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Journal
Journal of Family Psychology, 32(4)

ISSN
0893-3200

Authors
Salinger, Julia M
O'Brien, Mary P
Miklowitz, David J
et al.

Publication Date
2018-06-01

DOI
10.1037/fam0000393

Peer reviewed

HHS Public Access

Author manuscript

J Fam Psychol. Author manuscript; available in PMC 2018 June 08.

Published in final edited form as:

J Fam Psychol. 2018 June ; 32(4): 507–516. doi:10.1037/fam0000393.

Family Communication With Teens at Clinical High-Risk for Psychosis or Bipolar Disorder

Julia M. Salinger,
Department of Psychology, Yale University

Mary P. O'Brien,
Department of Psychology, Yale University

David J. Miklowitz,
Department of Psychiatry and Behavioral Sciences, University of California, Los Angeles School of Medicine

Sarah E. Marvin, and
Department of Psychiatry and Behavioral Sciences, University of California, Los Angeles School of Medicine

Tyrone D. Cannon
Department of Psychology, Yale University

Abstract

Previous research has found that family problem-solving interactions are more constructive and less contentious when there is a family member with bipolar disorder compared with schizophrenia. The present study extended this research by examining whether family problem-solving interactions differ between clinical high-risk (CHR) stages of each illness. Trained coders applied a behavioral coding system (O'Brien et al., 2014) to problem-solving interactions of parents and their adolescent child, conducted just prior to beginning a randomized trial of family-focused therapy. The CHR for psychosis sample included 58 families with an adolescent with attenuated positive symptoms, brief intermittent psychosis, or genetic risk and functional deterioration; the CHR for bipolar disorder sample included 44 families with an adolescent with "unspecified" bipolar disorder or major depressive disorder and at least one first or second degree relative with bipolar I or II disorder. When controlling for adolescent gender, age, functioning, and parent education, mothers of youth at CHR for psychosis displayed significantly more conflictual and less constructive communication than did mothers of youth at CHR for bipolar disorder. Youth risk classification did not have a significant relationship with youths' or fathers' communication behavior. The family environment among help-seeking adolescents may be more challenging for families with an adolescent at CHR for psychosis compared with bipolar illness. Accordingly, families of adolescents at clinical high-risk for psychosis may benefit from more intensive or

Correspondence concerning this article should be addressed to Julia M. Salinger, Department of Psychology and Neuroscience, University of Colorado Boulder, 345 UCB, Boulder, CO 80309-0345. julia.salinger@colorado.edu.
Julia M. Salinger is now at Department of Psychology and Neuroscience, University of Colorado Boulder

A subset of this data was previously discussed in a 2014 paper examining interactions in families with a youth at-risk for psychosis (O'Brien et al., 2014). Partial findings from this study were presented at the 2017 meeting for the Society for Research in Psychopathology.

focused communication training than is required by families of adolescents at clinical high-risk for bipolar disorder or other mood disorders.

Keywords

adolescent development; schizophrenia; family focused therapy; early intervention

Bipolar disorder and schizophrenia are recognized as stress-sensitive disorders, the onset and course of which are thought to be determined by a complex interplay between stress, genetic risk, and neurobiological vulnerability (e.g., Johnson & Roberts, 1995; Walker & Diforio, 1997). Compared with control participants, adults with psychosis or bipolar disorder demonstrate elevated emotional reactivity to stressors including minor daily hassles (Myin-Germeys et al., 2003). This elevated responsiveness to daily stress has been proposed as "an affective pathway to psychosis" (Myin-Germeys & van Os, 2007) and is evident prior to the experience of acute psychotic episodes (Palmier-Claus, Dunn, & Lewis, 2012).

Prior research has found that adolescents diagnosed with bipolar disorder rank family relationships as a leading source of life stress (Kim, Miklowitz, Biuckians, & Mullen, 2007), as do adults diagnosed with schizophrenia (Betensky et al., 2008). A substantial body of research has focused on the role of family factors, specifically critical attitudes, in the course of these disorders (e.g., Hooley, 2007). For example, Rosenfarb, Goldstein, Mintz, and Nuechterlein (1995) found that when family members made a critical comment, individuals with schizophrenia were more likely to respond with a disorganized thought. Similarly, among bipolar patients who later relapsed, parents' harsh criticisms during a brief interaction correlated with odd and grandiose thinking in patients (Rosenfarb et al., 2001).

Less work has attempted to characterize the types of stressful or supportive communication that individuals may experience prior to acute symptom onset, during the clinical high-risk (CHR) phase of psychosis[1] or bipolar disorder. These individuals are adolescents who are experiencing early signs of illness and are treatment-seeking. Behavioral studies that have explored family communication during the CHR stage of psychosis indicate a link with functional outcome. For instance, O'Brien and colleagues (2009) found that constructive communication displayed by youth and their parents predicted improvements in youths' social functioning in a 6-month follow-up, whereas higher levels of youth conflictual communication predicted elevated positive symptoms at 6-month follow-up. Subclinical positive symptoms have been found to decrease over one year when youth perceptions of maternal criticism decrease (O'Brien, Miklowitz, & Cannon, 2015). Moreover, "protective" family factors such as warmth predict youth functional improvements over the course of 6 months (Schlosser et al., 2010). No prospective work has been conducted on family predictors of symptom course in youth at CHR for bipolar disorder. However, family-based interventions within this population have resulted in expedited recovery and improved symptom trajectories (Miklowitz et al., 2013).

[1]We use the terminology "at CHR for psychosis" rather than "at CHR for schizophrenia," as determining whether an individual is at risk for schizophrenia would require longitudinal tracking. However, the literature on schizophrenia is highly relevant considering that some youth at CHR for psychosis will go on to develop schizophrenia.

While family interaction is likely relevant to functioning for both high-risk groups, the nature of family interaction may differ by youth risk classification. Individuals who later develop schizophrenia evidence more pronounced premorbid deficits in social, neuropsychological, and cognitive functioning than do individuals who later develop bipolar disorder (Lewandowski, Cohen, & Öngur, 2011; Reichenbert et al., 2002). Also, the CHR stage of bipolar disorder involves highly labile mood, whereas the CHR stage of schizophrenia involves more consistent affect (Skjelstad, Malt, & Holte, 2010; Walker, Kestler, Bollini, & Hochman, 2004). Family interaction is reciprocal in nature, meaning that one person's behavior is contingent on the behavior of others in the family (e.g., Cook, Kenny, & Goldstein, 1991). Thus, the presence of unique symptom patterns and functional challenges in CHR groups is likely to be accompanied by distinct interpersonal engagement within the family context. Indeed, Miklowitz, Goldstein, and Nuechterlein (1995) found that family problem-solving interactions were more constructive and less contentious when a family member was diagnosed with bipolar I disorder compared with schizophrenia. Parents of individuals diagnosed with schizophrenia made more negative statements and demonstrated less nonverbal engagement during family problem-solving interactions than did parents of bipolar patients (Miklowitz et al., 1995; Simoneau, Miklowitz, Goldstein, Nuechterlein, & Richards, 1996). The present study extends this research by examining whether similar distinctions exist during CHR stages of illness.

Evaluating communication differences between CHR groups is highly clinically relevant. Currently, family-focused communication-training interventions differ little by youth risk classification (Miklowitz & Chung, 2016). However, if youth at CHR for psychosis are involved in more conflictual communication within the home than are youth at CHR for bipolar disorder, these adolescents may experience uniquely elevated risk for further developmental disruption. Intervening early and with the appropriate level of intensity is especially important because adolescence is a critical period of communication skill development and consolidation. During adolescence, increases in empathic concern and perspective taking in youth are associated with reduced conflict escalation with mothers and increased constructive problem-solving behavior with parents (Van Lissa et al., 2014). Strengthening of the functional connections between the prefrontal cortex and amygdala during adolescence may underlie these developmental parallels since this network is central in empathic responding (Frith & Frith, 2006), emotion regulation (Gee et al., 2013), and conflict-related behavior (Blair, 2004). Progressive brain changes associated with schizophrenia and psychosis may undermine skills relevant to effective communication (De Peri et al., 2012; Lisy et al., 2011; Sun et al., 2009). Targeted early interventions have the potential to decrease the level of psychosocial stress that symptomatic youth experience at home, potentially decreasing likelihood of conversion and attenuating functionally disruptive neuroprogressive processes. This study takes the first step in clarifying whether communication skills-training interventions designed for use with these populations may benefit from differentiation, by comparing family interactions across CHR groups.

The primary goal of the present study was to investigate whether youth at risk for bipolar disorder or psychosis experience similar or differing levels of constructive and conflictual communication during problem-solving discussions. We expect to find group-based differences in constructive and conflictual communication for two primary reasons. First,

youth at risk for psychosis evidence significant neuropsychological and cognitive impairments (see Lewandowski et al., 2011 for review) that may make familial problem-solving discussions especially challenging. Second, prior work has found that problem-solving discussions are more constructive and less contentious for individuals diagnosed with bipolar disorder as compared with schizophrenia (Miklowitz et al., 1995). We hypothesized that adolescents at CHR for psychosis and their parents would similarly display more conflictual and fewer constructive communication behaviors than would adolescents at CHR for bipolar disorder and their families. We assessed and tested potential confounds including gender, age, and average parent education.

Method

Participants

This study combined the data gathered from two multisite studies of Family Focused Therapy. The first dataset is comprised of a subset of the participants in the North American Prodrome Longitudinal Study (NAPLS; Addington et al., 2011). Consistent with NAPLS criteria, individuals who were between the ages of 12–25, primarily English speaking, and met criteria for one of three prodromal syndromes assessed by the Structured Interview for Prodromal Symptoms (SIPS; Miller et al., 2002) were considered for inclusion. Eligible prodromal syndromes were the following: (1) attenuated positive symptoms: patients were experiencing positive symptoms (unusual thoughts, suspiciousness, grandiosity, perceptual disturbances, disorganized communication) that were subpsychotic in duration and intensity that began or worsened in the past year; (2) brief intermittent psychosis: patients were experiencing fully psychotic symptoms that were present only intermittently with onset in the past 3 months; (3) genetic risk and deterioration: patients either had Schizotypal Personality Disorder or had a first degree relative with a psychotic disorder and experienced a significant decline in functioning in the last year (Miller et al., 2002, 2003). Exclusion criteria included a previous *Diagnostic and Statistical Manual of Mental Disorders*–4th ed. (*DSM–IV*) diagnosis of schizophrenia or schizoaffective disorder, mental retardation, current drug or alcohol dependence, or the presence of a neurological disorder. Between January 2009 and February 2012, NAPLS participants who expressed interest in a randomized clinical trial of family therapy were recruited. A total of 129 CHR youths and their parent(s) or significant others signed informed consent documents and were randomly assigned to Family-Focused Therapy (FFT-CHR) or to an enhanced care treatment (EC). This study was conducted in compliance with the Internal Review Boards of each university. For additional information regarding recruitment and evaluation procedures see Miklowitz and colleagues (2014).

The second dataset is comprised of a subset of participants from a multisite randomized controlled trial conducted with youth at clinical high-risk for bipolar illness and their families (Miklowitz et al., 2017). Eligible participants were required to: be between the ages of 9 and 17 years; speak English; have at least one first or second-degree relative with a lifetime *Diagnostic and Statistical Manual of Mental Disorders*–4th ed., Text Revision (*DSM–IV–TR*) diagnosis of bipolar disorder I or II; meet criteria themselves for a lifetime *DSM–IV–TR* diagnosis of bipolar disorder not otherwise specified (BD-NOS) or major

depressive disorder (MDD); and have current affective symptoms, as indicated by a prior week Young Mania Rating Scale (YMRS; Young, Biggs, Ziegler, & Meyer, 1978) score >11 or a prior 2-week Children's Depression Rating Scale, Rev. (CDRS-R; Poznanski & Mokros, 1995) score >29. If the lifetime diagnosis was MDD, the child must have had a full major depressive episode in the past 2 years.

All biological parents were interviewed at intake using the Mini-International Neuropsychiatric Interview (MINI; Sheehan et al., 1998). Children's current/lifetime diagnoses were assessed with the Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime version (KSADS-PL; Kaufman et al., 1997) mood sections and the KSADS-PL nonmood supplements, based on separate child and parent interviews and best estimate consensus procedures. (For additional information regarding recruitment and evaluation procedures see Miklowitz et al., 2017).

For this study, participants between the ages of 13–17 who participated in a pretreatment 10-minute family problem-solving interaction were selected for inclusion. This age range was selected to match samples on age. There were 58 interactions included from the CHR for psychosis sample and 44 from the CHR for bipolar sample. This study was conducted in compliance with the Internal Review Board of Yale University.

Measures

Assessment of functioning—While specific symptom measures differed between studies, both projects included a measure of Global Assessment of Functioning (GAF-M). Independent evaluators made ratings on single item 100-point scales of psychosocial functioning covering the prior month: The Children's Global Assessment Scale (C-GAS; Shaffer et al., 1983) for the CHR for bipolar and the GAF-M (Hall, 1995) for the CHR for psychosis sample. While these two scales are quite similar, there are some subtle differences in descriptions of various anchor points. To enhance comparability across slightly different measures, we divided the sample into two groups: serious-to-severe symptoms with low functioning (score ≤50), and mild-to-moderate symptoms with moderate-to-high functioning (>50), based on categorical distinctions that are consistent across measures.

Assessment of clinical symptoms—In the CHR for psychosis sample, prodromal symptoms were rated using the Scale of Prodromal Symptoms (SOPS) contained within the SIPS. The SOPS scales range from 0 to 6 with extensive anchors for each scale point for each symptom. To reduce the number of statistical comparisons, this investigation focuses only on the positive and negative symptom scales. In the CHR for bipolar sample, independent evaluators administered the YMRS (Young et al., 1978) and CDRS-R (Poznanski & Mokros, 1995) interviews to the child and one parent regarding the child's mood in the last 1–2 weeks, with summary scores based on a consensus of the two reports.

Assessment of family communication during problem-solving interactions—Before the start of the second therapy session, family members independently evaluated on a scale ranging from one (low) to five (high) how much family tension was created by each of 18 topics. Therapists identified topics that were rated highly by all participants, asked the youth to select one of those for further discussion, and read the following standardized

instructions to the family: “Please discuss X and attempt to reach a resolution. You have ten minutes for this discussion and I will return after ten minutes.” This procedure is similar to family observation assessment strategies used in studies of schizophrenia and bipolar disorder (e.g., Blanchard, Sayers, Collins, & Bellack, 2004; Miklowitz, Goldstein, Falloon, & Doane, 1984) and of youth at CHR for psychosis (O’Brien et al., 2009).

The interactions were videotaped and later transcribed and coded. Trained raters coded each transcript while viewing the respective videotaped interaction so that family members’ affect could be evaluated. All codes are described in Table 1.

A tally mark was recorded for each of the categories of behavior that occurred during each speaker turn. If a speaker received a tally in a critical-conflictual category (except for the cut-off category) he or she was ineligible to receive a tally within a calm-constructive category during that particular speaker turn, as negative content was considered to override neutral or positive content in terms of emotional impact. Thus, conflictual speaking turns are defined as those which contain at least one conflictual behavior, and may also contain neutral or positive content that would not be eligible to receive positive codes. If a speaker engaged in several different categories of critical-conflictual behaviors during a speaker turn, he or she received a tally in each of those different categories. Constructive speaking turns are defined as wholly neutral (i.e., the speaker expressed his or her point of view calmly) or positive, and do not contain any negative behaviors. If a speaker engaged in several different categories of calm-constructive behaviors during a speaker turn, he or she received a tally in each of those different categories.

A team of eight coders evaluated the problem-solving interactions in the CHR for psychosis study and a team of two coders evaluated the problem-solving interactions in the CHR for bipolar study. Coders in both studies were trained using practice tapes with “gold-standard” consensus codes to attain acceptable levels of interrater agreement, and then participated in regular coding meetings.

Coders rated each speaker turn and then tallied the frequency with which each code had been assigned to each family member during the entire interaction. Intraclass correlations were conducted on the coded data (see Table 1). Acceptable levels of interrater agreement were achieved with both samples (Shrout & Fleiss, 1979), with intraclass correlation coefficients exceeding .60. In the CHR for psychosis study all interactions were rated by two coders and in the CHR for bipolar study, a subset of interactions were rated by two coders. Once coder pairs had completed independent ratings of a particular interaction, they met to resolve discrepancies and create consensus data. For interactions with multiple raters, consensus data were used in all analyses.

The summed tally marks in each category for each individual were divided by the total number of speaking turns provided by that individual during the interaction to create a proportional score for each category of coded behavior. Proportional scores were utilized rather than summed tallies because there was variation in family size and in the number of speaking opportunities. Proportional scores created a common metric across study participants. Two summary codes were created, calm-constructive and critical-conflictual, by

adding the five codes within the calm-constructive dimension and the four codes within the critical-conflictual dimension, respectively. Because individuals could be assigned multiple calm-constructive or critical-conflictual codes during each speaking turn (e.g., speakers obtained three tallies if they provided compliments, expressed themselves calmly, and engaged in active listening during one speaking turn and they obtained three tallies if they cut another person off, voiced a complaint, and used an angry tone of voice during one speaking turn), the number of codes sometimes exceeded the number of speaking turns, and proportions could be greater than 100%.

Statistical Analyses

T tests were conducted to evaluate whether there were differences between the two CHR groups in the characteristics of the interactions, such as length of the interactions, total number of speaking turns provided by each participant, and total number of participants in the interactions. There were no significant group differences.

Additional *t* test and χ^2 analyses were used to evaluate the possibility that other relevant individual and contextual variables, such as youths' age, global functioning, and gender, and parents' education and ethnicity, contributed to between-groups differences in family interactions among CHR adolescents. Based on these analyses, parental education, youths' global functioning, and gender were included in analyses comparing risk groups on family interaction behavior.

Study hypotheses regarding interaction behavior were tested with six analyses of variance (ANOVAs) with four between-subjects factors. The first six ANOVAS examined whether CHR group, youth gender, youth functioning level, and parental education differed on (a) the calm-constructive behavior summary category for mothers, fathers, and adolescents, and (b) the critical-conflictual behavior summary category for mothers, fathers, and adolescents. In order to reduce type-one error, follow-up ANOVAs were conducted on the individual codes within the summary categories (constructive behavior and conflictual behavior) only when there were significant main or interaction effects for CHR group on the summary variables. All statistical tests were two-tailed.

All dependent variables were checked for departures from normality and homogeneity of variance using Levene's test, and where these assumptions were violated appropriate transformations were made. Transformation was only necessary for one of the variables, and the results were unchanged when the analysis was applied to the transformed variable (in this case square root).

Results

Characteristics of Family Interactions

Family interactions did not differ significantly between CHR groups in number of speaking turns enacted by each participant, number of people in the interaction, nor in length.

Sociodemographic and Clinical Characteristics

As presented in Table 2, the average age of at clinical high-risk participants was 15. There were significant group differences for adolescent gender ($\chi^2 = 8.68$, $p < .01$, $n = 103$) and GAF-M ($\chi^2 = 6.25$, $p = .01$, $n = 103$), with significantly more females and significantly higher functioning in the CHR for bipolar group compared with the CHR for psychosis group. These variables are included as covariates in further analyses. Also, there were marginally significant group differences for parental education ($\chi^2 = 5.60$, $p = .06$, $n = 103$) with higher levels of education in the CHR for bipolar than the CHR for psychosis group. Given the importance of understanding family functioning within the environmental context, we included parent education in analyses of family communication behavior.

Family Communication

There was a significant effect for CHR group for mothers' constructive behavior summary scores (see Table 3). Consistent with the study hypotheses, mothers with adolescents at CHR for bipolar disorder expressed significantly more constructive comments during the 10-minute problem-solving interactions than mothers with adolescents at CHR for psychosis. Follow-up ANO-VAs conducted on the specific codes within the constructive category indicated that mothers with adolescents at CHR for bipolar disorder were more likely to express affection and compliments, engage in mild listening behaviors (such as saying "mmhm"), and express their ideas clearly and in a neutral or positive tone of voice compared with mothers of adolescents at CHR for psychosis.

Contrary to hypotheses, there was not a significant risk-group difference for fathers or adolescents on the constructive behavior summary score (see Table 3). However, there were significant effects for adolescent gender, $F(1, 31) = 12.13$, $p = .00$, and parental education, $F(2, 31) = 8.52$, $p = .00$, for fathers' constructive behavior. Fathers of sons provided significantly more constructive comments per speaking turn ($M = 1.19$, $SE = .07$) during the 10-minute interaction than did fathers of daughters ($M = .95$, $SE = .07$). Also, fathers from homes where one or both parents had some graduate education expressed significantly more constructive comments per speaking turn ($M = 1.32$, $SE = .09$) than did fathers from homes where one or both parents completed some college ($M = 1.06$, $SE = .07$), who in turn provided significantly more constructive comments than did fathers from homes where one or both parents completed some high school ($M = .73$, $SE = .12$). Since we did not provide hypotheses for gender or parental education for fathers' constructive behavior, we did not conduct follow-up analyses of specific behavioral codes for these findings.

There was a significant effect for GAF-M on adolescents' constructive behavior, $F(1, 66) = 4.9$, $p = .03$. Teens who were rated by experimenters as 51 and above on the GAF-M scale (indicating moderate to mild impairment) exhibited more constructive behaviors during family problem-solving interactions ($M = .82$, $SE = .05$) than teens who were rated by experimenters as having serious-to-severe symptoms and impairment, with scores equal to or less than 50 ($M = .61$, $SE = .06$). The same pattern of results was observed when GAF scores were standardized and assessed as a continuous covariate.

There was a significant effect of CHR group on mothers' conflictual behavior summary scores (see Table 3). Consistent with hypotheses, mothers with adolescents at CHR for psychosis engaged in significantly more conflictual behavior during the 10-minute problem-solving interactions compared with mothers with adolescents at CHR for bipolar disorder. Follow-up analyses indicated that these mothers also demonstrated greater irritability, expressed more critical remarks, and began talking before others had completed their sentences more frequently than did mothers of adolescents at CHR for bipolar disorder.

There were no effects of CHR group on the conflictual behavior of either fathers or high-risk adolescents (see Table 3). However, there was a significant main effect of youth gender, $F(1, 31) = 6.18$, $p = .02$, and parental education, $F(2, 31) = 3.71$, $p = .04$, on fathers' conflictual behavior scores. Fathers of sons demonstrated significantly less conflictual behavior during family problem-solving interactions ($M = .31$, $SE = .11$) than did fathers of daughters ($M = .55$, $SE = .10$). Also, fathers from homes where one or both parents had some graduate education engaged in significantly less conflictual behavior per speaking turn ($M = .18$, $SE = .12$) than did fathers from homes where one or both parents completed some college ($M = .44$, $SE = .10$). In turn, fathers from homes where one or both parents completed some college engaged in significantly less conflictual behavior per speaking turn than did fathers from homes where one or both parents completed some high school ($M = .76$, $SE = .17$).

Discussion

The goal of the present study was to evaluate whether families of an adolescent at CHR for psychosis or bipolar disorder differ in pretreatment rates of constructive and conflictual communication during family problem-solving interactions. Significant differences in family communication were detected as a function of risk group, although the effects of risk group differed by family member.

As hypothesized, mothers displayed more constructive behaviors when their adolescent was at risk for bipolar disorder as compared with psychosis. Specifically, their speaking turns were more often purely constructive, involving displays of affection, such as smiling, positive eye contact, gentle physical contact, and mutual humor. These mothers also provided more explicitly supportive remarks (e.g., "You have been doing a great job …") or attempted more frequently to normalize the problem or take ownership for their role in the problem (e.g., "I also get irritable when …"). Moreover, mothers of youth at CHR for bipolar illness nodded their heads and used vocal acknowledgments (such as "mm-hmm") to indicate attention more frequently than mothers of adolescents at CHR for psychosis. Further, ideas were more likely to be expressed in a neutral and/or positive tone by mothers of adolescents at risk for bipolar disorder as compared with psychosis. Also in line with our hypotheses, mothers of youths at risk for psychosis engaged in more conflictual behavior, especially in the subcategories of irritability, criticism, and cut-offs, than did mothers of youths at risk for bipolar disorder. Specifically, they were relatively more likely to raise their voices and punctuate their words in a way that conveyed tension and irritability, criticize or make overgeneralized statements, and speak over others who had not finished expressing their ideas. Although mothers of youths at CHR for psychosis engaged in relatively fewer constructive and relatively more conflictual behaviors than mothers of youths at CHR for

bipolar illness, they were more constructive and less conflictual during these conversations than their adolescent sons or daughters.

Contrary to our hypotheses, fathers' baseline constructive and conflictual communication did not differ based on the youths' risk classification. Fathers were more likely to communicate in a conflictual manner when interacting with a daughter and in a constructive manner when with a son. Moreover, the association between fathers' affective behavior in family interactions and their and their partners' education level suggests that fathers from more educated couples are more constructive in their interactions than are fathers from less educated couples.

Youths rated by experimenters as having moderate to severe functional impairment on the Global Assessment Scale demonstrated significantly less constructive behavior during family discussions than did youths who were rated by experimenters as having more serious impairment. Further, youth at CHR for psychosis were more functionally impaired than youth at CHR for bipolar disorder. Contrary to hypotheses, distinctions in risk classification were not reflected in different patterns of youth communication when controlling for functioning.

Several interpretations exist for how different patient and family factors may be affecting each family member's interactional behavior. Youth functioning does not explain between-groups differences in maternal communication; no significant main effects of GAF group on maternal communication nor interactions between GAF group and risk classification were observed. Behavioral differences in youth communication between risk groups were not observed during the 10-minute interactions; however, it is possible that subtle differences in behavior that were not captured by the behavioral coding system contributed to mothers' differential between-groups responses.

Alternatively, it is possible that between-groups communication differences may reflect differences in the way mothers perceive their offspring's symptoms, such as whether they believe the symptoms are controllable by the youth (Hooley & Gotlib, 2000). Several studies have found that hostility and criticism expressed by patients' relatives are independent of *objective* symptom severity (e.g., Meneghelli et al., 2011; Miklowitz et al., 1995). However, hostility and criticism are tightly linked to how relatives *perceive* the offspring's symptoms. Parents are especially likely to criticize behaviors that they view as under a patient's control, such as persistent negative symptoms. Episodic positive symptoms, on the other hand, are thought to be more readily perceived as the manifestation of a disorder and may be associated with less criticism as a result (Hooley & Gotlib, 2000). Mothers of a child experiencing early symptoms of psychosis may be more likely to attribute behaviors like social withdrawal or unusual thoughts to their child's character than to an illness. In comparison, the cycling moods and acute disruptions that come with risk for bipolar disorder may be perceived as discrete symptoms of a disorder, and therefore less likely to evoke criticism.[2]

[2]This study provides some evidence in support of this explanation, given that there were significant negative correlations within the CHR for psychosis group between mothers' constructive behavior and youths' negative symptoms as measured by the SIPS (−.32, p = .03).

For fathers, the differences in communication between CHR groups were in the same direction as for mothers; however, given that analyses included fewer fathers than mothers (n = 52 and n = 82, respectively), there was less power to detect between-groups differences. Post hoc power analyses conducted using G*power revealed that when assessing fathers' conflictual communication, an n of approximately 121 would have been required to meet or exceed a recommended power threshold of .80, given the observed between-groups effect size (f = 0.26) for risk classification. Therefore, it is possible that our observation of insignificant group-based communication differences for fathers reflects type II error. Alternatively, it is possible that fathers' communication truly is not impacted by the adolescent child's symptoms. In our sample, mothers were much more likely to bring their youth to the videotaped pretreatment session. This may reflect a general pattern of increased caregiving provided by mothers than by fathers, which could result in mothers being more sensitized to youths' behavior and developing distinct patterns of communication that correlate with the symptoms youth experience.

In regards to the unanticipated education finding, it is possible that fathers with less education experience more frequent or chronic stressors. Prior work has found that external sources of stress that may be associated with lower levels of education, including financial strain, and predict negativity in direct communication among families (Conger, Ge, Elder, Lorenz, & Simons, 1994; Conger et al., 2002). Again, this explanation should be considered speculative, and it is unclear why an association between education and communication was observed for fathers but not for mothers.

The results of this study have implications for treatment design and implementation during the CHR stages of bipolar disorder and psychosis. Our data support the utility of family-based approaches to early intervention. Considering the significant differences in maternal communication between groups, communication training with the whole family rather than the symptomatic individual may increase the likelihood that positive cycles of communication are supported and that negative cycles of communication are initiated less frequently or derailed before they escalate. Indeed, prior work found that 18 sessions of family-focused therapy during the clinical high-risk stages of psychosis effectively reduced irritability, anger, complaints, and criticism during family problem-solving interactions, while increasing active listening and calm communication (O'Brien et al., 2014). Given these observations, it is particularly troubling that youth at CHR for psychosis are nearly nine times more likely to receive individual psychotherapy than family therapy in the public health care system (Cadenhead et al., 2010).

While youth at CHR for psychosis or bipolar disorder are likely to benefit from family-based approaches, these groups may require different treatment intensities, durations, and emphases to reap maximum benefit. Because youth at CHR for psychosis seem to be recipients of praise less frequently and of criticism and irritability more frequently than youth at CHR for bipolar disorder, the cumulative impact of this pattern could put these youths at risk for further developmental disruption. Therefore, families of youth at CHR for psychosis may benefit most from communication enhancement and problem-solving training within an intensive skills-based intervention format such as family focused therapy (FFT). An emphasis on increasing opportunities for praise within the family may be especially

useful, given that youth at CHR for psychosis have been found to be more reactive affectively and physiologically to praise in comparison to healthy controls (Weintraub, Weisman de Mamani, & Timpano, 2016). On the other hand, because families with an adolescent at CHR for bipolar disorder evidence a relatively higher level of pretreatment constructive communication skill, these families may show equal improvement with relatively shorter interventions.

Because youths at CHR for psychosis are lower functioning than those at CHR for bipolar illness, they may have greater difficulty participating in stressful conversations with family members or may experience neuropsychological impairments that interfere with family problem-solving. Combining psychosocial interventions with cognitive remediation techniques has previously been found to increase working memory and empathy in individuals with schizophrenia (Kurtz, Mueser, Thime, Corbera, & Wexler, 2015). Adding a cognitive remediation component to family-based interventions for youth at clinical high-risk for psychosis may be advantageous and is deserving of further research.

This study had several limitations. First, only treatment-seeking families were represented in this sample, which limits the generalizability of our results. It is possible that the present findings would not extend to non-treatment-seeking families with a similarly symptomatic adolescent. Moreover, youth classified as CHR for bipolar disorder or psychosis often do not go on to become fully symptomatic; approximately 29% of individuals in the NAPLS sample were found to convert to psychosis within 2.5 years (Addington et al., 2011). About 45% of youth at high risk for bipolar disorder (i.e., those with bipolar disorder not otherwise specified and a parent diagnosed with bipolar disorder) have been found to develop bipolar I or II disorder within five years (Axelson et al., 2011). Longitudinal designs with follow-up throughout late adolescence and young adulthood would be necessary to clarify whether parental communication affects a child's subsequent likelihood of conversion, and whether parental communication differences exist prior to or emerge in reaction to youth symptoms. The cross-sectional design of the present study precludes us from characterizing the directionality of our findings.

There is always the possibility that a third variable, unmeasured in this study, accounts for the between-groups differences we observed in maternal communication. Comparing two distinct data sets carries with it the intrinsic disadvantage of possible confounding factors; for instance, different investigators carried out data collection at different times, using largely different measures. For example, our measurement of functioning differed slightly between groups, and may be seen as outdated considering the exclusion of the GAF from the most recent edition of the *DSM*. It is possible that the between-groups differences in maternal communication behavior we observed could result from such sampling differences. However, if this were the case, we would likely see a similar pattern of between-groups differences when comparing fathers or high-risk youth. This study attempted to assess and test for many third variables, including gender, age, and parent education.

Finally, with any behavioral coding system, there is the possibility that coders become less strict over time when evaluating videos of interactions. We attempted to control for drift by utilizing the same behavioral coding system and raters' manual when coding both CHR

populations, and by conducting periodic coding comparisons to ensure fidelity to the coding manual. Moreover, the lead coder participated in coding videos for both CHR populations. Coding teams for both data sets reached high levels of interrater reliability.

Despite these limitations, our findings provide a preliminary answer to the essential question originally posed by this study. Does family communication with CHR youth differ by youth risk classification? Mothers' communication behavior does differ, which indicates that youth at risk for psychosis may experience more stressful communication in daily life than do youth at risk for bipolar disorder. Future work should confirm and expand upon these findings by: (1) clarifying the optimal number of sessions and optimal intervention intensity for populations at CHR for psychosis or bipolar disorder and (2) investigating other characteristics of the family that could influence problem-solving interactions, such as parent education and parent perceptions of symptom controllability.

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Table 1

Coding Categories and Intraclass Correlation Coefficients

Codes	Definition	Example	ICC	
			CHR bipolar disorder	CHR psychosis
Calm-constructive			.96	.89
Affection and compliments	Displays of affection, caring; supportive remarks; expressing positive feelings about others	"We are all in this together"; "Good job"	.83	.86
Mild listening	Minor indication of listening	Saying "Mm-hm," nodding head	.94	.81
Active listening	Listening empathically, eliciting another's point of view, summarizing, asking follow-up questions	"That sounds tough," "Tell me more about that"	.97	.90
Calm speaking; Specific requests for change	Expressing oneself clearly and concisely in a neutral or positive tone of voice, direct requests for behavior change, nonjudgmentally stating what the other person has done that the speaker didn't like	"I think it is reasonable to expect someone your age to be doing their own laundry."	.93	.81
Organization	Efforts to get or keep the conversation on track	"Who would like to start?"	.88	.84
Critical-conflictual			.87	.79
Irritability, anger, crying (emotion dysregulation)	Speaking with an edge or tone, sounding irritable/defensive/angry, being uncooperative/withdrawing from the conversation, crying	"I do clear my dishes!" (in an irritable tone)	.78	.84
Complaints / criticism; monologue; speaking for the other	Overgeneralizations, naggy/bossy statements, listing complaints, demanding/overdramatic statements, speaking nonstop for a long time, assuming one knows how the other feels without asking	"You judge me on everything"; "I know that you don't have any self-confidence"	.88	.76
Cutoffs	Starting to speak before another has finished, cutting off the other person's line of thought	—	.91	.78
Off-task comments	Going on a tangent away from the discussion topic	"Hey, they have crayons here"	.82	.60

Note. ICC = intraclass correlation coefficients; CHR = clinical high-risk.

Table 2

Characterization of Study Participants and Families

Variable	At-risk BD (*n* = 45)	At-risk psychosis (*n* = 58)	χ^2 or *t*	*p*	Total % (*n* = 103)
Age *M* (*SD*)	15.27 (1.32)	15.34 (1.25)	−.31	.76	
Gender % (*n*)			8.68	.00 *	
Male	31.11(*n* = 14)	60.34 (*n* = 35)			47.57 (*n* = 49)
Ethnicity % (*n*)			5.30	.62	
Native American	2.22 (*n* = 1)	.00 (*n* = 0)			.97 (*n* = 1)
African American	11.11 (*n* = 5)	13.79 (*n* = 8)			12.62 (*n* = 13)
Caucasian	62.22 (*n* = 28)	44.83 (*n* = 26)			52.43 (*n* = 54)
Asian	4.44 (*n* = 2)	3.45 (*n* = 2)			3.88 (*n* = 4)
Pacific Islander	2.22 (*n* = 1)	.00 (*n* = 0)			.97 (*n* = 1)
Hispanic	15.56 (*n* = 7)	18.97 (*n* = 11)			17.48 (*n* = 18)
Middle Eastern	.00 (*n* = 0)	1.72 (*n* = 1)			.97 (*n* = 1)
Multiracial	2.22 (*n* = 1)	5.17 (*n* = 3)			3.88 (*n* = 4)
Declined to provide	.00 (*n* = 0)	12.07 (*n* = 7)			6.80 (*n* = 7)
Diagnoses % (*n*)					
Mood disorder	100 (*n* = 45)	37.93 (*n* = 22)			
MDD	73.33 (*n* = 33)				
BD-NOS	35.56 (*n* = 16)				
Anxiety disorder	48.89 (*n* = 22)	48.27 (*n* = 28)			
Substance use disorder	2.22 (*n* = 1)	1.70 (*n* = 1)			
Learning disorder	17.78 (*n* = 8)	8.62 (*n* = 5)			
ODD	6.67 (*n* = 3)				
SOPS positive *M* (*SD*)		11.50 (3.29)			
SOPS negative *M* (*SD*)		12.45 (5.99)			
CDRS-R *M* (*SD*)	10.47 (6.36)				
YMRS *M* (*SD*)	39.08 (12.59)				
GAF % (*n*)			6.25	.01 *	
Low functioning	22.22 (*n* = 10)	51.72 (*n* = 30)			38.83 (*n* = 40)
High functioning	55.56 (*n* = 25)	41.38 (*n* = 24)			47.57 (*n* = 49)

Variable	At-risk BD (*n* = 45)	At-risk psychosis (*n* = 58)	χ^2 or *t*	*p*	Total % (*n* = 103)
Missing data	22.22 (*n* = 10)	6.90 (*n* = 4)			13.59 (*n* = 14)
Averaged parent education % (*n*)			5.62	.06	
Complete or partial high school or less	13.33 (*n* = 6)	32.76 (*n* = 19)			24.27 (*n* = 25)
Complete or partial undergraduate	51.11 (*n* = 23)	46.55 (*n* = 27)			48.54 (*n* = 50)
Complete or partial graduate school	33.33 (*n* = 15)	20.69 (*n* = 12)			26.21 (*n* = 27)
Declined to provide	2.22 (*n* = 1)	.00 (*n* = 0)			.97 (*n* = 1)

Note. BD = bipolar disorder; MDD = major depressive disorder; BD-NOS = bipolar disorder not otherwise specified; ODD = oppositional defiant disorder; SOPS = Scale of Prodromal Symptoms; CDRS-R = Children's Depression Rating Scale Revised; YMRS = Young Mania Rating Scale; GAF = Global Assessment of Functioning.

*$p < .05$.

Table 3

Communication Differences for Mothers, Fathers, and Youths on the Basis of Risk Classification

Codes *M* (*SE*)	At-risk classification		
	BD	**Psychosis**	***F, p***
Constructive			
Mother	1.17 (.08)	.97 (.06)	5.27, .03 *
Affection and compliments	.08 (.01)	.04 (.01)	14.89, .00 ***
Passive listening	.11 (.01)	.03 (.01)	21.44, .00 ***
Calm speaking; requests for change	.69 (.03)	.59 (.03)	5.32, .02 *
Father	1.09 (.08)	1.03 (.07)	3.73, .06
Youth	.77 (.07)	.68 (.05)	<1
Conflictual			
Mother	.30 (.07)	.54 (.06)	7.98, .01 **
Irritability, anger, crying	.07 (.03)	.20 (.03)	11.53, .00 ***
Complaints/criticism; monologue; speaking for the other	.06 (.02)	.12 (.02)	6.24, .01 *
Cutoffs	.04 (.02)	.15 (.02)	22.75, .00 ***
Father	.39 (.11)	.49 (.10)	2.05, .16
Youth	.48 (.10)	.61 (.07)	1.24, .27

Note. Mother = mothers' average constructive/conflictual behavior summary score; Father = fathers' average constructive/conflictual behavior summary score; Youth = youths' average constructive/conflictual behavior summary score; *M* = mean; *SE* = standard error; *BD* = bipolar disorder.

* $p < .05$.

** $p < .01$.

*** $p < .001$.