. New interviewers were considered reliable once their ratings and diagnoses matched the observing interviewer over at least two cases. Weekly case reviews during team meetings also occurred in order to ensure agreement on scores (this procedure was also employed for the K-SADS-PL). Among the team members, across 10 randomly selected interviews, symptom reliability for the SIPS was ICC = 0.82 and diagnostic agreement was perfect (kappa = 1.0).

Table 1
SIPS diagnoses.

Category	Criteria	*n* within current sample
Not at psychosis risk	• Participant does not meet criteria for any SIPS defined psychosis risk syndrome or psychotic disorder.	60
Psychosis risk syndromes		
	• Brief Intermittent Psychotic Syndrome (BIPS): Participant experiences psychotic--intensity symptoms, but frequency is subthreshold to meet psychotic disorder criteria.	3
	• Attenuated Positive Symptom Syndrome (APSS): Participant experiences subthreshold symptoms at least once per week, beginning or worsening in past year.	28
	• Genetic Risk and Deterioration Syndrome (GRDS): Participant meets two of three following criteria: meets DSM-IV-TR criteria for schizotypal personality disorder; has recent deterioration in functioning; has a first degree relative with psychosis.	5
Total *N*		96

Please cite this article as: Bentley, E., et al., High-risk diagnosis, social stress, and parent-child relationships: A moderation model, Schizophr. Res. (2016), http://dx.doi.org/10.1016/j.schres.2016.04.014