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Examining Family Functioning in Pediatric Bipolar Disorder Through Kinetic Family Drawings

Graduate Thesis

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of the School Psychology Department

College of Liberal Arts

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By

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Table of Contents

Abstract.....pp. 3

Chapter 1: Introduction.....pp. 4

Chapter 2: Literature Review.....pp. 11

Chapter 3: Methods.....pp. 29

Chapter 4: Results.....pp. 35

Chapter 5: Discussion.....pp. 42

Limitations.....pp. 46

Future Directions.....pp. 46

References.....pp. 48

Abstract

Pediatric bipolar disorder (PBD) is a mental illness that affects the daily lives of children and adults, particularly their family functioning. Past research has found significant differences in maternal-child warmth and disciplinary warmth, maternal and paternal hostility and tension, family cohesion and adaptability, and minor conflicts between children with PBD and comparison groups. Typical methods for assessing family functioning involve objective scales, questionnaires, and interviews. The projective measure, the Kinetic Family Drawing (KFD), has been utilized with other groups including populations of abused and maltreated children, and children with serious medical illnesses, but has yet to be utilized with the pediatric bipolar population. The current study analyzed family functioning through the use of KFD's completed by children with PBD and healthy control (HC) children. **Method:** The sample contained 24 parent-child dyads (14 control and 10 bipolar), with children ranging from 10 to 18 years of age ($M=13.7$ years). Each child completed the KFD task and parents and children completed the Self-Report Family Instrument (SFI), which was used as an objective measure of family functioning to compare to the KFD. **Conclusion:** No differences were found in the KFD's between the PBD and HC groups. Results indicate that parents and children in the PBD group view their family functioning more positively overall and in the areas of Family Health/Competence, Family Cohesion, Family Communication or Expressiveness, and Directive Leadership when compared to the control group. Results were not in the expected direction, and are discussed and analyzed further. Implications of the findings are also addressed.

Chapter 1

Introduction

Pediatric Bipolar Disorder (PBD) is a life-long debilitating disorder with a lifetime prevalence rate between .4% and 3.3% (Maniscalco and Hamrin, 2008). PBD is often characterized by rapid cycling mood states and levels of energy, along with mixed states (symptoms of mania and depression co-occurring), irritability, and changes in sleep patterns and behavior. This disorder significantly affects many aspects of a child's life including interpersonal and psychosocial functioning, and in particular, the quality of family relationships (Esposito-Smythers, Birmaher, Valeri, Chiappetta, Hunt, Ryan, Axelson, Strober, Leonard, Sindelar, & Keller, 2006; Geller, Bolhofner, Craney, Williams, DelBello, & Gundersen, 2000; Robertson, Kutcher, Bird, & Grasswick, 2001; Schenkel, West, Harral, Patel, & Pavuluri, 2008; Sullivan & Miklowitz, 2010; Uebelacker, Beevers, Battle, Strong, Keitner, Ryan, Solomon, & Miller, 2006). Although interest in psychosocial functioning and family dynamics in PBD have increased over the past few years, there are a limited amount of studies that have directly examined the quality of family functioning among families who have a bipolar child. Therefore, family functioning in pediatric bipolar disorder is the focus of the present study. Indeed, family functioning is an area that deserves much attention because the family unit is the group of people that are closest to these children, and the people who interact with them and their disorder on a daily basis. Family functioning has an influence on and is influenced by children with PBD.

Bipolar disorder is assessed and diagnosed through the use of clinical interviews, questionnaires and scales. Some of the most commonly used tools include the Kiddie Schedule for Affective Disorders and Schizophrenia Present and Lifetime Version (KSADS; Kaufman et al., 1997) to diagnose bipolar disorder, as well as the Young Mania Rating Scale (YMRS; Young

et al., 1978), and the Child Depression Rating Scale-Revised (CDRS-R; Poznanski et al., 1985) to assess manic and depressive symptoms respectively. Studies that have examined family relationships and functioning in PBD have relied primarily on questionnaires, psychosocial interviews, and rating scales to assess family dynamics along with diagnostic and symptom measures to examine relationships between these variables (Esposito-Smythers et al., 2006; Geller et al., 2000; Robertson, et al., 2001; Schenkel, et al., 2008; Sullivan & Miklowitz, 2010; Uebelacker, et al., 2006). Results from these studies have found significant differences in maternal-child warmth and disciplinary warmth, maternal and paternal hostility and tension, family cohesion and adaptability and minor conflicts between children with PBD and comparison groups (Geller, et al., 2000; Robertson, et al., 2001; Schenkel, et al., 2008; Sullivan & Miklowitz, 2010). Expressed emotion (EE) has also been implicated as a factor affecting family functioning and the relapse-remission course of PBD, with higher levels of EE found in families reporting more conflict, more negative interactions and lower cohesion (Sullivan & Miklowitz, 2010; Miklowitz, 2007).

Past research has given us an interesting and informative look into the lives of children with PBD and their families. Understanding how children with PBD perceive the functioning of their family holds implications for therapeutic guidelines and directions. One inherent difficulty with studying child perceptions of family functioning among PBD youth is the quality of the reports that are given by PBD patients. For example, PBD youth have been found to underreport their symptoms compared to the reports of their parents and the reports of clinicians (Youngstrom, Findling, Calabrese, 2004). Therefore, it is unclear whether or not PBD youth would be more likely to report difficulties in the quality of family functioning compared to their parents. Moreover, it is unclear whether or not PBD youth perceive their families as being more

problematic, and if they do, whether or not they would be truthful in reporting such difficulty. One method to address this issue is to use a less face-valid measure of family functioning such as the Kinetic Family Drawing (KFD, Burns & Kaufman, 1970). If more can be discovered about children with PBD's perceptions of family functioning through KFD's then the therapeutic focus and goals can be adjusted to address these perceptions. The more information that can be gathered and the more varied the information, the better prepared we will be to work with and treat these children and their families. For example, Family focused therapy (FFT) is commonly used with the PBD population, with a major component being the understanding of family dynamics from each family member's perspective, and how this relates to symptom management and clinical functioning (Miklowitz, 2007). Therefore, a better understanding of family functioning, particularly from the perspective of the affected child, is vital for successful psychosocial treatment.

Family-focused therapy is based on the premise that individuals with bipolar disorder will experience a decrease in symptomatology as a result of greater awareness of how to cope with the disorder, improvement in family problem-solving and communication skills and decreased levels of expressed emotions from family members or caregivers (Pavuluri, Graczyk, Henry, Carbray, Heidenreich, and Miklowitz, 2004). FFT has been developed for adults with Bipolar Disorder and a procedure to treat adolescents is being developed by Miklowitz and Goldstein (1997). A more developmentally friendly version of this therapy was developed and implemented for use with children diagnosed with PBD by Pavuluri et al. (2004) and they found that, in conjunction with medication, symptoms of mania, depression, aggression, psychosis, sleep disturbances and ADHD decreased and overall functioning improved. An accurate understanding of how the child views their family is essential to FFT, as it is based on the

perceptions of family functioning and communication patterns within the entire family. The better the understanding the better the focus and direction clinicians can take in FFT.

Although studies using objective measures of family functioning in PBD indicate more problematic relationships, there have been no studies to date that have examined family functioning in PBD using projective measures. Understanding how PBD youth view their families and family dynamics through the use of projective measures warrants attention from the research community. Tools such as the Psychosocial Schedule for School Age Children-Revised, Family Adaptability and Cohesion Scale (FACES II), Parent-Adolescent Communication Scales (PACS), Family Assessment Device (FAD), Parent-Child Relationships Questionnaire (PCRQ), and Conflict Behavior Questionnaire (CBQ) have been used to assess dimensions of family functioning in PBD (Esposito-Smythers et al., 2006; Geller et al., 2000; Robertson, et al., 2001; Schenkel, et al., 2008; Sullivan & Miklowitz, 2010; Uebelacker, et al., 2006). Questionnaires and scales ask direct questions and usually make clear what is being asked and the type of responses being sought. The use of a projective measure is a way to indirectly analyze a child's unconscious feelings and thoughts. Projective measures have been used in research with other populations of children to assess family dynamics and functioning, but have yet to be explored in a sample of PBD youth.

The first projective measure was developed in 1897 by Francis Galton, and since then many others have been developed, researched and implemented with many populations. Projective measures, specifically drawings, are typically used by therapists in attempts to obtain valuable information from children without the need for direct verbal communication. These measures are often used in instances when individuals are not able to or unwilling to articulate this information openly. Symbolic representations of what a child sees in his or her life are

captured by these drawings and are seen by many researchers and clinicians as a way for children to express things they have experienced when they do not possess the language to describe what happened (Veltman and Browne, 2000). These drawings allow children to express their feelings in an unthreatening and indirect manner. They do not require children to answer direct and specific questions that may trigger traumatic memories or negative and unhealthy thoughts or emotions that further any pain previously or currently experienced.

Projective measures, such as the KFD have been employed with other populations including children with delayed perceptual and motor development, children who have serious medical illnesses, English Language Learners (ELL), and maltreated children (Baker and Raskin, 1975; Cornman, 1993; Hackbarth, 1991; Ochoa, Riccio, Jimenez, de Alba, and Sines, 2004; Veltman and Browne, 2001). The KFD was found to be better than another type of projective drawing, the Favorite Kind of Day, at identifying maltreated children (Veltman & Brown, 2001). The KFD technique was developed by Burns and Kaufman (1970) as a projective tool for assessing perceptions of family dynamics and self within the family. Baker and Raskin (1975) found two clinical signs of socio-emotional disturbances (Isolation and Bodily Concerns) to be more frequent in drawings of children who have perceptual and/or motor delays than their non-delayed peers. They suggested that this knowledge be used proactively to help children and their families before these socio-emotional problems become too severe.

Hackbarth (1991) studied the use of the KFD with children who have experienced sexual abuse. They found that ratings of the KFD could significantly discriminate between sexually abused children and unidentified children with “normal adjustment,” and that the children who had been abused drew significantly less desirable family situations. The utility of projective measures with other populations, such as sexually abused children, has been demonstrated by a

range of studies. Therefore, it is somewhat surprising that projective tests have not been researched for use among pediatric populations with mood disorders, and in particular youth with PBD. The use of accurate assessments for children with PBD is particularly important as understanding how they view their family and fit into the family structure has direct implications on treatment. Normed objective measures of family functioning are an important part of better understanding psychosocial functioning among PBD youth. However, projective measures may be an alternative and/or adjunctive method for assessing children's perspectives on family functioning. Although to date, this issue has not been empirically studied, it may prove to be a valuable measure with this population, and therefore, warrants further investigation.

Children with PBD, their families, teachers, counselors, psychologists, therapists and any other mental health professional will benefit from knowledge gained from exploring the potential of projective measures in understanding PBD. According to a study by Ochoa, Riccio, Jiminez, Garcia de Alba and Sines (2004), Kinetic Family Drawings were being used by school psychologists around the nation as part of assessments of emotional disturbance for English Language Learners. About 55% of their sample reported using KFD's frequently. KFD's are used in pediatric practice to survey development at a specific point in time and longitudinally, as reported by Stein (2001). They provide clues and information about the family relationships and individual behaviors as well as open dialogue between doctor, patients and families.

Most studies caution against using KFD's to diagnose or determine the presence or absence of some particular behavior or activity, because this instrument provides only one piece of evidence that must be considered along with other information. Most studies on the empirical validity of the KFD have found significant but modest construct and criterion-related validity, but data on reliability has been relatively inconsistent. The integration of other sources of

information is always necessary when using data gathered from projective measures. It is not the intent of this study to justify the sole use of the Kinetic Family Drawing in the Pediatric Bipolar population to assess family functioning. Based on findings from previous studies, it is thought that this technique will provide valuable information that will add to the understanding of family functioning gained through clinical interviews, questionnaires and scales. It is important to discover if there are observable and measurable differences in drawings between children with PBD and healthy comparison children, so that the usefulness of KFD's can be assessed and evaluated. Because differences between groups in other populations have been found by previous studies, it is hypothesized that there will be significant differences in KFD's between the PBD group and the Healthy Control (HC) group. The findings will also be compared to children's and mothers' perceptions of family functioning using an objective self-report measure, the Self-Report Family Instrument (Beavers, Hampson, and Hulgus, 1990). The SFI examines several dimensions of family functioning including family structure, mythology, goal-directed negotiation, autonomy of family members, the nature of family expression and family style.

The purpose of the current study is to examine how children with and without PBD perceive family dynamics through the use of the KFD and to compare this to objective measures of family functioning from both PBD patients and their mothers. The following research questions will be addressed by the current study: What, if any, major differences exist in the Kinetic Family Drawings (KFD) between children with Bipolar Disorder and Healthy Controls? What do these differences mean in terms of perceived family functioning? Are there patterns to the Kinetic Family Drawings or patterns to the differences between the two groups? How do the findings from the KFD's compare to the SFI completed by children and their parents?

Chapter 2

Literature Review

Pediatric bipolar disorder (PBD) is a complex disorder with a variety of symptoms and features. It presents differently in children than in adults, making it difficult to diagnose and treat. This has also created a good deal of controversy as to whether bipolar disorder can exist and be diagnosed in children. Youngstrom, Birmaher, and Findling (2008) reviewed and critically evaluated the evidence available on PBD and identified elated, expansive, euphoric mood, racing thoughts, decreased need for sleep, hypersexuality and mood swings/lability as the most specific symptoms to BD in youths. They also identified associated features of the disorder including attention problems, anxious and depressed symptoms, aggressive behavior, delinquent behavior, social problems, withdrawal and thought problems. Interviews with parent and child indicated that youth with BD experienced less maternal-child warmth, more tension between child, mother and father, and more impaired peer relationships compared to healthy control children. Youngstrom et al. (2008) asserted support for the validity of a bipolar diagnosis in children and adolescents.

The severity and chronic course of the disorder require that clinicians diagnose and treat it as soon as possible. Many other disorders or conditions co-occur with PBD, making differential diagnosis critical. Maniscalco and Hamrin (2008) identify ADHD, conduct disorder, anxiety disorders, posttraumatic stress disorder (PTSD) and oppositional defiant disorder (ODD) as the most common comorbid disorders. This also means that assessment and the methods employed need to be highly valid, reliable and clinicians need to ascertain information from multiple and varied sources.

Standardized measurement tools and clinical interviews are the most commonly used in the

assessment and diagnosis of PBD. The “gold standard” for diagnosing PBD is the WASH-U-KSADS (Washington University in St. Louis KSADS), a modified version of the Kiddie Schedule for Affective Disorders and Schizophrenia (KSADS). It is a semi-structured interview that is typically used in research settings (Geller, Williams, Zimmerman, & Frazier, 1996). Interviews like this one require clinicians to be highly trained in the administration of the assessment measure in order for them to be reliably administered. The length of semi-structured interviews like this one and the amount of training required results in their infrequent use in clinical settings (Fields & Fristad, 2009). Structured interviews are another method of assessment in PBD, but suffer from the same problem of being much too lengthy for clinical use. Clinical rating scales are common and include measures such as the K-SADS-Mania Rating Scale (K-MRS; Axelson, Birmaher, Brent, Wassick, Hoover, Bridge, et al., 2003) and the Young Mania Rating Scale (YMRS; Young Biggs, Ziegler, & Meyer, 1978). These tools are better used for assessing severity of manic symptoms or monitoring response to treatment, rather than for diagnoses. Lastly, self-report inventories are employed as well, and have been investigated in the literature.

Fields and Fristad (2009) reviewed several measures including Achenbach’s Child Behavior Checklist (CBCL; Achenbach, 1991a), Youth self-Report (YSR; Achenbach 1991b), Teacher’s Report Form (TRF; Achenbach, 1991c) and Child Mania Rating Scale-Parent Version (CMRS-P; Pavuluri, Henry, Devineni, Carbray, & Birmaher, 2006). The evidence generated about these measures suggests they are better utilized as screening tools, rather than used alone as diagnostic tools for PBD. Fields and Fristad (2009) advise that clinicians use a multi-informant, longitudinal, measured approach to assessment. Additionally, functional impairment as a result of the symptoms of PBD is a necessary component of the diagnoses and must not be

overlooked. The major areas of impairment in this disorder are disruption at home (with the family), in school or with peers. Assessment of these areas of the child's life is essential to proper diagnosis and treatment.

Family functioning in PBD is an area that deserves more attention in the research community. Several studies have looked at different aspects of family functioning in order to understand the influence family has on the disorder and in turn the influence the disorder has on the family unit. Uebelacker et al. (2006) studied family functioning in Bipolar I disorder in adults and examined whether global family functioning is associated with the course of bipolar disorder, through the use of the McMaster Clinical Rating Scale (MCRS) and the Family Assessment Device (FAD). They studied a sample of 62 adult patients (ages 18-75) with bipolar I disorder to examine whether global family functioning was associated with the presence of a concurrent bipolar episode as well as whether global family functioning was associated with the presence of manic and depressive episodes in the following three months. Global family functioning was repeatedly measured with both clinician-rated (with the MCRS) and patient-rated (FAD) assessment instruments over the 28-month study period.

The authors found that as a person's mood fluctuates, family functioning fluctuates as well, but family functioning was not associated with changes in episode status. Being in a manic episode was associated with poorer family functioning on the FAD. When analyzing the MCRS they found that being in a manic or depressive episode was associated with poorer family functioning. When family functioning was measured three months later they found that neither the FAD or MCRS was associated with subsequent mania, however the MCRS was associated with depressive episode three months later. The results suggest that family functioning

fluctuates with mood symptoms in adults with BD, and is an important focus in therapeutic treatments.

Robertson et al. (2001) investigated the impact of adolescent onset bipolar illness on perceived family functioning. They utilized comparison groups of unipolar youth and normal controls. Subjects consisted of 44 stabilized bipolar I, 30 unipolar youth, and 45 normal controls with mean ages of 19.9, 18.5 and 18.2 years, respectively. Subjects completed the Family Adaptability and Cohesion Scale (FACES II), Parent-Adolescent Communication Scales (PACS), which assess openness, selectivity, strengths, weaknesses and problematic issues in adolescent-mother and adolescent-father dyads, and the Social Adjustment Inventory for Children and Adolescents (SAICA) which evaluates themes of shared activities, responsibility, affection and communication within families.

There were no significant group or sex differences between controls and mood disordered subjects (bipolar and unipolar) in ratings of relationship with either parent. Bipolar youth acknowledged significantly more minor conflicts with parents than either unipolars or controls. Ratings by mood disordered subjects were significantly less positive in terms of shared activities and communication with siblings, and mood disordered youth were significantly more likely than controls to describe their families as less cohesive/less connected. Overall, bipolar adolescents' perceptions of family dynamics do not seem to diverge significantly from controls in this study. Robertson et al. (2001) concluded that “substantial difficulties in family functioning are not present” (p. 35) in the course of bipolar and unipolar illness in youth and that interventions focused on family functioning will not provide significant benefits based on these findings. They asserted the need for further research exploring specific variables or aspects of family functioning that could be targeted in therapeutic interventions. This study did have a

number of limitations however. For example, the bipolar patients were euthymic which may have accounted for the lack of significant findings. The use of non-objective measures, such as self-report ratings of family functioning is also a major limitation and may have influenced the results. While this study did not find group differences in family functioning, there have been a number of other investigations that have found significant impairments in family functioning.

High levels of expressed emotion (EE) or highly critical and intrusive behavior by family members have been associated with higher rates of relapse among BD patients (Miklowitz & Johnson, 2009). For example, Rosenfarb et al. (2001) examined the relationship between symptom expression during family interactions and illness course among adult patients with bipolar disorder. Following discharge from inpatient hospitalization (due to manic episode), twenty-seven bipolar patients and their relatives participated in two 10-minute family interactions. Patient ages ranged from 18-30 (mean age=21.2 years). The patients' behavior was measured by a modified version of the Patient Symptom Profile (PSP; Rosenfarb, Goldstein, Mintz, & Nuechterlein, 1995). Relatives' behavior was measured by The Affective Style coding system (Doane, Falloon, Goldstein, & Mintz, 1985), which assesses verbal behavior in five dimensions. Patients were followed and assessed every three months for a total of nine months using an outcome instrument called the Brief Psychiatric Rating Scale (BSRS; Lukoff, Nuechterlein, & Ventura, 1986).

Results indicated that patients who showed high levels of odd and grandiose thinking during the interactions with family members were more likely to relapse during a nine month follow-up period than patients who did not show these symptoms during the family discussions (this difference approached but did not reach significance). Higher rates of harshly critical and directly supportive statements by relatives were both related to relapse. Patients' odd thinking

and relatives' harsh criticism were significantly more likely to be correlated when patients relapsed than when they did not relapse. The data also suggested that relatives of relapsing patients cope with these symptoms by increasing both positive and negative affective behaviors (Rosenfarb et al. 2001). According to the authors, their findings indicate a bidirectional relationship between patients and their relatives and an interaction between patients' symptoms and relatives' coping style in predicting relapse. They suggested that these results be interpreted as preliminary findings that require further attention and a larger sample size. The results were limited by the small sample size and the fact that the participants were mostly Caucasian and young.

Turning to the study of BD in children, Geller, Bolhofner, Craney, Williams, DelBello, & Gundersen, (2000) were one of the first to compare psychosocial functioning (PF) in a prepubertal and early adolescent phenotype (PEA-BP) to matched community controls (CC) and children with attention-deficit/hyperactivity disorder (ADHD). There were 93 PEA-BP (with or without comorbid ADHD), 81 ADHD, and 94 CC subjects, mean ages 10.9, 9.7, and 11.1 years respectively. Children with BD were assessed through the WASH-U-KSADS (Geller, et al., 1996), and relationships between participants and parents, siblings, teachers, and peers were assessed through the Psychosocial Schedule for School Age Children-Revised (PSS-R; Puig-Antich, Lukens, & Brent, 1986). Mothers and children were separately interviewed with the PSS-R and marital relationships were also assessed through the same instrument.

Geller et al. (2000) found that compared with both ADHD and CC subjects, PEA-BP cases had significantly greater impairment on items that assessed maternal-child warmth, maternal-child and paternal-child tension, and peer relationships. Peer relationship impairments were found in the categories of few/no friends and poor social skills. They also suggested that

clinicians need to consider PF deficits when planning interventions. The authors noted that the results were limited by a PBD phenotype characterized by elation and/or grandiosity.

Miklowitz (2007) analyzed and summarized the current research and findings on BD with regards to the role of psychosocial stressors, including high EE attitudes among family members, in the relapse-remission course of the disorder. The author postulated a developmental psychopathology approach to EE, which begins with a child with temperamental disturbances and a parent's reaction of frustration and hostility or guilt and anxiety. Miklowitz (2007) then looked at the bidirectional effects of the child's symptoms and behaviors on the parent or caregiver with higher levels of EE. The parent's criticisms and responses continually affect the child and contribute to self-doubt and self-criticism. High EE-relatives are more likely to attribute the negative behaviors of patients to personal and controllable factors, while low-EE relatives are more likely to attribute behaviors to external stressors. Negative cycles of verbal and nonverbal interaction are also more likely with high EE relatives. Overall stress levels of patients can be increased by these and other cognitive vulnerabilities.

Although the primary treatments for bipolar disorder are pharmacological, there is much evidence supporting the positive effects of a combination of pharmacotherapy and family-focused therapy (FFT). The psychosocial difficulties and effects on family relationships in BP, evidenced by a large group of studies (Geller et al., 2000; Schenkel et al., 2008; Youngstrom et al., 2008; Rosenfarb et al., 2001; Uebelacker et al., 2006; Miklowitz, 2007), indicate the need to address these impairments through psychosocial treatments. Several randomized controlled trials have demonstrated that the combination of FFT and pharmacotherapy delays relapses and reduces symptom severity among patients followed over the course of one to two years.

Miklowitz (2007) concluded that FFT may play a more indirect role in enhancing protective

qualities of family relationships rather than directly decreasing negative criticisms or response patterns from relatives. The author suggested that more information needs to be obtained on the subpopulations of patients who would most likely benefit from family focused interventions.

Sullivan and Miklowitz (2010) further examined the role of EE in family functioning through parent and adolescent reports. They pointed out the importance of understanding if families of children with bipolar disorder differ uniquely from families of healthy children, since there is so much support for family therapy with this population (Miklowitz & Goldstein, 1997; Miklowitz et al., 2004; Pavuluri et al., 2004). They examined parent and adolescent reports of family functioning, expressed emotion (EE) and their interrelationships closely following an episode of mood disorder in the adolescents. Most studies examining family functioning have studied participants who were euthymic, making this study unique in its design. The participants included 58 families with a child between 12-17 (mean age 14.48). They recruited participants for a randomized trial of family focused treatment with pharmacotherapy in comparison with brief psychoeducational treatment and pharmacotherapy (Sullivan & Miklowitz, 2010). The Camberwell Family Interview (CFI; Valughn & Leff, 1976) was utilized to obtain EE ratings from parents, the Conflict Behavior Questionnaire (CBQ; Prinz, Foster, Kent, & O'Leary, 1979) to measure problems with interpersonal behavior in the household, and the Family Adaptability and Cohesion Evaluation Scale II (FACES-II; Olson & Tiesel, 1991) as a self-report measure of family adaptability and cohesion. Rather than using a control group, they compared the means of parent and child scores to the normative means of the measurement tools used in the study.

Compared to scale scores reported by healthy adolescents and their families, Sullivan and Miklowitz (2010) found that cohesion and adaptability were more impaired in families with an adolescent with bipolar disorder. Interestingly they also found that levels of conflict were higher

than normative scores reported by healthy families, but not significantly different from scores gathered from distressed, clinic-referred families. More severe depressive symptoms were associated with lower parent-reported family cohesion ratings, while more severe levels of mania were associated with lower adolescent-reported cohesion and higher father-reported family conflict scores. Parents rated high in EE reported less cohesion and adaptability, and more conflict, than parents rated low in EE. Parents who expressed greater numbers of critical comments also reported more conflict than those who expressed fewer criticisms. They also found a curvilinear relationship between scores on the mania measure and parent-reports of adaptability and cohesion, which they determined to mean that when adolescents are at an extreme of few manic symptoms or severe manic symptoms, there is more adaptive and cohesive behavior within the family. Overall, when adolescents had a recent mood episode, families reported being less cohesive, less adaptive and more conflictual than families of adolescents from normative samples (Sullivan & Miklowitz, 2010). The authors suggested that family adaptability, cohesion, and conflict may be important targets for family treatments administered during periods immediately following a symptom episode in early onset bipolar disorder. A limitation of this study was the lack of a control group for comparison and they stated the need for future studies implementing control groups and comparison groups of children with other psychiatric disorders in which family functioning is disrupted.

Esposito-Smythers, Birmaher, Valeri, Chiappetta, Hunt, Ryan, Axelson, Strober, Leonard, Sindelar, & Keller, 2006) examined the association between youth comorbid psychiatric disorders, maternal mood disorder, and perceptions of family cohesion and conflict among youth diagnosed with PBD. A sample of 389 bipolar patients and their parents completed a diagnostic interview, the K-SADS-PL (Kaufman et al., 1997) and instruments assessing family

psychiatric history (The Family History Screen; Weissman et al., 2000) and functioning. Family functioning was assessed with the Family Adaptability and Cohesion Scales-II (FACES II; Olson, Bell, & Portner, 1982) and the Conflict Behavior Questionnaire (CBQ; Robin & Foster, 1989).

The authors found that the presence of a maternal mood disorder was associated with lower family cohesion. The presence of a youth externalizing disorder with or without a co-occurring anxiety disorder was also associated with lower family cohesion as well as higher family conflict. The negative relationship between maternal mood disorder and family functioning was stronger in the presence of a youth externalizing disorder. Youth comorbidity and maternal mood disorders appear to be associated with worse family functioning among bipolar youths. According to the authors, family-based treatments with bipolar youths may need to integrate treatment of youth comorbidity and address maternal mood disorder for the most advantageous results. The authors point out two limitations of the study, the first being the cross-sectional nature of the study and inability to make causal associations and the second being that the family functioning measures were not based on independent observations, but rather on self-reports that could have been biased.

Given the high rates of comorbidity and parental psychopathology among PBD youth (Esposito-Smythers et al., 2006; Pavuluri, Birmaher, & Naylor, 2005), it is essential to target these co-occurring conditions along with the actual disorder itself. For example, Esposito-Smythers et al. (2006) suggest that family therapy should include an individual component for the child to target cognitive distortions that may be associated with co-occurring anxiety disorders, and the maternal or paternal mood disorder should be targeted in a separate treatment modality. The association between maternal mood disorder and family functioning relates to

Miklowitz's (2007) model of EE and psychosocial functioning in PBD. The presence of a maternal mood disorder would even more negatively affect interactions between mother and child and create an environment that would further exacerbate difficulties in family functioning and potential for relapse.

Schenkel et al. (2008) explored parent-child relationships in PBD, specifically the extent to which difficulties in the parent-child relationships affect or influence the course of PBD and the child's functioning. In the same way that parenting can have effects on the course of the child's disorder, the child's symptoms and behaviors can in turn affect parenting behaviors and reactions. PBD diagnoses were assessed through the administration of the WASH-U-KSADS (Geller et al., 1998), manic symptoms through the Young Mania Rating Scale (YMRS; Young et al., 1978), and depressive symptoms through the Childhood Depression Rating Scale Revised (CDRS-R; Poznanski et al., 1985). Lastly, maternal reports of the parent-child relationships were assessed through the Parent-Child Relationship Questionnaire (PCRQ; Furman & Giberson, 1995). The Family History Screen (Weissman et al., 2000) was utilized to assess for family psychiatric history. A group of children with PBD, a group with PBD and ADHD, and a healthy control group were compared on the results of these measures.

Significant group differences were found on several subscales of the PCRQ where the PBD group had lower scores on the Warmth and Personal Relationship subscales and higher scores on the Power Assertion subscale than the healthy controls. On the Power Assertion subscale the PBD + ADHD group had significantly higher scores than the PBD only group. In the PBD group correlational analyses found that higher scores on the YMRS were associated with lower scores on the PCRQ Warmth and Disciplinary Warmth subscales and higher scores on the Power Assertion subscales. Higher ratings of manic symptoms were associated with

lower warmth in the parent-child relationships and more perceived power assertion. As Schenkel et al. (2008) hypothesized, “mother-child relationships in the PBD group were characterized by less warmth and intimacy, and greater amounts of conflict.” Overall, the authors found significant difficulties in mother-child relationships among PBD youth, regardless of comorbid ADHD status, which further supports the need for psychosocial treatment concurrent with any pharmacotherapy (Esposito-Smythers et al., 2006; Geller et al., 2000; Miklowitz, 2007; Sullivan & Miklowitz, 2010; Uebelacker et al., 2006). Several factors limit the results of this study, including the cross sectional design and inability to determine causal directional effects, use of maternal reports only, and use of self-report rather than direct observational ratings or reports. The PBD youth were also medically stabilized at the time, which may have affected the results. Schenkel et al. (2008) suggested that this fact indicates that parent-child difficulties exist even after symptoms have been stabilized, again, further supporting the need for FFT or other psychosocial treatments.

FFT or psychosocial treatments have been discussed in many studies of family functioning in PBD (Esposito-Smythers et al., 2006; Miklowitz, 2007; Schenkel et al., 2008; Sullivan & Miklowitz, 2010; Uebelacker et al., 2006) and this form of treatment has been the sole focus in several other studies (Miklowitz, George, Axelson, Kim, Birmaher, Schneck, Beresford, Craighead, & Brent, 2004; Pavuluri, Graczyk, Henry, Carbray, Heidenreich, & Miklowitz, 2004). Pavuluri et al. (2004) described child- and family-focused cognitive-behavioral therapy (CFF-CBT), a developmentally sensitive psychosocial intervention for PBD intended for use along with medication and targeted for younger children. CFF-CBT integrates principles of family-focused therapy with those of CBT. According to Pavuluri et al. (2004), “the theoretical framework is based on (1) the specific problems of children and families coping

with bipolar disorder, (2) a biological theory of excessive reactivity, and (3) the role of environmental stressors in outcome.” CFF-CBT actively engages parents and children over 12 hour-long sessions and provides direct support for parents.

Pavuluri et al. (2004) conducted an exploratory study to determine the viability of CFF-CBT by assessing treatment integrity, adherence, and parent satisfaction. Participants included 34 patients with PBD (mean age 11.33 years) who were treated with CFF-CBT plus medication in a specialty clinic. Symptom severity and functioning were evaluated before and after treatment using the severity scales of the Clinical Global Impression Scales for Bipolar Disorder (CGI-BP; Spearing, Post, Leverich, Brandt & Nolan, 1997) and the Children's Global Assessment Scale (CGAS; Shaffer, Gould, Brasic, et al., 1983) respectively. They created the acronym “RAINBOW” for the specific therapeutic treatment protocol they implemented. The authors found that on completion of therapy, patients with PBD showed significant reductions in severity scores in symptoms of ADHD, aggression, mania, psychosis, depression, and sleep disturbance and significantly better global functioning compared to pretreatment assessment. High levels of treatment integrity, adherence, and satisfaction were achieved. Pavuluri et al. (2004) concluded that CFF-CBT had a strong theoretical and conceptual foundation and preliminary results supported the potential feasibility of the intervention. The study results were limited by the open trial, no control group design.

Miklowitz et al. (2004) conducted a randomized controlled open trial to assess a FFT model for adolescents (FFT-A) with PBD. Participants included 20 adolescents with BD (mean age 14.8 years), who completed FFT-A and received mood stabilizing medications for one year. The therapy consisted of 21 outpatient sessions of psychoeducation, communication enhancement training, and problem solving skills training. Diagnoses were verified through the

K-SADS-PL (Chambers et al., 1985; Kaufman et al., 1997) and levels of EE were assessed through the Camberwell Family Interview and Coding System (Vaughn & Leff, 1976). Outcome measurements were obtained every three months over the course of the year through the K-SADS mania and depression scales (Axelson et al., 1999) and the Child Behavior Checklist (CBCL; Achenbach et al., 1987). Miklowitz et al. (2004) found that the combination of FFT-A and mood stabilizing medications was associated with improvements in depression symptoms, manic symptoms, and behavior problems over one year. These early results were based on a small-scale open trial and therefore limited. In 2008 Miklowitz et al. published the results of a two-year follow-up of a randomized clinical trial of FFT-A. They found that family-focused therapy was effective in combination with pharmacotherapy in stabilizing bipolar depressive symptoms among adolescents.

The support for FFT means that it is especially important to have an extensive and complete understanding of family functioning in PBD. While most studies have implemented interviews, scales, questionnaires and direct observations, there have been no studies examining family functioning through the use of projective measures. Projective measures, in particular the KFD, can aid in gaining a more comprehensive view of family functioning from the child's perspective. Projective measures, specifically the Kinetic Family Drawing (KFD; Burns & Kaufman, 1971) have been employed with other populations such as children with delayed perceptual and motor development, and sexually or physically abused children (Baker & Raskin, 1975; Hackbarth, 1991; Veltman & Browne, 2001) and in pediatric practice (Stein, 2001). One of the earliest studies of projective measures was conducted by Baker and Raskin (1975), when they investigated the use of KFDs with kindergarten and first grade children with delayed perceptual and motor development.

The authors obtained KFDs from 50 kindergarten or first grade children with delayed perceptual and/or motor development and 50 controls to investigate the effectiveness of the instrument as a measure of socio-emotional dimensions of high-risk low achievers. The children were also given the Martin Screening Test for Motor Disabilities (MST; Martin, 1971) and the Beery Test of Visual Motor Integration (VMI; Beery, K. and Buktenica, N., 1967.) to screen them for a supplemental perceptual-motor program. Drawings were scored on the criteria of isolation, bodily concerns, and rivalry. Baker and Raskin (1975) found that Isolation and Bodily Concern were more frequent in children of average intelligence who were slower than their peers to develop perceptual and/or motor abilities. They point to the utility of having this knowledge in that it can be anticipated that these children will have concerns of isolation and body image, which can be targeted when working with these children. The limitation of this study was that the children were all from the same socio-economic group, so the results could have been limited to that SES group only.

A study in 1991 by Hackbarth compared KFD scores of sexually abused children and children not identified as sexually abused. Participants included 30 children in each group, with a mean age of 8.63 in both the unidentified comparison group and in the group of identified children. Mothers of these children also participated in the study. Hackbarth (1991) used counselor ratings of the Like to Live in Family (LILIF) rating procedure and found that the KFD could significantly discriminate between sexually abused and unidentified children. It was also found that the identified children drew less desirable family situations (family problems or hints of something wrong or hurtful) than their mothers and these mothers drew slightly less desirable family situations than mothers of unidentified children. This study demonstrated the utility of

KFDs with sexually abused children to gain a better understanding of their perceptions of their family situations.

Veltman and Browne (2000) investigated whether teachers and mental health professionals (MHPs) were able to identify drawings produced by maltreated children. They performed two studies with the first comprised of a group of 33 mental health practitioners (MHPs) and 10 teachers who were shown 12 sets of three drawings (six sets of Favorite Kind of Day [FKD] drawings and six sets of KFD's) of children age five to eight years. The second study involved 28 children (10 years old) who produced the FKD drawing and a KFD. From the first study, the authors concluded that MHPs, when given a 1:3 chance, were able to identify maltreated children's drawings significantly better than chance. Teachers were able to identify maltreated children from the KFDs above chance levels. In the second study, the MHPs and teachers were not told how many children were identified as maltreated. When presented with an 'open' choice, the probability of MPHs and teachers identifying maltreated children's drawings was no greater than chance. They concluded that the KFD may be a reliable drawing technique when it is known that child maltreatment is definitely present in a group of children's drawings. Projective measures can provide valuable information in scenarios like this, but as with all assessments, should be considered in conjunction with other information and knowledge. As with all forms of assessment, there are limitations to the KFD and one piece of evidence or information should not be used exclusively.

Veltman and Browne conducted another study in 2001, related to the study in 2000, which investigated whether the Favorite Kind of Day (FKD) and Kinetic Family Drawing (KFD) techniques would make useful screeners for child maltreatment. They used the same drawings they had collected from the previous study and had two trained raters use the Screening

Inventory for Kinetic Family Drawing (Peterson & Hardin, 1995). The inventory took into consideration qualitative (quality of the drawing, child perception of family members, and child self-perception within the family) and quantitative (styles used, treatment of figures drawn, actions drawn which emphasize negative aspects) variables. For screening purposes the KFD performed better than the FKD, but the authors cautioned against using the KFD as the only identification tool for maltreatment. They concluded that the FKD and KFD were not suitable as classroom screening tools in identifying children who were maltreated.

Stein (2001) reported on the usefulness of KFDs in pediatric practice. He discussed how KFDs have helped open dialogue between himself, children and parents and how he gained knowledge from the drawings and ensuing discussion that he would otherwise not have obtained. He also pointed to the utility of KFDs as a tool for developmental assessment when used on a regular basis. Stein (2001) stated that the drawings illustrate inner strengths in children and in family relationships. As most other studies have done, he cautioned that the drawings should be used in conjunction with other information, as they are only one piece of the puzzle. As seen in previous studies the drawings can serve as pictures of development of motor, visual, and spatial abilities and in general allow us to see the world from the child's perspective in a subjective, indirect, and unobtrusive manner. Stein (2001) provides a selection of drawings from his practice that served as examples of how KFDs can be extremely useful and provide valuable clinical information.

Another interesting use of KFDs was investigated by Ochoa, Riccio, Jiminez, de Alba, and Sines (2004). This study examined critical components of assessment procedures school psychologists use when conducting evaluations for emotional disturbance with students who are English language learners (ELLs). The authors surveyed a large sample of NASP members

around the country in states with high limited English proficient populations and received surveys back from 439 respondents. Only 223 of the respondents indicated that they assessed ELLs. The most frequently used measures included Bender Visual Motor Gestalt Test (75.8%), Draw-A-Person (71.7%), House-Tree-Person (58.4%), Kinetic Family Drawing (55.3%), and Generic Sentence Completion Forms (52.5%). The most commonly used measures were projective and nonverbal in nature. These were utilized because they required the children to comprehend limited verbal instructions in English (Ochoa et al. 2004). KFDs are clearly a useful tool for school psychologists when working with ELL students and appear to be used quite frequently.

The research and information presented here leads to the main purpose of the current study. Assessments for PBD and related features have relied upon interviews, scales, questionnaires and observations. While these methods provide valuable, reliable and valid information, they gather that information through direct, objective questions. Projective measures have been used with many different populations and have been shown to provide valuable information that may not have been gathered otherwise. The KFD in particular has been widely used, however it has never been employed with PBD populations. Understanding family functioning in PBD is extremely important for effective treatment. Knowing the child with PBD's perspective on family functioning is even more important, as there have been significant differences found between parent and child reports (Youngstrom, Findling, Calabrese, 2004). The purpose of the current study is to look at how children with and without PBD perceive their family dynamics and functioning through the use of the KFD and to see if there are discernible differences in drawings between healthy controls and PBD youth.

Chapter 3

Method

Participants

Children age 7 to 18 years and their parent (mostly mothers) were recruited through a previous study that examined social cognition in Pediatric Bipolar Disorder (PBD). Families who previously participated in the social cognition study were asked to return to Rochester Institute of Technology for a second follow-up research study. Therefore, data for this proposal was part of a larger follow-up study examining family functioning and social cognition in PBD. Children were compensated \$25 for their time. A total of 24 participant pairs of child-parent dyads were recruited. The 24 children consisted of 14 control participants and 10 children with bipolar disorder.

The children in the PBD group were previously identified as such through the Kiddie Schedule for Affective Disorders and Schizophrenia-Present and Lifetime Version (KSADS-PL; Kaufman et al., 1997). Inclusion criteria for the PBD group were a current diagnosis of bipolar disorder type I, mixed or manic state, or bipolar disorder type II, hypomanic or depressed state. Manic and depressive symptoms were assessed through the Young Mania Rating Scale (YMRS; Young et al., 1978) and the Child Depression Rating Scale-Revised (CDRS-R; Poznanski et al., 1985) respectively. Consent and assent were obtained from each child-parent dyad prior to participation in the study. Approval had been obtained from the Institutional Review Board at Rochester Institute of Technology.

Measures and Procedure

The Kinetic Family Drawing (Burns and Kaufman, 1970) technique is a drawing task in which the child is instructed to draw a picture of their family including themselves doing

something. A research assistant gave each child a piece of white paper and a pencil and the instructions. After the drawing was completed, the child participant was asked to label each person in the drawing and to write each person they live with on the back of the drawing. The children's participant identification numbers were recorded on the drawing and the drawings were placed in an envelope. The task took approximately 10-15 minutes to complete. The drawings were scored by a trained rater once they were all collected. The drawings were evaluated utilizing a quantitative method adapted from the work of Wegmann and Lusebrink (2000) and originating from the work of Burns and Kaufman (1972). In this scoring method there are 15 variables, two numerical and 13 descriptive, organized into five categories. The numerical variables were recorded in millimeters and the descriptive variables were recorded as present or absent or given a value if there were several levels of the variable (e.g. level of nurturance and activity level). The variables analyzed, their descriptions, and qualitative meanings are as follows:

Family Composition:

- *Major figure's erasure*: This involves significant erasure of the mother, father, or self where the Gestalt (form or shape) of the figure is altered. Erasures indicate some type of conflict or denial within that figure and can be better understood by analyzing the erasure and re-drawing.
- *Size of the figures*: Measurement of the major figures in millimeters following the midline of the body from the top of the head to the bottom of the feet. If the figure is curved the size is measured as the shortest distance between the head and feet. If the figure is hidden, only measure what is drawn. Size is recorded in millimeters. Reflects power or worth. Indicates a diminished or exaggerated view of the self, usually the person who feels very inadequate draws a tiny person. Larger figures indicate grandeur or importance (DeGraw, 2002; Reynolds, 1978).

Distance and Closeness:

- *Distance between figures*: This is the distance between the self (child) and other figures measured by the closest distance between any body parts of the child and another figure. The distance is recorded in millimeters. Less distance between figures indicates a closer relationship or emotional closeness or support/acceptance, while greater distance

indicates a weaker relationship or separateness or isolation/rejection (Reynolds, 1978; DeGraw, 2002).

- *Compartmentalization*: These are lines that organize the space and structure the entire drawing. It is the intentional separation of family figures through the use of lining (Handler & Habenicht, 1994). All figures must be placed in a compartment in order to be considered compartmentalized. For example the drawing may be separated into two or four “boxes” with figures in each of the “boxes” or compartments. This will usually involve straight lines drawn across or down a portion or most of the page. Indicates that love cannot be expressed naturally or unreservedly. A lack of barriers indicates that there exists a freshness and trustfulness in the love between family members. When some members are compartmentalized and not others it indicates the ability to love some openly, while being bothered by others. This style is typical of social isolates who try to cut off the feeling component between individual members of the family (Burns & Kaufman, 1972).
- *Encapsulation*: Lines that enclose or encircle a whole figure, as if the figure were in a capsule and separated from the others in its own constrained space. The capsule may border on the edge of the paper or two figures may be enclosed together. For example a figure may have a circle drawn around it, which separates it from another figure in the drawing. Indicates a desire by the artist to set himself or herself away from others or to alert the observer to the possible need for protection; Isolation or the removal of threatening figures (Reynolds, 1978).
- *Barrier*: When two figures are separated by an object (non-human) or by lines-including the lines of a compartment or an encapsulation. Indicates guardedness or defensiveness; conflict (Reynolds, 1978)
- *Extended family members added*: This is scored if any members other than self, mother, father, or siblings are drawn.

Interactions and relationships:

- *Level of interaction: Active interaction* = two figures are engaged in a shared activity involving action (e.g. playing ball, eating together, speaking to each other) or when the two figures share the same kind of activity (e.g. doing household chores, sharing a picnic). *Passive action together* = are involved in the same passive activity (e.g. watching TV together, reading books in same room, standing in same place, one figure watching the other). May indicate the type of relationship between family members (active or passive) and whether they spend time together in passive or active activities.
- *Cohesive action*: If the figures are interacting, whether or not it is unified or interconnected. If the level of interaction is determined to be active then this will automatically be present as well. *Whole Family Cohesive Action*: If the action is cohesive does it involve the entire family or not? May indicate the strength of the relationships/cohesion within the family.
- *Facing*: Scored if a figure is looking towards another figure, rather than towards objects or looking “out of the picture”. This has been linked to the child’s self-concept (O’Brien & Patton, 1974; Wegmann & Lusebrink, 2000).
- *Level of nurturance*: Feeding/holding is scored if one figure is taking care of another in very close contact, cooking/setting table is scored if they are present. Eating is scored when a figure is eating and taking care of pet /gardening/housework is scored when a

figure is taking care of a pet, a plant, or the house. More instances of nurturance indicate a more nurturing family environment.

- *Figure ascendance (elevated figures)*: The position of the head of each figure on the vertical axis is scored by the zone it is located in (if the head is located in two or more zones then the zone with the largest portion of the head is scored). The page was broken into eight vertical compartments and the numbers 1-8 correspond to the location of each figure's head. Higher numbers = higher location. The direction of the drawing (e.g. vertical or horizontal orientation of page) will determine the direction of the compartments. Indicates a child striving for dominance within the family or a family member who maintains a dominant position within the family.

Activities:

- *Activity level: Running/sports* implies that a lot of energy is spent. *Walking/doing* implies some movement is drawn, and *standing* implies that a figure does not seem to move and is standing. *Sitting* is scored if a figure is sitting, even though it is doing something (like eating) and *laying* is scored if a figure is laying. May indicate the level of activity within the family.

Sexual Identification:

- *Self sharing activity with*: Scored if the self figure is doing the same, or same kind of, activity with one parent and not with the other. The activity must be clearly different than the activity of the other parent. This is not scored if an activity is shared with both parents. This is scored to examine whether the child feels him/herself closer to one parent than the other. Indicates sexual identification of the self (Wegmann & Lusebrink, 2000).
- *Self drawn like*: This is scored if the self figure is drawn like one of the parental figures and different from the other parental figure. This is scored if the hair or clothing are drawn with similar details, or if the self and the mother (or father) are drawn in markedly similar stances. These similarities must contrast with details used for other figures and be obvious. For example if the self and mother have the same hair length and style or the self and father are in the same stance and it is different from the mother's stance. Indicates sexual identification of the self (Wegmann & Lusebrink, 2000).

The Self-Report Family Instrument (SFI; Beavers, Hampson, and Hulgus, 1990) is a self-report measure that assesses an individual's perception of his or her family functioning. Both children (PBD and HC) and their parents completed this measure. This measure takes approximately 5-10 minutes to complete and can be administered by an interviewer or given to the participant to read and answer themselves. All children in the current study completed the measure on their own. This measure was chosen because it is a relatively brief (36-items)

instrument that assesses several important dimensions of family functioning, and also provides a good overall picture of family competence. The instrument is scored by first reverse scoring 16 of the items, summing the scores on each of the six factors and lastly, dividing each sum by the number of items included in the particular factor. The five factors include Family Conflict, Family Communication (Expressiveness), Family Cohesion, Directive Leadership, and Family Health/Competence. The sixth factor is composed of five items but was not empirically determined. The total scale score or the subscale scores can be used. Lower scores represent greater competence on all scales.

The Young Mania Rating Scale (YMRS; Young et al., 1978) is a clinician-rated measure used to assess manic symptomatology. It consists of 11 questions that are scored on a scale of 0 to 4 (with four items scored 0 to 8).

The Children's Depression Rating Scale-Revised (CDRS-R; Poznanski et al., 1985) is a brief 17-item clinician-rated measure of depression severity. Each item is rated on a scale of 1 to 5 or 1 to 7.

Reliability and Validity of Measures

Significant, but modest, construct and criterion-related validity has been found for the KFD, but data on reliability have been inconsistent. Inter-rater reliability for scoring the various KFD variables has been found to range from very good to excellent with median percentages of agreement ranging from 87% to 95%. It has been difficult for researchers to compare studies regarding validity and reliability because there have been many variations in KFD scoring systems utilized and little consistency within the literature. Adequate test-retest reliability has not been found due to the changes and variability in children's performances that is to be

expected on a day-to-day basis. Reliabilities from one study ranged from 46% to 90% for different variables (Handler & Habenicht, 1994).

Validity and reliability data for the SFI is good. Beavers et al. (1995) reported the reliability coefficients for the entire scale to range from .84 to .88. Test-retest reliability coefficients (for 30 to 90 days) ranged from .84 to .87 for Family Health/Competence, .50 to .59 for Conflict, .50 to .70 for Cohesion, .79 to .89 for Expressiveness, and .41 to .49 for Directive Leadership (Beavers et al., 1990). Convergent and concurrent validity have been demonstrated through comparisons to other assessments of family functioning, such as FACES II and FACES III (Hampson, Hulgus, & Beavers, 1991), the McMaster Family Assessment Device (Epstein, Baldwin, & Bishop, 1983), and the Beavers Interactional Scales (Beavers, Hampson, & Hulgus, 1985).

Statistical Analysis

Chi-squares were computed to assess for differences between groups on the discontinuous variables. T-tests were run to assess for significant differences between groups on the continuous variables, present or absent variables, and for significant differences between groups in symptom levels. Correlations were computed to assess for relationships between symptom levels and family functioning as measured by the SFI.

Chapter 4

Results

Descriptive statistics

Descriptive statistics computed on the sample reveal a mean age of 13.70 years (SD=2.78). The youngest child was 10 and the oldest 18 years. There were 17 males and 7 females in the sample, with 10 males and 4 females in the HC group and 7 males and 3 females in the PBD group. The differences in numbers between these groups was not significant based on the chi-square computation ($\chi^2=.006, p=.94$). Chi-square and *t*-tests were computed on the two groups to determine if significant differences exist in age and sex of subjects. No significant differences were found ($p_s>.05$). In the HC group 12 subjects were living with their birth mother and father, 1 was living with their birth father only, and 1 was splitting time between their birth mother and birth father. In the PBD group 5 subjects were living with their birth mother and father, 2 were living with their birth mother and stepfather, and 3 were living with their grandparent. The mean YMRS score for the Control group was 4.43 and for the bipolar group 16.44. The mean CDRS score for the control group was 20.43 and for the bipolar group it was 40.50.

Group Differences on KFD Discontinuous Variables

To test for differences between the two groups in KFD's, chi-square's were computed for the discontinuous variables and were not significant for barriers ($\chi^2=.00, p=.66$), most elevated figure ($\chi^2=6.51, p=.26$), self sharing activity with a parent ($\chi^2=.43, p=.43$), facing ($\chi^2=.10, p=.75$), activity level ($\chi^2=.34, p=.44$), interaction ($\chi^2=.87, p=.33$), level of interaction ($\chi^2=.31, p=.53$), whole family cohesive action ($\chi^2=.02, p=.70$), compartmentalization ($\chi^2=.06, p=.67$), encapsulation ($\chi^2=1.46, p=.42$), and extended family members added ($\chi^2=4.80, p=.06$) [not

significant because 3 PBD children included their grandmother who is their caregiver]). The self drawn like a parent variable could not be calculated because this was not present in any of the drawings, so there was no difference between the groups on this variable. For the cohesive action variable, all of the subjects who had interaction were found to have cohesive action in the drawing. There was, again, no difference between the groups on this variable. No drawings were found to have an erasure of a major figure, so this variable was also not computed and no difference between the groups exists. There was a trend ($\chi^2=3.82, p=.08$) towards the bipolar group's drawings containing more instances of nurturance than the control group. Table 1 contains the counts for the present vs. absent (discontinuous) variables of the KFD.

Table 1

Counts of KFD Discontinuous Variables in All Children's Drawings

	HC Group	PBD Group
Compartmentalization	1	1
Encapsulation	0	1
Barrier	7	5
Facing	2	1
Nurturance	1	4
Self Sharing Activity With	10	4

*Variables were only included in this table if they had a count greater than 0.

Group Differences on continuous KFD variables

T-tests were computed to assess for group differences on the continuous variables, and there were no significant differences for size of figures [Self ($t(21)=0.52, p=.61$); Mom ($t=-.04,$

$df=18, p=.97$); Dad($t=.08, df=19, p=.94$); Sister1($t=1.81, df=9, p=.11$); Sister2($t=.41, df=2, p=.72$); Brother1($t=1.57, df=18, p=.13$); Brother2($t=1.11, df=6, p=.31$)] and distance between figures [Self and Dad($t=-1.12, df=18, p=.28$); Self and Mom($t=-1.07, df=17, p=.30$); Mom and Dad($t=-2.25, df=17, p=.16$); Self and Brother1($t=-1.88, df=17, p=.08$); Self and Brother2($t=-.50, df=5, p=.64$); Self and Sister1($t=-1.23, df=8, p=.26$); Self and Sister2($t=.04, df=2, p=.97$)].

Group Differences on the SFI

For the SFI, data was only available for seven PBD and seven HC parent-child dyads. A series of 2(parent vs. child) x 2(bipolar vs. control) repeated measures ANOVAs were done to assess for group differences overall, as well as on each of the five variables. For the overall SFI score, there was a main effect of family member, with children reporting higher scores, or more problematic family functioning, than parents ($F(1,12)=4.69, p=.05$). Higher scores represent less competence on the SFI scales. There was also a main effect for group with the PBD group reporting lower scores (greater competence) than the HC group ($F(1,12)=43.21, p<.001$). There was not a significant group x family member interaction ($F(1,12)=1.82, p=.20$). Mean scale scores and standard deviations for the SFI can be found in Table 2.

Table 2

Means (M) and standard deviations (SD) for the HC and PBD groups on the Self Report Family Inventory

SFI Variable	HC Parent		HC Child		PBD Parent		PBD Child	
	M	(SD)	M	(SD)	M	(SD)	M	(SD)
Health/Competence	2.14	(.30)	2.71	(.79)	1.76	(.21)	1.83	(.60)
Conflict	2.07	(.38)	2.27	(.75)	1.60	(.29)	1.87	(.63)
Cohesion	2.51	(.40)	3.19	(.76)	2.17	(.21)	2.19	(.67)
Leadership	2.51	(.29)	2.53	(.56)	1.56	(.62)	1.83	(.62)
Expressiveness	1.80	(.20)	3.19	(.75)	1.37	(.45)	1.60	(.61)
Total SFI Score	11.04	(1.35)	13.81	(2.70)	8.46	(1.17)	9.10	(1.60)

For the Family Health/Competence scale there was a main effect for group ($F(1,12)=11.85, p<.01$) with the PBD group reporting significantly lower scores than the HC group. There was no main effect of family member ($F(1,12)=2.18, p=.17$) or group x family member interaction ($F(1,12)=1.26, p=.28$).

For the Family Conflict scale there was no main effect for family member ($F(1,12)=1.53, p=.24$) and no interaction effect ($F(1,12)=.04, p=.85$). There was a trend towards the PBD group reporting lower scores than the HC group ($F(1,12)=3.95, p=.07$).

For the Family Cohesion scale there was no main effect for family member ($F(1,12)=2.22, p=.16$) and no interaction effect ($F(1,12)=2.04, p=.18$), however there was a main effect of group ($F(1,12)=12.84, p=.00$), with the PBD group reporting significantly lower scores than the HC group.

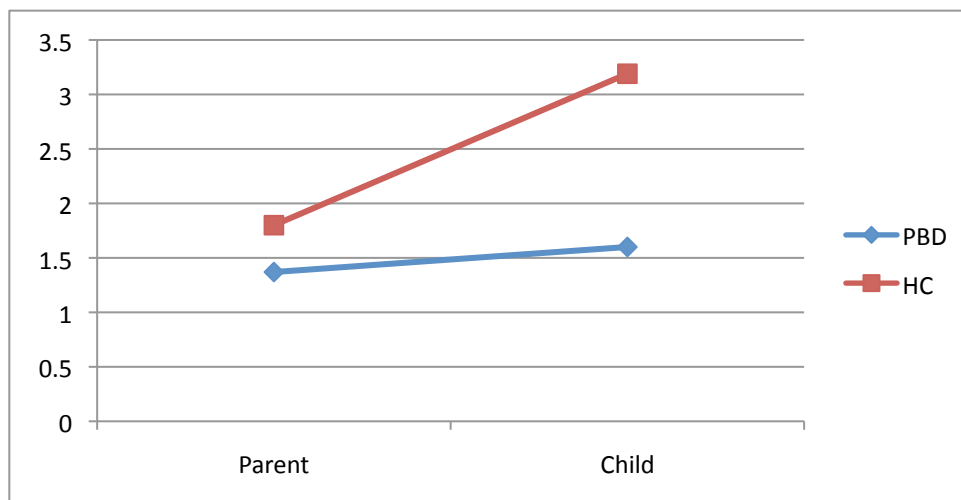
On the Expressiveness (Family Communication) scale there was a main effect of group ($F(1,12)=34.34, p<.00$) with PBD group reporting significantly lower scores than the HC group.

There was also a main effect for family member ($F(1,12)=11.79, p=.01$) with children reporting higher scores than parents, and there was an interaction effect ($F(1,12)=6.06, p=.03$).

Examination of the interaction effect (with all of the SFI data rather than just 7 subject results from each group) revealed a significant difference between the PBD and HC parents' scores ($F(1,19)=7.56, p=.01$), with the HC parents reporting higher scores than the PBD parents, and a significant difference between the PBD and HC children's scores ($F(1,12)=.06, p=.00$), with HC children reporting higher scores than PBD children. There was a significant difference between the parent and child scores within the HC group ($F(1,18)=1.08, p=.03$), with children reporting higher scores than parents. There was no significant difference found between the parent and child scores within the PBD group ($F(1,13)=1.82, p=.33$). Overall, this interaction tells us that children report significantly higher scores (less competence) for Expressiveness, but only in the HC child group. The interaction effect on the Expressiveness scale is displayed in Chart 1.

Chart 1

Interaction Effect on the Expressiveness Scale of the SFI



For the Directive Leadership scale there was a main effect of group ($F(1,12)=9.89, p=.01$) with the HC group reporting higher scores than the PBD group. There was no main effect of family member ($F(1,12)=1.48, p=.25$) and no interaction effect ($F(1,12)=1.20, p=.30$).

Correlations with KFD and Symptomatology

Pearson product-moment correlation coefficients were computed for the PBD and HC groups separately to assess what, if any, relationships exist between the KFD continuous variables and symptomatology as measured by the YMRS and CDRS. For the KFD continuous variables there was a significant negative correlation between size of self and YMRS score for the PBD group only ($r = -.64, p < .05$). The smaller the self was drawn, the higher the YMRS score (more manic symptoms) in the PBD group. There was a trend towards size of self being negatively correlated with CDRS score for the PBD group as well ($r = -.54, p = .06$). Symptom scores (YMRS and CDRS) and KFD present vs. absent (discontinuous) variables were analyzed separately for the PBD and HC groups through t -tests to assess for group differences. No group differences were found for these variables ($p_s < .05$).

Correlations with SFI and Symptomatology

For the PBD group, on the SFI, there was a negative correlation between YMRS scores and Parent Total SFI score ($r = -.59, p = .04$), Parent Expressiveness score ($r = -.70, p = .01$), and Parent Leadership score ($r = -.58, p = .04$). This means that in the PBD group higher YMRS scores (more manic symptoms) were correlated with lower SFI scores (greater competence). The more manic symptoms present the better the parent perceived functioning in the areas of Expressiveness, Leadership, and overall family functioning. There was a trend, in the PBD group, towards the YMRS scores being negatively correlated with the Parent Conflict scale

scores ($r = -.49, p = .09$). Again in the PBD group only, CDRS scores were found to be negatively correlated with parent total SFI scores ($r = -.61, p = .03$), parent Expressiveness ($r = -.76, p = .00$), and parent Leadership scale scores ($r = -.65, p = .02$). Higher CDRS scores (more depressive symptoms) were correlated with lower scores (greater competence) on the overall SFI scale, the Leadership scale, and the Expressiveness scale.

Chapter 5

Discussion

This study examined how children with and without PBD perceive family dynamics through the use of the KFD. The results of the KFD data analyses indicate that there are no differences between the drawings of HC's and children with PBD, and therefore no patterns to the differences. It is important to note that the PBD children were all medicated, euthymic individuals, and therefore may not have indicated significant differences in family functioning because they were in a stable place in their disorder. The KFD results were not compared to the SFI results because there were no significant KFD findings. Interestingly, there were significant results in the SFI data for the sample, and they were not in the expected direction. The SFI data indicates that parents and children in the PBD group view their family functioning more positively overall and, specifically, in the areas of Family Health/Competence, Family Cohesion, Family Communication or Expressiveness, and Directive Leadership. These findings are explored further.

As a norm reference to compare the current findings to, caregiver (ages 6, 8, 12, and 14) mean scores for each scale of the SFI were compiled through the LONGSCAN Coordinating Center at the UNC Chapel Hill campus through 2007 (Hunter, Cox, Teagle, Johnson, Mathew, Knight, Leeb, & Smith, 2003; Knight, Smith, Martin, Lewis, & the LONGSCAN Investigators, 2008). This center compiles different types of longitudinal data related to child abuse and neglect. The ranges of means across race and study site for each SFI scale are as follows: Health/Competence 1.78-2.13, Conflict 1.55-1.93, Cohesion 2.01-2.45, Leadership 1.99-2.49, and Expressiveness 1.47-2.21. These scores fall within the competent range on all scales over time when compared to the norm data collected and reported by Beavers et al. in 1990. In the

current study, the PBD group's parent scores fall within these ranges, meaning that their scores fall within the competent range for each variable. The HC group's parent scores fall just above these ranges with the exception of one variable (parent rated Expressiveness falls within). Therefore, even though the HC and PBD parent scores are significantly different on four of the five variables in the current study, the mean scores for both groups are falling within or right around the range of norm scores that have been compiled and that fall within the competent range. This leads one to conjecture that these scores could be considered typical scores for healthy functioning families. It appears that neither group is experiencing incompetent family functioning, however it is still interesting that the PBD group is reporting more competent family functioning than the HC group.

Based on previous research (Geller et al., 2000; Schenkel, 2008; Sullivan & Miklowitz, 2010) it would be expected that the HC groups would report better or more positive family functioning, however for this sample the PBD children and parent groups both reported more competence in family functioning overall, and in four out of five variables (Health/Competence, Cohesion, Leadership, and Expressiveness). It is also interesting that parents and children in each group (PBD and HC) did not differ significantly in their scores, except on the Expressiveness (Family Communication) scale in the HC group. One can speculate that these findings might be due to the PBD families compensating for the presence of child psychopathology within the family by making more of an effort to maintain healthy family functioning. As indicated by the results, the family as a whole may display the following: more expression of positive feelings, warmth and caring; stronger and more consistent patterns of adult leadership; greater family closeness; more competence in happiness, family love, problem-solving, responsibility; and greater emphasis on autonomy and individuality.

Higher scores on the SFI scales among the HC group could be reflective of less of a focus on family functioning since there is no psychopathology within the family, and the dynamics are typical and healthy. It is possible that the PBD group reported more competent family functioning to compensate for the presence of the disorder within the family and to appear more socially desirable, however one would expect more inconsistency in parent and child scores if they were not being truthful and that this is not the case here. For example, if some parents were answering in a more socially desirable manner, and the children were not, then there would likely not be so many significant group main effects on the SFI variables. One would expect to see significant differences between PBD parent and child scores if parents were attempting to compensate for their child's psychopathology based on that logic. This finding could also be due to the fact that the PBD group is comprised of medicated, euthymic youth who belong to families who have sought out support (medication, counseling, parent support group, etc.). Uebelacker et al. (2006) had found that as an individual with BD's mood fluctuated, family functioning fluctuated as well. This may be the case in the current study, as the children were assessed while in fairly stable states, therefore allowing for a stable family environment.

The significant findings related to symptomatology and size of self and symptomatology and the SFI scales are also interesting. The significant negative correlation between YMRS scores and size of self drawn in the PBD group seems to be contrary to the nature of manic symptoms. One would expect a child experiencing more mania to draw themselves much larger, with the presence of grandiosity and an inflated sense of self (Youngstrom et al., 2008). In this case, the higher YMRS scores the smaller the self was drawn. The trend toward more depressive symptoms being associated with smaller size of self makes more sense in this case. One would expect a child to draw him/her self smaller if they were experiencing more depressive symptoms

and low self-esteem. Perhaps these two findings are due to the interplay and influence of alternating mood states that define this disorder. Assessing self-esteem, self-confidence, or life satisfaction and comparing the findings to KFD's (specifically size of self) could possibly provide some valuable information to help explain these findings. Perhaps a general lack of self-esteem or poor self-concept is behind the smaller size of self and higher YMRS and CDRS scores.

Further exploring the symptomatology within the PBD group, it is also surprising to find that the more manic symptoms present the better the parent perceived functioning in the areas of Expressiveness, Leadership, and overall family functioning. Is this because the family needs to (and has learned to) function more effectively when the index child is experiencing more manic symptoms? The same question can be asked in regards to the finding of more depressive symptoms correlating with better parent perceived functioning on the Expressiveness, Leadership, and overall SFI scales. Perhaps the parents have learned to be more proactive when their child is experiencing more manic and depressive symptoms. These findings were only significant for the parent scores on the SFI. This could be because the parents, as leaders of the family, may have to focus on the family functioning more than the index child. The child may be wrapped up in their own world with their disorder and may not be paying attention to how their family functions.

Overall, the findings of this study reiterate the point that KFD's should not be used in isolation to assess family functioning in children with bipolar disorder. While data from scales and questionnaires has historically found differences in family functioning between PBD groups and Healthy Controls (Geller, et al., 2000; Robertson, et al., 2001; Schenkel, et al., 2008; Sullivan & Miklowitz, 2010), it appears that projective measures may not be a reliable source for

identifying these differences. Projective measures, such as the KFD, can still provide valuable information about how a child views their family, however that information should be considered with other concrete, objective, and quantitative measures of family functioning from the child's perspective.

Limitations

The results of this study are limited by a small sample size and by the lack of validity and reliability findings for the KFD. The scoring system utilized in this study was a quantitative system, not a qualitative one. KFD's can be scored and interpreted in either a quantitative or holistic, qualitative manner and the latter was not utilized in the current study. Handler and Habenicht (1994) pointed out the difficulty and variability involved in scoring the drawings in a quantitative manner, where the addition or subtraction of different signs and symbols is assessed. Tharinger and Stark (1990) developed a scoring system, called the KFD Integrative System, which follows the procedures and raters as described by the DAP Integrative System. This could be a possibility for future studies that further examine KFD's in the PBD population. The limited coding system is another drawback. There has been little consistency in the past in the systems researchers have utilized to analyze KFD's. Different variables have been added and removed from different scoring systems over time, and new scoring systems have morphed out of those changes. These are also preliminary findings, as KFD's have never been employed with this population.

Future Directions

Future studies should utilize a larger sample size and recruit children in different clinical states (e.g. unmedicated) to broaden the scope of the research and improve the power of the

results. Researchers should seek unmedicated children for the PBD group to test the theory that euthymic, medicated children may have more competent family functioning because of the stabilization of their mood and the resulting effects on the family unit.

The degree of counseling and psychotherapy the family and/or individual is engaged in should be considered. Counseling and parent-training experience could serve as a mediating variable for family functioning, specifically on the Leadership and Expressiveness scales of the SFI. The subjects from the present study were recruited through a support group for families with a child with PBD and through a study at another university, and most likely have been working on improving family functioning related to the psychopathology within the family. Another recommendation is to analyze parent-child interactions in a laboratory (controlled) setting in order to objectively assess behavior and interactions, and to be able to compare these objective observations to KFD's and SFI data. This would provide a third, hopefully much more neutral, perspective of family functioning.

Future studies should also look at parental psychopathology in relation to this data. Parental psychopathology has been shown to be associated with poorer family functioning (Esposito-Smythers et al., 2006), making it an important variable to consider when assessing family functioning. The current study had access to data on parent education levels and income, but did not analyze this. This would be another interesting variable to explore, because one could speculate that if these PBD families have higher parent education and higher income then they would have more access to supports for their child and family (e.g. more counseling options, access to more highly trained professionals, time for parent training or family counseling). This could have also been a contributing factor in the more competent family functioning reported by PBD parents and children.

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