FAMILY FUNCTIONING IN CHILDREN AND ADOLESCENTS WITH

MAJOR DEPRESSIVE DISORDER

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This Dissertation is dedicated to my family:

Michael and Cathy, Kevin, Kerry,
Michelle, Kathleen, Marcus, and Mary

Thank you for your love and support.

FAMILY FUNCTIONING IN ADOLESCENTS WITH MAJOR DEPRESSIVE DISORDER

by

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Poor family functioning is common among children and adolescents with Major Depressive Disorder (MDD). Previous research suggests that depressed children describe their families as less cohesive, supportive, communicative, and as more conflictual than do their nondepressed peers. The present study examined the relationship between family functioning and severity of child/adolescent and parental depressive illness at baseline, whether the presence

of healthier family functioning at baseline predicted a differential response to acute treatment with fluoxetine, and whether self-report measures were a better predictor of outcome than clinician or observer rated measures. The family functioning of 168 depressed children and adolescents (ages 8 to 17) and one or both parent(s), and treatment response from the 12-week acute treatment phase of an NIMH-funded study of discontinuation phase treatment for MDD were examined. At study entry and exit, information was collected about the severity of MDD, parental affective symptomatology, and self-reported, clinician reported, and observationally reported family functioning. Participants received 12 weeks of open treatment with fluoxetine, using flexible dosing (10mg-40mg) in order to maximize treatment response. Results indicate a robust treatment response for depressive symptoms across all participants, with an overall response rate of 77% and a remission rate of 66%. There were no significant differences in severity of depression and initial family functioning. Maternal depression was found to be significantly correlated or approaching significance for all five global measures of family functioning examined in this study (including self report, clinician report, and observational report). There were no significant associations found between family functioning at baseline and symptom improvement, although children/adolescents who responded early to treatment had reported significantly healthier family cohesion than late responders to treatment. There were no significant differences in outcome of depressive symptoms based on baseline

family functioning. As parents rated their family's health competence functioning in the healthy direction, so did clinicians. Our findings suggest that it is very important to include families in the treatment process for depressed patients, including assessing and addressing parental psychopathology.

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PRIOR PUBLICATIONS

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LIST OF ABBREVIATIONS

BDI	Beck Depression Inventory
CDI	Children's Depression Inventory
CDRS-R	Childhood Depression Rating Scale - Revised
CGAS	Child Global Assessment Scale
CGI-I	Clinical Global Impression – Improvement
CGI-S	Clinical Global Impression – Severity
CST-C	Cognitive Style Test for Teens
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, 4th Edition
FAD	Family Assessment Device
FACES-III	Family Adaptability and Cohesion Scales - III
FES	Family Environment Scales
FGAS	Child's Family Global Assessment Scale
FMSS-EE	Five Minute Speech Sample – Expressed Emotion
IDS-SR	Inventory of Depressive Symptomatology
K-SADS	The Schedule for Affective Disorders and Schizophrenia for School Age Children
MCRS	McMaster Clinical Rating Scale
MDD	Major Depressive Disorder
SFI-2	Self-Report Family Inventory
TCFES	Timberlawn Couple and Family Evaluation Scales

CHAPTER ONE

Introduction

A. Depression in Child and Adolescent Populations

Major Depressive Disorder (MDD) in children and adolescents is a serious psychiatric disorder with prevalence rates in children ranging between .4% and 2.5% and between .4% and 8.3% in adolescents (Birmaher et al., 1996; Lewinsohn et al., 1993). It is estimated that by 18 years of age, 20-25% of adolescents will have experienced an episode of affective illness (Lewinsohn et al., 1993). Lifetime prevalence rates of MDD in adolescents has been estimated at 15-20%, which is suggestive that depression in adults begins in adolescence, as the rates are similar (Lewinsohn et al., 1993). Studies of depressive disorders among adults have indicated that the most frequent age of onset of depression is adolescence (Christie et al., 1989).

MDD in children occurs around the same rate in girls and boys, although the adolescent rate is 2:1 (female to male) – which parallels the rate reported in adults (Birmaher et al., 1996). Multiple studies have shown that 40-70% of depressed children and adolescents have comorbid psychiatric disorders, with at least 20-50% having two or more diagnoses (Birmaher et al., 1996).

MDD also threatens the cohesion and survival of the family, as depressed youths evidence impaired interpersonal relationships with their parents, siblings, and peers (Puig-Antich et al., 1993). They perceive their families more negatively than do normal children, and their families engage in less social, recreational, cultural, and intellectual activities (Kaslow, et al., 1988; Stark et al., 1990). Depressed children describe their families as less cohesive and supportive, more controlling, more conflictual, less able to communicate effectively, and as having higher levels of expressed emotion than do their nondepressed peers (Barrerra and Garrison-Jones, 1992; Cole and McPherson, 1993). Miller et al. (1992) reviewed multiple studies that demonstrated that relative to control families, families of depressed patients exhibit significant impairments in functioning during the patient's acute episode, with 50-70% of families with a depressed person manifesting significant family dysfunction. While these family impairments improve with remission of acute symptoms, large proportions (40-50%) of families continue to have significant deficits even after the depressive episode remits.

Given the prevalence and serious implications of depression in children and adolescents on individuals and families, assessment of variables which impact treatment is crucial. Family discord has been found to be associated with increased rates of relapse and shorter times to recurrence in major depressive

disorder (Tamplin et al., 1998). Families both influence and are impacted by depression in children and adolescents. Although family functioning is an important factor in child and adolescent depression, it is little understood. Therefore, it is imperative that we increase our understanding of family factors which impact treatment response in children and adolescents with major depressive disorder.

Following is a review of literature, which will briefly summarize family variables found to influence treatment response in child and adolescent populations with MDD. Several studies have examined the relationship between parents and children/adolescents with MDD. However, relatively little research has been dedicated to finding common family characteristics which are associated with better or worse outcomes (Hampson and Beavers, 1996b). Thus, the following literature review is intended to develop a context for developing hypotheses related to family factors as predictors for treatment response in children and adolescents with MDD.

CHAPTER TWO

Review of the Literature

A. Family Environment and Depressed Children/Adolescents

Debate over the contributing factors to childhood depression has continued for some time, with no single causative pathway becoming dominant (Kashani and Sherman, 1988; Kazdin, 1990). Cicchetti and Schneider-Rosen (1984) attempted to combine some of the multiple causal pathways set forth by other researchers into a transactional model which was comprised of 7 risk factors that may account for childhood depression. Interestingly, five out of seven of the risk factors were related to the child's family functioning: absence or early separation from mother or other significant person; development of insecure attachments to parents; exposure to parental factors that might make the child feel sad, helpless, confused, or self-deprecating; loss of social support during stressful periods; and biological vulnerability or genetic predisposition toward affective illness (Cicchetti and Schneider-Rosen, 1984).

Despite the above report, the literature addressing family functioning as a contributor to the etiology, course or outcome of depression in adolescents is scarce (Marton and Maharaj, 1993). Studies of depressed youths, depressed adults, and offspring of depressed parents have shown that their family

interactions are characterized by more conflict, more communication problems, more rejection, less support, less expression of affect, and more abuse than normal control families (Kaufman et al., 1991; McCauley and Myers, 1992).

There are a number of demographic and sociocultural factors, as well as family characteristics that are associated with the development and maintenance of depression in children (Kaslow et al., 1994). Some of these include family psychopathology, family structure, and negative life events (Kaslow et al., 1994). In a study of perceived family environment as a moderator of young adolescents' life stress adjustment, Burt et al. (1988) demonstrated that families perceived by adolescents as cohesive, organized, and expressive (on the Family Environment Scale) were related to positive psychological functioning in the adolescent. However, negative functioning was related to families perceived as conflict-ridden and controlling by adolescent-report.

In the next section, research focusing on family variables including: cohesion, support, conflict, affect regulation, communication, and problem-solving will be examined in more detail.

1. Family Cohesion and Support

A cohesive family structure appears to be a protective factor against depression (Reinherz et al., 1989). In low cohesion families, there is little

emotional involvement among members, there is an emphasis on separateness and distance, personal motives predominate, and family members often do things on their own. In high cohesion families, members feel emotionally close to other members and there is emphasis on togetherness, shared time, and motives.

In a longitudinal study of young adolescents (aged 11 to 15 years) in the community, a low level of family cohesion on the adolescent-reported Family Adaptability and Cohesion Scales - III (FACES-III) was found to be the strongest predictor of depression (Garrison et al., 1990). In this study, cohesion encompassed the emotional bonding which family members had towards each other as well as the individual autonomy the adolescent experienced in the family system. Prange et al. (1992) found that parent and adolescent's (aged 12-18; with severe emotional disturbance) perceptions of low levels of family cohesion (FACES-III) significantly predicted depressive symptoms. Both parents and adolescents in this study perceived their family relations as more disengaged and less connected than did normative families.

In a 14-yr longitudinal study of a community sample of adolescents (aged 5-18 years) it was found that adolescents who later developed depression had poorer perceptions of their roles in the family at age 9 (Reinherz, et al., 1993). In an earlier study Reinherz, et al. (1989) had found family cohesion to be a mediator depressive symptoms in a community sample of adolescents aged 13-17

years, with higher levels of family cohesion (on the adolescent rated cohesion subscale of the FACES-III) associated with fewer depressive symptoms.

Cumsille & Epstein (1994) studied adolescent depression as it related to family cohesion, adaptability, and social support in 93 families attending an outpatient marital and family therapy clinic. Adolescents between the ages of 13-19 years completed self-report measures including: the Beck Depression Inventory (BDI), Perceived Social Support, the FACES-III, and the Family Satisfaction Scale. In keeping with the results of previous studies (Feldman et al., 1988; Garrison et al., 1990), support was found for the inverse relationship between adolescent depression and family cohesion. In addition, low levels of perceived family support was associated with higher levels of depression in adolescents. Overall, the study found that the strongest predictor of depression for adolescents was the adolescents' reported degree of satisfaction with family functioning, including family adaptability and cohesion. One limitation of this study, as with some of the studies above, was the reliance on adolescent report alone, even with regard to measures of depression. Given that depression is commonly associated with negative world views, it is difficult to assess whether the correlations of self-reported depressive symptoms with more negative views of family factors may reflect a negative cognitive set. Therefore, in future studies

it will be important to also obtain observational samples of family interactions (Cumsille & Epstein, 1994).

McCauley and Myers (1992) revealed similar findings, with inpatient depressed children indicating a perception of less support from parents (on the self-report My Family and Friends Questionnaire) and less family cohesion on the Family Environment Scale (FES) than non-depressed psychiatric controls. Cole and McPherson (1993) conducted a multidyad-multiperspective (107 adolescents and both parents completed an FES modified to reflect each dyad rather than the whole family) assessment of data from families of with a depressed high school student. Results showed that the degree to which cohesion in the marital dyad predicts the adolescent's level of depressive symptoms is mediated by the parent-adolescent relationship. Further, father-adolescent conflict and cohesion were more strongly correlated with adolescent depression than mother-adolescent cohesion and conflict. Limitations of this study include formal diagnostic information for adolescents not being available, and therefore the inability to diagnose these adolescents based on the Children's Depressive Inventory (CDI). In addition, although multiple perspectives were examined, there is room for improvement with using observational measures as well as additional instruments to examine these constructs within families.

Feldman et al. (1988) assessed family and peer relationships as a source of stress that could contribute to adolescent's expression of depressed affect. The study assessed 103 adolescents on the adolescent self-report indices: the CDI, the Weinberger Adjustment Inventory, the FACES, and the Parent-Adolescent Communication Scale. Adolescents who scored higher on the depression scale described their families as low in cohesion and communication, were from single-parent homes, and reported lack of support from peers. Family cohesion and friendship support were the most influential factors, accounting for more than 50% of the variance in depression.

Barrera and Garrison-Jones (1992) conducted a study which looked at family and peer social support as specific correlates of adolescent depressive symptoms. They examined 94 inpatients (aged 12 to 17) of 2 private psychiatric hospitals using semi-structured clinical interviews (including the Child Assessment Schedule) as well as child self-report measures (the Family Relationship Index of the FES and the Arizona Social Support Interview Schedule). Family support, especially with the supportiveness of fathers, was uniquely associated with depression symptoms for these subjects, with depression having an inverse relationship to the supportiveness of the family and satisfaction with father's support. Thus, disturbances in important supportive relationships have significance for the experience of depression in adolescents. As with some

of the above studies, this study relied on inpatient adolescent report alone, which may not be representation of the family system as a unit, but reflects the adolescents' perception at the time the data was collected. Since family support is of interest, gathering multiple perspectives on the family oriented variables may be necessary.

Family interactions, family stressors, and family resources as mitigators of dysfunction in children of depressed parents were investigated longitudinally by Billings and Moos (1983, 1985). A group of 83 depressed parents with children aged 18 years of younger living at home were investigated using self-report measures of family functioning. At 1-year follow-up depressed families, by parent-report on the FES, reported lower levels of cohesion, expressiveness, independence, organization, and higher levels of conflict than control families. High levels of family stress and low family support were associated with increased problems in the children, whether or not one parent was depressed. A limitation of this study is that the children's functioning is based on parent-report only. Although this study found that agreement between depressed parents and their nondepressed spouses was as high as that between nondepressed parents, depressed parents' negative cognitive styles may be reflected, rather than actual dysfunction among their children (Billings & Moos, 1985).

In summary, low levels of perceived family cohesion has repeatedly been linked to higher levels of depression in children and adolescent's with depressive symptomatology by both adolescent and parent-report. However, as most studies have relied on a single-respondent, more research in this area using multiple sources and measures, including an observational measure, is needed.

2. Family Conflict

Families of depressed children and adolescents have been characterized by parent-child conflict, family conflict, and marital conflict. As mentioned above, Cole and McPherson (1993) found that the effects of marital conflict on a youth's level of depression are mediated by the parent-child relationship.

Although both adolescents with depressive symptoms and psychiatric controls report more verbal and physical aggression during intrafamilial conflict than normal adolescents, difficulties with conflict resolution have been associated with more severe depressive symptomatology (Kashani et al., 1988). Kashani et al. (1988) explored how a sample (N=150) of 14-16 year old depressed, nondepressed psychiatric controls, and nonpsychiatric control youths recruited via telephone in a midwestern community responded on an assessment of conflict-resolution tactics. Both depressed and psychiatric control groups perceived themselves and their mothers as more verbally aggressive during episodes of

intrafamilial conflict than normal adolescents. The two psychiatric groups used more verbal aggression and violence in their problem-solving. However, across all groups, greater depression was associated with more difficulties resolving family conflicts.

Parent and child self-report (cohesion scale of FES) and observational reports (observation of a family problem-solving task) of adolescent depression and family environment were examined in a sample of 421 adolescents (aged 14-20 years) and their mothers during a 2-year long investigation of social and familial factors relevant to adolescent adjustment. Results showed that less supportive and more conflictual family environments were associated with greater depressive symptomatology both concurrently and prospectively over a 1-year period (Sheeber et al., 1997). The longitudinal data strongly suggested a causal influence of family relationships on depression. However, these results speak only to mother-adolescent relationships within the families of a primarily Caucasian, middle-class community group.

Sheeber and Sorensen (1998) compared family environments of depressed and nondepressed adolescents during a multimethod assessment including mother- and adolescent-report measures and observational measures. Each of the two groups consisted of 26 adolescents aged 12-19 years. Mothers and adolescents completed the FES, the Issues/Checklist (list of topics about which

adolescents and mothers disagree), the Conflict Behavior Questionnaire, the Child Report of Parent Behavior Inventory-Revised, and the Arizona Social Support Inventory. In addition, two 15-minute problem-solving tasks were videotaped. Depressed adolescents experienced less supportive and nurturing families than nondepressed adolescents. Compared to the control group, depressed adolescents and their mothers described their families as being less cohesive, supportive and more conflictual. Depressed adolescents demonstrated less problem-solving behaviors, and both they and their mothers exhibited more depressive behaviors and less facilitative behaviors during the observational tasks. Although this study was methodologically strong in that it gathered data from multiple sources, one limitation was that the diagnostic interview, The Schedule for Affective Disorders and Schizophrenia for School Age Children (K-SADS) was completed with the adolescent only, due to the timely nature of the interview. In addition, the self-report and observational measures gathered data on different areas of family functioning, and could not be examined together to assess level of agreement.

3. Affect Regulation

Children and adolescents tend to be dependent on their families, particularly when they are depressed and prone to social withdrawal (Asarnow, et al. 1993). Therefore, measures of the affective climate of the household of depressed youths can be very important predictors of outcome (Asarnow, et al.

1993). Expressed emotion, which includes critical attitudes, hostile attitudes, and extreme emotional overinvolvement, refers to family members' reports of the emotional aspects of their communication patterns. Although most of the literature in this area has focused on expressed emotion in persons with schizophrenia or in adult populations (Vaughn and Leff, 1976), researchers have begun to examine expressed emotion patterns in families with depressed children or children at risk for depression.

Asarnow et al. (1993) conducted a 1-year follow-up study of 26 inpatient children (7-14 years of age) diagnosed with major depression or dysthymia and their parents. Data collected included the clinician rated K-SADS-E and the clinician scored Five Minute Speech Sample-Expressed Emotion (FMSS-EE), in which the parent speaks for five minutes about the target child and how they get along. They found that this brief measure of expressed emotion was highly predictive of 1-year post-discharge outcome. Children returning to homes characterized by high levels of expressed emotion (i.e. critical, hostile, and emotionally overinvolved) were unlikely to recover during the year following discharge from hospital. Recovery during the 1-year period was more likely for children in homes with lower expressed emotion. Despite these promising results, it is important to note that the present sample was small, and family data was collected from only one source: clinicians' ratings of parent expressed emotion.

Asarnow et al. (1993) suggest that further research is needed to assess whether parental expressed emotion is associated with presence of psychiatric disorder in the parent, characteristics of the child and/or other environmental stressors.

In a study yielding similar results, the influence of family and social factors on the course of illness was measured in schizophrenic and depressed adult inpatients (mean age 38.6 years). The depressed patients were found to be more vulnerable to criticism from relatives than the schizophrenic patients, and had a tendency to relapse at a lower level of criticism. In addition, depressed patients whose relatives had high levels of expressed emotion were three times more likely to relapse within the 9 months following recovery than those whose relatives had low levels (Vaughn and Leff, 1976).

Sheeber et al. (2000) investigated 25 depressed outpatient adolescents (aged 12-19 years) and 25 nondepressed adolescents on 2 indices of affect regulation. Mothers and adolescents participated in two 15 minute problem-solving interactions which were videotaped and rated. Results showed that depressed adolescents are less adept at regulating negative emotions. Depressed adolescents maintained depressive and aggressive behaviors for longer durations that nondepressed adolescents. In addition, duration of depressive affect was positively associated with maternal displays of facilitative behavior contingent on adolescent depressive behavior. However, this study focused solely on negative

affect, and thus it will be important to investigate whether adolescents evidence greater difficulty regulation positive affect also. In addition, the small sample size did not allow for covariates to be examined in the analyses, and it is possible that the results may be attributable to characteristics other than depression (i.e. comorbid conditions were not examined).

Radke-Yarrow et al. (1993) also found that compared to control mothers, mothers with unipolar (and bipolar) illness expressed more total negative affect, and more anxious-sad and downcast affect towards their children (aged 2-3 years) during a videotaped interaction task.

Although there has been only a few studies in this area, and the findings are preliminary, research suggests that family interactional processes that impede the development of affect regulation skills may constitute a risk factor for major depressive disorder (Sheeber et al., 2001). In addition, as most of the studies in this area have not been done with adolescents, we have a limited understanding of how families teach developmentally appropriate affect regulation to adolescents.

4. Communication Patterns and Problem Solving

Family communication is defined as the ability of a family system to maintain open and clear channels of communication between members (Olson et al., 1983). It is expressed in empathy and attentive listening, readiness to self-

disclosure, and sharing personal feelings without fear of criticism or retaliation, and with respect and regard for other members' beliefs and behaviors. Difficulties in communication and problem-solving behaviors have been widely observed in families with a depressed individual. However, there are broad, unexamined areas as much of the research in the area of communication has been done by examining mother-child interactions (Keitner and Miller, 1990). The following is a summary of the literature to data addressing communication patterns and problem solving in families with a depressed adolescent.

Slesnick and Waldron (1997) observed depressed and nondepressed adolescents (mean age = 15) and 2 parents during a videotaped discussion of an area in which the parents would like the child to change. Results showed that parents of depressed adolescents engaged in higher rates of incongruent communication in which aversive content behavior was linked to positive affective behavior. Parents of depressed children were significantly more hostile in response to their adolescent's depressed behaviors.

Mothers of depressed children engage in more negative thinking about their families and report less communication with their children (Puig-Antich et al., 1985a) than control mothers. Puig-Antich et al. (1985a) examined psychosocial functioning in prepubertal major depressive disorders by examining 3 groups of prepubertal children: current diagnosis of major depression (N=52),

nondepressed neurotic disorder (N=23), or normal controls (N=40) and their parents. Using the Psychosocial Schedule for School-Age Children Aged 6 to 16 years (PSS; a clinician administered parent interview), results showed the affective tone of the mother-child communication in the families with a depressed child to be hostile, tense, and punitive. Even at follow-up, recovered depressive children continued to rate significantly worse than normal children in the communication items as well as on global ratings (Puig-Antich et al., 1985b). Again, a limitation of these studies were that they relied on parent-report of family environment only, and as it has been shown that parents of psychiatrically ill children have a higher likelihood of suffering from a psychiatric disorder, it is possible that parental bias could have affected the ratings.

Another observational study of parent-child interaction to examine a self-control model of depression was carried out by Cole and Rehm (1986). Depressed children, psychiatric clinic children and nondepressed controls aged 8-12 years were included along with their families. Diagnostic interviews and self-report measures were collected, as well as a coded parent-child interaction of a game-playing situation. Coding on the parent-child interaction focused on task performance and parents' use of reward and punishment. Mothers of depressed children responded by setting high criteria for rewarding their children's performance but did not provide a high level of positive reinforcement compared

to either clinic/nondepressed or nonclinic children. Mothers of depressed children were almost half as likely to express positive affect after their child's trial than nonclinic mothers. As noted with previous studies, the role that family members other than the mother might play in terms of parental and/or self-reinforcement was not measured in this study.

Kashani et al. (1999) examined 39 depressed or anxious inpatient children and adolescents using self-report family measures (FACES-II, Family Strengths, and Social Support Questionnaire-Revised). One result of this study found that by adolescent-report, families of depressed children are less adaptable to life's changes than families of anxious children. For example, when a problem arises, depressed children perceive their families as having more difficulty coming up with a solution, making a decision about what to do, or changing an established rule to adapt to new situational demands. Depressed adolescents were also less satisfied with the support received from their families compared to anxious children. One limitation of this group was that there were significantly more diagnoses of oppositional defiant disorder in the depressed group, which could have had an impact on their perceptions. In addition, as with other studies, obtaining more informants than just adolescents may provide a more comprehensive understanding of the family differences between depressed and anxious adolescents.

Thus, the research to date on family factors associated with child and adolescent depression has shown that families with a depressed youth tend to show lower levels of cohesion, support, affect regulation, communication, problem-solving and higher levels of conflict. However, current understanding of familial influences on adolescent depression is limited by reliance on self-report measures of family functioning. In most instances, studies have relied solely on adolescent-report or on parent-report to assess family data. This is problematic because it is difficult to discern the extent to which reports are accurate descriptions of the family environment or reflections of a negative response from the depressive state (Sheeber and Sorenson, 1998).

In addition, as mentioned above, few studies have examined the affective state of the parents who are reporting on the families' functioning. This is important because families which include a parent who suffers from depression may have more parental dysfunction and aversive interactions, which may contribute to negative outcomes in children and adolescents. As most of the data in the literature focuses on the mother-adolescent relationship, and the majority of parent-report measures in this study were completed by mothers, the following is an examination of the effects of maternal depression on children and adolescents.

B. Maternal Affective Disorders Literature

In a review of family factors in adolescent unipolar depression, Marton and Maharaj (1993) concluded that the literature on parents suffering from depression illustrates that they are markedly impaired in fulfilling their roles as parents, which may contribute to the risk for depression in their children. Marton further concluded that depression in a family member has a major impact on other family members and places adolescents at a greater risk for depression.

Many studies have shown that children of affectively ill parents are at a greater risk for psychiatric disorders than children of non-ill parents (Downey and Coyne, 1990). Beardslee et al. (1998) quoted Life Table estimates indicating that by the age of 20, a child with an affectively ill parent has a 40% chance of experiencing an episode of major depression. Children of depressed parents who themselves develop an affective disorder often evidence particularly severe episodes, with disruptions in multiple domains of functioning (Beardslee et al., 1985). In addition, it has been noted that children of depressed have a younger age of onset of depression (12-13 years) than children of non-depressed parents (16-17 years) (Weissman et al., 1987).

In a study including 220 children and young adults between the ages of 6 to 23 whose parents were depressed or non-depressed, Fendrich et al. (1990) found that family risk factors including affectionless control, low family cohesion,

parent-child discord, marital discord and divorce were more prevalent among children of depressed parents than children of nondepressed parents (Fendrich et al., 1990). This study used diagnostic interview (K-SADS-Epidemiologic Version) and parent and child self-report measures, which reduces the biases introduced by a restrictive focus on one particular observer. Since the results of this study are cross-sectional, it is unclear whether some of the family risk factors are a consequence of the child's psychopathology. Regardless of the direction of causality, parental psychopathology has been found to be a correlate of both family discord and psychopathology in children in several studies (Fendrich et al., 1990), and therefore it is an important variable to consider in studies related to family functioning and depression.

Shiner et al. (1998) assessed family functioning of 79 adolescents with a history of depression compared to 82 never-depressed control subjects, taking into account maternal history of depression. The subjects were all part of a larger epidemiological study of twins, approximately aged 17 at the time of the data collection. In this study, families of 3 groups were compared: ever-depressed adolescents with ever-depressed mothers, ever-depressed adolescents with never-depressed mothers, and never-depressed control adolescents. Measures collected included parent and child self-report measures of family functioning (FACES-III) and family relationships (Parental Environment Questionnaire) as well as a

clinician-rated structured interview (Structured Clinical Interview for the DSM-IV). Results showed that a greater proportion of ever-depressed adolescents had ever-depressed mothers compared to the controls. The ever-depressed adolescents with ever-depressed mothers described significantly poorer family functioning than did the ever-depressed adolescents with never-depressed mothers or the control adolescents for half of the family variables examined (family cohesion, conflict, mother-adolescent involvement, and adolescent regard for mother and father). Mothers of both ever-depressed groups reported more family difficulties relative to control mothers (Shiner et al., 1998). It is important to note that the subjects included in this study were all twins, the impact of which is not clear.

In an investigation of depression and adolescent perception of family functioning in nonclinic, nondepressed clinic, and depressed clinic children (aged 8-12) and their parents, clinician report (K-SADS, CGAS), parent-report (BDI), and child-report (CDI) of depressive symptoms were collected, as well as an adolescent reported Family Functioning Questionnaire designed for the study (Kaslow et al., 1990). Findings showed that depressed clinic children perceive their families in a more negative light than do nondepressed clinic children or nonclinic children. In addition, children with greater symptomatology came from families in their which the parents had more depression and psychopathology. In

particular, more mothers of depressed children were depressed (60%) compared to nondepressed children (31%). Thus, current depression in mothers was related to psychopathology in the child. Again, it is important to note that in this study, only adolescent reports of family functioning were assessed.

Weissman et al. (1972) found that compared to normal mothers, depressed mothers had more conflicts and greater difficulty showing affection, expressing affect, and communicating with their children. Maternal role performance was examined in a group of acutely depressed women who were compared to normal controls. The social performance of 40 women was assessed using a clinical rated Social Adjustment Scale. There were significant differences found between the depressed and normal women on 7 of 8 items on the scale. Compared to normal mothers, depressed women displayed moderate degrees of impairment on maternal role performance, felt only moderately involved in their children's lives, reported difficulties in communication, lessened affection, and were having considerable friction with their children (Weissman et al., 1972).

In summary, the incidence of child and adolescent depression appears to be greater in homes with affectively ill parents versus homes with non-affectively ill parents (Beardslee et al., 1998). Furthermore, acute depressive illness appears to significantly impair a depressed mother's capacity as a parent. It is clear that it is important to consider parental depression in the treatment of adolescent

depression as well as to understand the interactional patterns of families with a depressed youth, particularly families with multiple depressed members. In particular, it is important for studies which include self-report measures of family functioning to take into account the affective state of all persons filling out the measures.

Family factors have been found to be influential in the length, severity, and recurrence of depressive episodes. The next section will examine family functioning over the course of a depressive episode.

C. Family Functioning and Illness Severity

Factors associated with a poor course of depressive illness are: severity of depression, number of previous episodes or hospitalizations, family history of psychiatric illness, duration of illness, co-morbidity, age of depressive onset, and other personality factors (Keitner et al., 1997). Keitner et al. (1993) also concluded that there is strong evidence linking the family environment with the depressive episode's onset, duration, course, outcome, relapse, and response to treatment. In this section, studies relating family functioning to the severity of illness will be reviewed.

Sheeber at al. suggests that the onset and maintenance of depressive symptomatology in adolescents is related to the quality of their family

relationships (Sheeber et al., 1997). A community sample of mothers and adolescents (N=421, aged 14 to 20 years) participated in a 2-year longitudinal study of family support and conflict. The researchers chose to use adolescent report of depression rather than parent report due to literature addressing the low rate of agreement between parent and adolescent reports of depression. Parent, child, and observational reports (observation of a family problem-solving task) of family environment showed that less supportive and more conflictual family environments were associated with greater symptomatology both concurrently and prospectively over a 1-year period. Conversely, adolescent depression did not predict deterioration in family relationships. The longitudinal data from this study strongly suggests a causal influence of family relationships on depression (Sheeber et al., 1997). Limitations of this study included absence of sibling or father data and a homogenous sample (subjects were primarily white, middle class). In addition, this study used adolescent-report measures only, although some literature suggests that adolescents' reports during a depressive episode may be biased by a negative response set.

McCauley et al. (1992) revealed similar findings, with inpatient depressed children indicating a perception of less support from parents and less family cohesion than non-depressed psychiatric controls (on the self-report My Family and Friends Questionnaire). These researchers also explored family environment

in a 3-year longitudinal study of depressed youth from inpatient and outpatient psychiatric clinics. At entry, depressed children differed from nondepressed psychiatric controls only on the cohesion subscale of the FES, and not on conflict or expressiveness. However, at 3-year follow-up, the depressed group's responses on the Family Relationship Index of the FES were significantly associated with severity of initial depression and predicted Global Assessment of functioning. In summary, children's reports of more cohesion, expressiveness and less conflict in the family at entry to the study were associated with less severe initial depression and more positive status on 3-year outcome measures (McCauley et al., 1992).

There are few studies that have examined family functioning as it relates to severity of illness. Studying the relationship between family processes and a relapsing and remitting illness is problematic because both families and the illness are changing over time (Keitner and Miller, 1990). Therefore, we propose to examine various family characteristics via multisource, multimethod assessment techniques in order to assess the relationship between family functioning and illness severity at the time of an acute episode of major depressive disorder in children and adolescents.

D. Family Factors as Moderators of Treatment Outcome

Factors that appear to predict poorer treatment response are: severity of depression, lack of support, comorbid anxiety disorder, parental psychopathology, family conflict, exposure to stressful life events, and low socioeconomic status (Sanford et al., 1995).

Studies (Asarnow et al., 1993; Sanford et al., 1995) have shown that the quality of parent-adolescent interactions have been shown to predict the clinical course of depression. Sanford et al. (1995) conducted a study to predict the one-year course of adolescent major depression using a sample of 67 adolescents (aged 13-19 years) with major depression from psychiatric clinics. Clinical interviews, parent and child self-report measures (the Social Adjustment Interview for Children and Adolescents) were collected at two times. Results showed that at 1-year follow up, major depression remitted in 66% of the subjects. However, the nonremitters were characterized as less involved with fathers and less responsive to mother's discipline – suggesting that treatments for adolescent depression should include components aimed at enhancing the parent-adolescent relationships. This study collected data on two separate occasions from two separate informants (adolescent and parent), by trained interviewers using structured interviews, and were combined to provide a single diagnosis according to DSM-III-R criteria. This method used all available data while still

being able to analyze data from separate informants. As in previous studies (Kazdin, 1988), it was found that there was poor agreement between informants on MDD diagnosis and that adolescents provided the most useful measure with respect to prediction of MDD persistence. One major weakness of this study was that there was no means to determine whether there was remission during the 1-year follow-up and therefore some of the sample labeled as persisters may have had an MDD recurrence.

Expressed emotion measures assess the critical and emotionally overinvolved attitudes by key relatives towards a patient. Asarnow et al. (1993) found that the observational Five Minute Speech Sample – Expressed Emotion (FMSS-EE) measure was a significant predictor of 1-year outcome among a sample of 7-14 year old in-patient children (N=26) with diagnoses of major depression or dysthymic disorder. In a later study Asarnow et al. (1994) examined 86 children (aged 6 to 13 years) diagnosed with depression, dysthymic disorder, schizophrenia, or schizotypal personality disorder, and their parents. Children with depressive disorders were significantly more likely to have parents who expressed high levels of FMSS-EE than were normal control children screened for the absence of psychiatric disorder; and rates of criticism were significantly higher among parents of depressed children compared to parents of normal controls. Again, one limitation of this study is that parental expressed

emotion may be associated with the presence of psychiatric disorder in the parents and/or other forms of environmental stress, although these were not measured in this study. In addition, although expressed emotion has been found to be a significant factors in families with depression, studies which focus on this one area of family functioning exclude other areas of potential importance.

The majority of research done in this area to date has been with adult subjects. Keitner et al. has shown that the likelihood of recovery from a depressive episode is linked to healthy family functioning (Keitner et al., 1997; Keitner et al., 1995; Keitner et al., 1992). Keitner et al. (1997) did a telephone follow-up interview of 78 adult inpatients 6 years after being hospitalized with a severe major depressive episode and 5 years after completing a 12 month follow-up study. Using the Family Assessment Device (FAD; filled out by patients and family members) and the McMaster Clinical Rating Scale (MCRS; an observational measure analogous to the FAD) the acute phase patients who later had a symptom-free course of illness viewed their families' Problem Solving (ability to proceed from problem identification to problem resolution in instrumental and affective areas), Roles (recurrent patterns of behavior necessary to fulfill the instrumental and affective needs of family), Affective Responsiveness (ability to respond with appropriate quality and quantity of feelings), and Affective Involvement (amount of interest, care, and concern families invest in each other) as healthy (based on healthy/pathology cutoff scores

on the mean family score on the FAD). However, patients with episodic or chronic course of illness perceived their families as unhealthy on all dimensions.

In a review of previous research, Keitner stated that depressed adult patients with poor family functioning have a poorer course of major depressive illness (Keitner and Miller, 1990). Miller et al. (1992) conducted a study on the course of illness of depressed patients with dysfunctional families. The study included 68 depressed adult patients divided into functional and dysfunctional groups based on the family's scores from both observational and self-report measures. Depressed patients with functional families did not differ significantly from those with dysfunctional families on severity of depression, previous history, other nonaffective psychiatric diagnoses, neuroendocrine functioning, or depressive subtypes. At 12-month follow-up, patients from functional families reported significantly better levels of cohesion, expressiveness, conflict, and organization (on the Family Environment Scale). Patients living with dysfunctional families had a significantly poorer course of illness over the 12-month follow-up. Scores on the clinician rated McMaster Clinical Rating Scale (MCRS) and the self-report Family Assessment Device (FAD) were also significantly better for functional families (Miller et al., 1992).

Additionally, the study concluded that patients with good family functioning (based on both observational and self-report) had a significantly

higher recovery rate (69.6%) than patients with dysfunctional families (34.9%) 12 months after discharge. Overall, patients from dysfunctional families had higher levels of depression, lower percentage of recovery, and poorer overall functioning. Preliminary analyses concerning which specific dimensions of families may be related to course of illness revealed that families' self-report of functioning was more related to subsequent outcome than clinician ratings. In addition, the FAD scale Affective Involvement (which measures the amount of interest and value the family places on one another's activities and concerns) was found to be the best predictor of subsequent course of illness (Miller et al., 1992).

Family functioning qualities that have been found to be significant predictors of goal attainment in family therapy are observationally rated family competence and style and parent self-rated family competence (Hampson and Beavers, 1996b). Hampson and Beavers collected self-report (SFI and FACES-III) and observational (Beavers Interactional Competence and Styles Scales) data from 434 families at intake, the 3rd session, and at termination. Results showed that greater gains in therapy were made, globally, by the observationally rated more competent (scale composed of family affect, parental coalitions, problem solving, autonomy and individuality, optimism vs. pessimism, acceptance of family members) and more inner-oriented families (satisfaction sought from within the family). They also found that families who viewed themselves (by

self-report) as more competent at the outset attained more goals in treatment, leading to the conclusion that perhaps the family's sense of competence is important for making progress in a short period of time.

In a number of studies, self-report indicators were particularly related to the outcome of major depressive illness. In an adult study (participants aged 18 to 69 years) Keitner et al. (1995) found that self-report ratings of adults on family functioning more clearly predicted the subsequent outcome of the depressive illness than did observational perception. Families that perceived themselves as functioning well were generally able to maintain a healthy level of functioning throughout the depressive episode, whereas families rated by an observer as functioning well showed an initial improvement followed by a setback in several areas of functioning at the 12 month assessment. Families initially rated as functioning poorly by self report rated themselves as improved at 12 months although observational ratings remained in the unhealthy range. The pattern observed by clinicians of initial improvement followed by setback in functioning for both families with good and poor functioning is worth exploring more in depth. Keitner suggested that families may mobilize themselves to deal with the crisis of hospitalization but over time revert back to their usual interactional patterns, which has important clinical implications. This study concluded that

clinician ratings of family functioning at the acute stage do not significantly predict recovery (Keitner et al., 1995).

Swindle et al. (1989) assessed the effects of psychosocial factors on the long-term course of unipolar depression in a large group of 352 inpatient and outpatient adults. Using the Health and Daily Living Form and the Family Environment Scale, family conflict at the index episode consistently predicted poorer long-term outcome for depression over a 4-year interval (Swindle et al., 1989).

In summary, emerging data suggests that family environmental variables are potent predictors of outcome for depressed children and adolescents (Hamilton, et al., 1999). A number of studies have shown that the likelihood of recovery from a depressive episode is linked to healthy family functioning. In the child and adolescent literature, the quality of parent-adolescent interactions have been shown to predict the clinical course of depression, specifically with regard to paternal involvement, response to mother's discipline, and expressed emotion, with negative emotional attitudes were shown to be strong predictors of outcome one year after hospitalization for depression. A number of studies also examined family members' perceptions and observers' perceptions of family functioning as they related to treatment outcome. A closer examination of the relationship

between self-report and observer-report can be found below. First, however, family factors related to time to response in acute treatment are examined.

E. Family Factors related to Time to Response in Acute Treatment

Another factor to consider is the relationship of family functioning to the overall course of depressive illness. It has been shown that adult patients from families with good functioning have better prognosis than patients who have poor functioning, and that family functioning improves the course of the depressive episode (Keitner et al., 1987). However, the particular pattern of functioning remains unclear. Although little research has been done on this topic, Keitner and Miller (1990) reviewed the few studies, including just one child/adolescent study, that have addressed family functioning and its relationship to rate of recovery.

In a study examining predictors of short-term outcome of MDD, sixty-eight 8-16-year olds attending an outpatient clinic and their parents completed a self-report measure at entry and 9 months later. Compared to recovered adolescents, depressed adolescents who had not recovered at 36 weeks were significantly more likely to be in families classified as dysfunctional on the FAD at presentation (Goodyer et al., 1997). However, because this study was a naturalistic study, treatment was not controlled for. In addition, an average family score was used to assess family functioning, which some researchers have argued may result in a net loss of valuable information (Cole & McPherson, 1993).

Keitner et al. (1987) looked at 28 depressed adult inpatients (aged 18 to 64 years) who had recovered from their depressive illness. Results showed that those patients whose families improved in their general functioning (as measured by the FAD) had a significantly shorter time to recovery (4.1 months compared to 8.1 months in patients whose families did not improve). In addition, patients in families that improved in their communication, roles, and affective involvement showed nonsignificant trends towards having a shorter recovery time. Thus, Keitner et al. (1987) concluded that positive changes in overall family functioning during the course of illness were associated with faster recovery time. However, this study used an average score of all reporting family members for the family functioning, which was discussed in the previous paragraph. In addition, depression was measured in the patients via a self-report measure of depression (Modified Hamilton Rating Scale for depression) over the telephone rather than clinician interview, and there was no attempt made to control for treatment received during the follow-up period.

As mentioned earlier, in a study measuring family therapy outcome in a clinical setting, Hampson and Beavers (1996) concluded that families that benefited from a small number of sessions felt more positively about themselves (via self-report on the Self-Report Family Inventory and the FACES-III) than therapists did (based on the observational Beavers Interactional Competence and

Style Scales) at the beginning of therapy. As was expected, severely dysfunctional families drop out of therapy and are harder to reach, possibly indicating that the more dysfunctional the family system is the less sustained improvement is likely.

Thus, despite limited amount of research to date in this area, the data about relationship between family functioning and time to response in depression appears to show that problematic family functioning is associated with slower recovery among patients who do recover (Keitner and Miller, 1990). However, it is again unclear whether this association occurs because a patient's depression impairs family functioning, or impaired family functioning affects the patient's course of illness. Mutual reinforcement between individual vulnerability and family competence remains a plausible model (Keitner and Miller, 1990). In addition, there is a paucity of research examining time to response in children and adolescents with major depression.

In the next section, a number of methodological limitations in research with children and adolescents with major depressive disorder are addressed. Although many of these issues have been raised as limitations of the previous studies, a closer look at studies which specifically address the varying perspectives on family functioning is warranted.

F. Measuring Family Factors: Self-report, Observational Report, Clinician Report

Measurement of family functioning itself is an important area for further study in child and adolescent depression. Little is known about the relationship between child and adolescent self-report and other family members' reports on questionnaires relating to family functioning (Keitner and Miller, 1990). In addition, few studies have included an observational measure of family functioning in addition to self-report measures, although there have been conflicting conclusions on how to use multiple data sources. Some studies have indicated that differences between family members in their perceptions of family interaction and family relationships are common, with low to moderate agreement being the norm (Jessop, 1981). McCauley and Myers (1992) noted that self-report measures of depression in youths are not effective diagnostic tools as they may reflect the overall level of the child's distress rather than depression.

Below is a review of literature addressing the relationship between parent- and child-report measures and family- and observer-report measures. These two areas have primarily been addressed separately in the literature, although studies using a more robust multimethod assessment have been done in recent years and will also be reviewed.

1. Parent self-report vs. child self-report

Tamplin and Goodyer (2001) compared family functioning in community adolescents at high and low risk for MDD (based on life events, emotionality, marital problems, and past psychiatric history). Two subgroups of adolescents and their parents (aged 12-16 years) were compared on the McMaster Family Assessment Device (FAD) and the General Health Questionnaire (GHQ). They found that adolescents as a whole reported family functioning as significantly worse than their parents on almost all scales of the FAD, and the lower their mood and self-esteem, the worse they rated their families (Tamplin and Goodyer, 2001).

In an earlier study, Tamplin et al. (1998) found strong mother/father agreement on the FAD, particularly in the families of adolescents with depression. Thus, when families did have problems, both parents were likely to perceive this. In this study too, although parent and adolescent scores were significantly correlated, adolescents tended to report family problems as more severe than their parents. This again points to caution being used when family functioning is assessed solely on the basis of adolescent self-report.

Shek (1999) examined parents and their adolescent children from 378 families in Hong Kong on the Chinese version of the Self-report Family Inventory (SFI) over a 2 year period. Consistent with previous literature, the results of this

study showed that adolescents' perceived lower levels of family functioning that did their parents. However, since the results are based on Chinese adolescents in Hong Kong and the SFI was developed in the culture of the United States, these results need to be interpreted carefully.

Noller et al., 1992 examined 13 to 16 year-olds compared to their mothers on a self-report family assessment device. The adolescents in this study reported higher levels of family conflict and lower levels of intimacy among family members. In another study in which Noller et al. (1992) examined clinic and non-clinic adolescents, they found no differences between clinic adolescents and their mothers but non-clinic adolescents saw their families as significantly less intimate and more conflicted than their mothers.

In a study of perceptions of family functioning and adolescent emotional adjustment, families including a 6th or 7th grade adolescent and a mother or father completed self-report measures of family functioning including the Family Adjustment Scale and the Family Adaptability and Cohesion Evaluation Scale-III. A Center for Epidemiological Studies Depression Scale for Children (CES-DC) was also administered to children. Ohannessian et al. (1995) found that adolescents perceived lower levels of family cohesion than their parents, and girls perceived lower levels of family adjustment that did both parents. The correlations between the adolescents' perceptions of family functioning and either

parents' perceptions were lower than the correlations between the two parents' perceptions. In addition, discrepancies in perceptions of family functioning were related to the adolescents' reported levels of depressive symptomatology.

In a study described above of families that do better or worse in therapy, Hampson and Beavers (1996) found that parent self-ratings of family functioning (on the SFI and FACES-III) corresponded more with outcome than those of the adult offspring. A positive view of one's own family is a good predictor of doing well in few sessions of therapy. Finally, Herjanic and Reich (1982) found that agreement between the ratings of parents or clinicians and the child tend to be higher when the focus of the ratings is on the presence or absence of symptoms, rather than on the severity of the symptoms.

In summary, studies which have examined parent and child or adolescent self-report of family functioning have found discrepancies between the ratings. Overall, research has shown that adolescents tend to report lower family functioning than their parents. In *The Family's Construction of Reality,* Reiss stated that parents desire to maintain a positive image of the family from their vantage points of investment and control, while adolescents are more willing to take risks in disengaging from the system and may see the family from a more "outside" perspective than do the parents (Reiss, D., 1981). In addition, parent/adolescent discrepancies have been interpreted in terms of the

"generational stake" hypothesis, which states that while parents have a stake in maximizing similarities between themselves and their children, adolescent children have a stake in minimizing these similarities that can strengthen their autonomy and independence during the transition to adolescence (Bengston and Kuypers, 1971).

2. Family-report vs. Observer/Clinician report

Although there is a tendency to believe that the perceptions of an outside observer are more objective, neutral and therefore more reliability than those of a family member, studies have indicated that observers' perceptions are usually more similar to those of the adolescent than the parent, and that observers tend to see families as more pathological than the family members themselves (Feldman et al., 1989; Noller & Callan, 1988).

Feldman examined 55 intact, middle-class families with a 6th grade son on self-report (Family System Test) and observational measures (2 video-taped family tasks) of family cohesion and power. Data showed that the degree to which self-reports were significantly correlated with observational measures of family functioning were not the same for all family members. Interestingly, mothers' perceptions of cohesion showed the least convergence with observed behavior. Instead, both fathers and sons provided more "objective" information

about family cohesion. In addition, it was found that the use of multiple respondent scores (either the average of scores of family members or consensus scores) were not significantly better than that of individual respondents in assessing family structure (Feldman et al., 1989).

Noller and Callan (1988) undertook a study of perceptions of family members and outsiders in order to assess if 12-year-old adolescents' perceptions of family relationships were more similar to their parents or to an outsiders' view. Mothers, fathers, and adolescents (41 families from the community) participated in two videotaped tasks in their homes as well as completing measures of parent-adolescent relationship. The tasks were then viewed by each family member and rated for levels of anxiety, dominance, involvement, and friendliness. A trained observer and a separate mother-father-adolescent triad (the outsider view) also watched and rated the 2 interactions. Results showed that ratings by the outsider families were more negative than the family who had done the task rated themselves. As seen in other studies, adolescent ratings from the insider family matched those of both the adolescent and parents of the outsider family. There was greater agreement between parents and adolescents in the outsider families than the insider families. In addition, ratings by a trained observer were more highly correlated with the outsider family than the insider families. Finally family members appeared to be more objective when rating themselves than when rating

other family members. It is not clear why outsider families tended to judge insider families less positive. However, a number of explanations including the ratings being more objective, the insider families being more invested in creating a positive image of their families, or a defensiveness on the part of the outsider family in judging another family more critically than they would judge their own families. Nevertheless, it is clear that there is a strong need to consider fully the views of different family members as well as outside observers when studying family relationships.

Keitner et al studied family functioning with an adult sample using a self-report measure of family functioning (Family Assessment Device) and an observational (McMaster Clinical Rating Scale) measure of family functioning that provides ratings analogous to the Family Assessment Device. He found that families generally perceive their functioning as healthier than is evaluated by observers (Keitner, et al., 1995). It is unclear whether these discrepancies indicate the relief related to the patient's discharge or recovery, that family members are less critical of themselves, or that the improvement reflects a more complete picture of the family's functioning. In addition, subjective perception of family functioning more clearly predicted the subsequent outcome of the depression that did objective ratings.

Beavers and Hampson, (1993) have studied the relationship between self-report and observational report in several clinic and nonclinic samples. One of their main objectives has been to address whether a mean family score, variance patterns, or using certain individuals' scores is the most accurate means of assessing family functioning by self-report. In both samples, parents' Self-report Family Inventory (SFI) scores have been in the most competent direction (closer to those of observer-rated), and adolescent ratings have been more critical of the families (based on lower SFI Competence ratings). Kolevzon, et al. (1988) found that different participants (family members, therapists, neutral observers) tend to rate family qualities and therapy gains somewhat differently. A participant who is suffering from a depressive episode (either child or mother) will likely have a distorted perception of the family.

Adolescent, maternal, and paternal views on family data were examined by Bartle-Haring and Gavazzi, (1996). The major objective of the article was to demonstrate that confirmatory factor analysis with structural equation modeling could be used when a researcher has multiple perspectives on the same variables. A self-report measure of family differentiation level (the Differentiation in the Family System Scale) was collected from adolescents (aged 11 to 19 years) and the parents or stepparents currently residing in the same household (33 families). A second, larger (N=165) data set was used from a larger longitudinal study at a

Midwestern University. The students (mean age = 19.8 years) and parents completed the same self-report measure. Results of the combined sample confirmatory factors analysis procedures indicated that the family members' perspectives converged and could be used as a single latent variable. Although the results showed some initial evidence that family members' perspectives do seem combinable in a way that may yield a glimpse of a "systemic" property, there were significant amounts of error variance found throughout their analysis procedures. In addition, because the demographic data did not include a measure of psychiatric illness, these results cannot be generalized to psychiatric populations.

Cole and McPherson (1993) conducted a study to measure of investigate the relation of specific family subsystems to adolescent depression. Using a multidyad-multiperspective approach to family assessment, they investigated the relationship of conflict, cohesion, and expressiveness in family subsystems to depression in 107 high school students. They found that the convergent validity of the mothers' reports tended to be more reliable than adolescents' reports, substantial differences existed between family dyads, effects of marital conflict and cohesion on adolescent depression were entirely mediated by the parent-adolescent relationships, father-adolescent conflict and cohesion were more strongly related to adolescent depression than mother-adolescent conflict and

cohesion, and, finally, expressiveness was unrelated to adolescent depression. There were significant differences between family subsystems, indicating that reverting to global family assessment by collapsing across family subsystems may result in a net loss of valuable information.

In conclusion, due to conflicting conclusions in the above studies, more studies of adolescent depression which use direct measurement of family interaction are needed. Observational measures may offer a more valid measure of family functioning since they are less subject to response bias on the part of the patient. It is often difficult to discern whether adolescent reports of family dysfunction are accurate descriptions of the family environment, or reflections of a distortion by the mood state of the respondent. In addition, the use of observational measures in addition to self-report is a more methodologically rigorous design which can be used to identify discrete behaviors that distinguish families with depressed members from those without, and may thus be useful in identifying intervention targets (Sheeber et al., 2001). Based on a review of these discrepant findings, we will consider child or adolescent-report measures, parent-report measures, clinician-report measures and observer-report measures separately.

G. Summary

In conclusion, the prevalence and implications of MDD in children and adolescents necessitates effective treatment. It is important to increase our understanding of variables which impact illness severity, course of illness, and treatment response. The family is the principle and most influential system to which a person will ever belong (McGoldrick and Gerson, 1985). Therefore, it is little surprise that the family can exert a powerful force on the health of a child, especially during the important developmental years. Identifying in more detail the complex bi-directional processes that occur during the course of depression will be critical for clarifying processes associated with increased risk for continuing mood disorder (Asarnow et al., 1993).

Families of depressed adolescents have been found to be less cohesive, secure, communicative, warm, and supportive and as more tense, critical and antagonistic relative to families of normal adolescent controls (Kaslow et al., 1994). Family environmental factors have been found to profoundly influence the course of major affective illness (Keitner and Miller, 1990). However, our understanding of family factors as they relate to child and adolescent depression is hampered by a number of methodological limitations.

Traditionally, self-report measures of family functioning from a single family member have been used because they are economical and convenient.

Self-report measures are important because family members have access to information about family behavior that spans time and setting. In addition, perceptions of family environment are relevant to determining adolescents' mood and behaviors (McCauley and Myers, 1993). There has been an implicit assumption that single-respondent data is veridical and therefore that information from other family members would provide the same conclusions about family functioning (Feldman et al., 1989). However, adolescents, mothers, and fathers may perceive family relationships differently, as a result of their respective family roles, experience within the family and investment in the family (Feldman et al., 1989). Additionally, as mentioned above, it is difficult to discern the extent to which reports by depressed adolescents are accurate descriptions of family functioning or reflections of a negative response set consistent with a depressive state. Finally, the global nature of self-report data do not translate easily into behavioral intervention strategies.

Observational data, on the other hand, can be used to identify discrete behaviors that distinguish families with depressed members from those without and may be more useful in identifying treatment strategies (Sheeber and Sorenson, 1998). Although using observational measures of data collection may overcome some of the methodological problems associated with self-report data, they are also limited in how accurately a brief behavior sample collected in a

research setting reflects the real family life. Thus, studies using multi-method, multi-source assessment of the family environment of children and adolescents with depression are needed.

Another limitation of many of the studies mentioned is the lack of attention to the clinical state of *both* child and parent at the time family functioning data is assessed. Since the psychological functioning of parents and children may impact the perception of family functioning, knowing the clinical state of each member of the dyad at the time parent-child relations are assessed is critical (Burbach and Borduin, 1986). Mothers who are experiencing personal psychosocial distress tend to respond to measures with a generalized, negative response set (Kinsman and Wildman, 2001). Compared to nondepressed mothers, mothers who reported personal psychosocial distress also reported poorer family functioning, child psychosocial problems, and poor child daily functioning (Kinsman and Wildman, 2001).

Finally, many community studies that have been done rely on self-report measures of depression and may identify a different subject group than studies which use diagnostic interview to identity depressed subjects. In this study we will assess family functioning as it relates to depression in children and adolescents using multiple sources of data including structured clinical interviews,

adolescent-report, parent-report, clinician-report, and finally observer-report measures.

CHAPTER THREE

Aims of Study

In this study, we were interested in gaining a clearer understanding of patterns of family functioning over the course of an acute depressive episode. In addition, we were interested in identifying possible facets of family interaction that are most influential in the recovery process. Specific aims of this study were as follows:

- Investigate the relationship between family functioning and severity of illness.
- Determine whether family functioning serves as a moderator of outcome.
- Determine if self-report measures are a better predictor of outcome than observer rated measures.

Primary Questions and Hypotheses

Cross-sectional/Baseline Questions and Hypotheses

A. Investigate the relationship between family functioning and severity of illness.

1. There is strong evidence linking the family environment with the depressive episode's onset, duration, and course (Keitner et al, 1993). Although relatively little research has been dedicated to finding common family characteristics which are associated with severity of illness, various studies have shown that depressed young people endorsed less cohesion and support and more conflict within their families (McCauley et al., 1992; Sheeber et al., 1997). Thus:

a. Healthier parent-ratings and child or observational ratings on family cohesion and expressiveness (as measured by the SFI-2 and TCFES) will be associated with less severe initial depression (as measured by the CDRS-R).

b. However, less healthy parent, child, and observational ratings of family conflict (measured by SFI-2 and TCFES) will be associated with more severe initial depression (as rated by the CDRS-R).

2. An association between parental mental illness and increased behavioral dysfunction among offspring has been well documented (Beardslee et al. 1998; Fendrich et al., 1990; McCauley and Myers, 1992). Observational ratings of depressed mothers have shown these mothers to be more negative in terms of expressed affect, more critical, and less supportive (McCauley and Myers, 1992; Weissman et al., 1972). Thus:

a. Families with more maternal depression (as measured by QIDS-SR) will be associated with lower affect regulation and lower cohesion (as measured by TCFES, FGAS, and SFI-2).

b. Families with more maternal depression (as measured by QIDS-SR) will be associated with higher rates of conflict (as measured by TCFES, FGAS, and SFI-2).

Longitudinal/Time 2 Hypotheses

B. Determine whether family functioning serves as a moderator of outcome.

1. The likelihood of recovery from a depressive episode is linked to healthy family functioning (Keitner et al., 1995; Keitner et al., 1992). Families with higher global functioning at baseline (as measured by TCFES, FGAS, and SFI-2) will be associated with significant symptom improvement (as measured by CDRS-R, CGI) after acute treatment.

2. Problematic family functioning is associated with slower recovery among adult patients who do recover (Keitner et al., 1990). There has been little research on this relationship in the child and adolescent depression population. However, common risks factors for treatment response in children and adolescents with

MDD include a family history of affective disorder, inept or inadequate parenting, abrasive interactions within the family, and insecure attachments. Thus:

a. Healthier parent, child, and observations ratings on family cohesion and expressiveness (as measured by the higher ratings on the SFI-2 and TCFES) will predict early response to treatment (Response is defined by: over 50% improvement on the CDRS and/or a score of 1-2 on the CGI *AND/OR* Time to response as a continuous variable by week 4) in children and adolescent with MDD.

b. However, less healthy parent, child, and observational ratings of family conflict (as measured by the SFI-2 and TCFES) will not predict early treatment response in child and adolescent populations with MDD.

C. Determine if self-report measures are a better predictor of outcome than observer rated measures.

1. Research examining differences in perceptions of family functioning between family members has indicated that adolescents and their parents do not hold similar views about their families. In general, both self-report and observational measures have shown that adolescents view their families more negatively than do their parents (Ohannessian et al., 1995). In addition, studies have indicated that observers' perceptions are usually more similar to those of the

adolescent than the parent, and that observers tend to see families as more pathological than the family members themselves (Feldman et al., 1989; Noller & Callan, 1988). Thus:

a. Children and adolescents will rate themselves lower on self-report measures of family functioning (SFI-2) than parents will rate their functioning on the same measure (SFI-2).

b. Child/adolescent ratings of global family functioning on self-report (SFI-2) will be associated with clinician and observer ratings of family functioning on clinician (FGAS) and observational (TCFES) measures. Parent report of family functioning (SFI-2) will not be associated with clinician (FGAS) or observer (TCFES) report.

c. Baseline parent and child/adolescent ratings of family functioning (SFI-2) will be a better predictor of change in CDRS-R than clinician (FGAS) or observer ratings (TCFES).

CHAPTER FOUR

Methods

A. Subjects

All subjects were enrolled in the Family Functioning in Children and Adolescents with Major Depression: Prediction of Response to Acute Treatment Study at the University of Texas Southwestern Medical Center (UTSW). This study expanded the family assessment component of a current study on Relapse and Remission in Children and Adolescents with MDD (Emslie, principle investigator, 2000), which is a randomized controlled trial investigating the course of illness when medication is discontinued vs. continued after 12 weeks. This study was originally approved by the Institutional Review Board at the UTSW on June 1, 1998 (see Appendix A) and has been renewed annually since then. All subjects were recruited from clinical referrals to the general Child and Adolescent Psychiatry Outpatient Clinic and pediatric psychopharmacology service at Children's Medical Center of Dallas. Additional referrals came through advertisements in the newspaper or radio. Subjects were recruited and evaluated by trained interviewers (research assistants).

The study sample thus totaled 168 children and adolescents who met criteria for MDD at the start of treatment. One or both primary caregivers (with legal guardianship) accompanied the subjects. In accordance with study

inclusion criteria, child and adolescent subjects ranged in age from 8 to 17 years 11 months (still attending school) and met DSM-IV criteria for major depressive disorder (MDD). Criteria were assessed by trained research assistants using the Schedule for Affective Disorders and Schizophrenia for School Aged Children, Present and Lifetime (K-SADS-PL) (Kaufman et al., 1997).

B. Inclusion and Exclusion Criteria

Inclusion Criteria

1. Outpatients 7-18 years of age and still attending school (i.e. older adolescents who have left school will not be included as school functioning is a major assessment area in this age group and an item on the severity scale [CDRS-R]).
2. Primary diagnosis of non-psychotic major depressive disorder (single or recurrent) for at least four weeks as defined by DSM-IV with a CGI $\geq$ 4 for depression and CDRS-R $\geq$ 40.
3. In good general medical health and normal intelligence, i.e. IQ > 80 based on WISC-III, if concerns about intellectual capabilities are evident on clinical assessment.

Exclusion Criteria

1. Subjects are excluded for lifetime history of any psychotic disorder, including psychotic depression; bipolar I and II disorder; alcohol or substance abuse or dependence within the past six months; lifetime anorexia nervosa or bulimia;

pregnant or lactating females, sexually active females not using medically acceptable means of contraception (IUD, birth control pills or barrier devices); those with chronic medical illness requiring regular medication; those on medication(s) with psychotropic effects (anticonvulsants, steroids, etc.); patients with first degree relatives with Bipolar I Disorder; or subjects with severe suicidal ideation or previous history of serious suicide attempt.

2. Subjects who have failed on a previous adequate treatment with fluoxetine (defined as at least 20mg/day for 4 weeks) are excluded.
3. While the MDD must be the primary cause for dysfunction, other concurrent disorders (anxiety, attention deficit (ADHD), or conduct) are not excluded.

C. Procedure

The following procedures were conducted at the Child and Adolescent Mood Disorders Program at the Children's Medical Center of Dallas, Center for Pediatric Psychiatry by a research team. The research team consisted of primary investigator, Graham Emslie, M.D., secondary investigators, and research assistants. Subjects were screened for inclusion and exclusion criteria via telephone by a trained interviewer (research assistant). Potential subjects were scheduled for evaluation while others were provided with appropriate referrals.

At the first interview, a clinician or trained interviewer (research assistant) met with the subjects and parent/guardian(s) and explained the study. Written

consent was obtained from the parent/legal guardian, and written assent was obtained from the subject prior to beginning the evaluation. The informed consent form is a document approved by the Institutional Review Board at UTSW. During the initial evaluation, a trained interviewer (research assistant) interviewed the parent/guardian(s) and subject separately using a semi-structured DSM-IV based interview to assess whether subjects met criteria for MDD and other concurrent or lifetime psychiatric disorders. The semi-structured interview administered was the Schedule for Affective Disorders and Schizophrenia for School Aged Children, Present and Lifetime (K-SADS-PL) (Klein, 1993).

The severity of criterion depressive symptoms were assessed using the depressive items of the semi-structured interview, the Clinical Global Impression Score (CGIs) (National Institute of Mental Health, 1985), which provided Clinical Global Severity and Clinical Global Improvement ratings, and the Childhood Depression Rating Scale- Revised (CDRS-R) (Poznanski et al., 1984). The severity of depressive symptoms were also assessed using the Montgomery Asberg Depression Rating Scale (MADRS) (Davidson, Turnbull, Strickland, and Miller, 1986), the Children's Global Assessment Scale (CGAS), the Child's Family Global Assessment Scale (FGAS), the Quick Inventory of Depressive Symptomatology – Clinician rated (QIDS-C) (Rush et al., 2003).

Family measures completed include the Self-Report Family Inventory-2 (SFI-2) (Hampson, et al., 1989) and the Timberlawn Couple and Family Evaluation Scales (TCFES) (Lewis, et al., 1999). For the TCFES, parent and child dyads (at a minimum, other family members were involved when possible) were video taped in a 24 minute discussion using three topics from the Timberlawn Couple and Family Evaluation Scales at baseline and again at end of acute treatment/exit from study. They were video taped discussing for 8 minutes each of the following topics: 1. Discuss as a family what is strong about your family; 2. Discuss what you would like to change about your family; 3. Plan a family activity that involves all of you. All raters were trained by an expert on the Timberlawn Couple and Family Evaluation Scales. After the initial training, two "expert" raters rated a subset of tapes (25%), with an intraclass correlation coefficient of .909 established on TCFES Sum of Scales. Subsequent raters were trained to at least a .80 level of reliability against the expert raters on 12% (5) of the tapes. Once expert level of interrater reliability was obtained, a trained rater rated remaining tapes with every 4th tape double-rated to ensure rater drift did not occur.

Self-report and clinician measures were obtained at baseline and 12 weeks (or exit from the study if patients leave the study prior to 12 weeks). Demographic variables (SES, gender, age, and race) and illness variables (episode

duration, number of prior episodes, and age of onset for children and adolescents, as well as parent's history of depression and treatment) were also collected.

Those meeting the inclusion and exclusion criteria entered into the acute phase of treatment. This included 12 weeks of open treatment with fluoxetine, which is generally believed to be sufficient to achieve a full response. Participants started at 10mg for the first week and were then increased to 20mg. In order to allow the treatment response to be maximized, after six weeks of treatment the dose could be increased to 40mg if the child was showing insufficient response. A psychiatrist saw the child weekly for the first four weeks and then every other week to monitor improvement. At each visit the CDRS-R, CGI-Severity, and CGI-Improvement scales were completed based on child and parent interview. Blood tests were done at week 6 and week 12 to determine fluoxetine and norfluoxetine blood levels.

Participants were withdrawn from the study if they required additional medications/treatments now allowed in the protocol (medications other than stimulant medication or any specific psychotherapy beyond supportive management provided through the trial), or if they were non-compliant with the treatment (defined by <70% medication compliance at two consecutive visits or a total of three visits during the trial). Participants were free to withdraw themselves at any time during the study for any reason.

At week 12, the child was evaluated by the doctor and by an independent evaluator. Clinician-rated outcome measures were based on the scores obtained by the treating physician. The primary outcome measures were the CDRS-R and the CGI-Improvement score. Based on these scores, participants were classified as Responders or Non-responders. Responders were further divided into Remission or Adequate Clinical Response (ACR). Remission was prospectively defined as a CDRS-R raw score of 28 or less and a CGI-Improvement score of 1 or 2. Adequate Clinical Response was defined as a decrease of at least 50% in CDRS-R raw score adjusted for minimum score of 17) and a CGI-Improvement score of 1 or 2.

D. Measures

1. Diagnostic Measures

a) The Schedule for Affective Disorders and Schizophrenia for School-aged Children – Present and Lifetime Versions (K-SADS-PL) (Klein, 1993).

The K-SADS-PL was adapted from the K-SADS (K-SADS-P, Chamber et al., 1985). It is a semi-structured, 82-symptom screen, parent-child integrated interview designed to ascertain present episode and lifetime history of psychiatric illness, according to DSM-IV criteria. To address differential diagnosis, it also includes five supplements for affective disorder, psychotic disorders, anxiety disorders, behavioral disorders, and substance abuse, eating, and tic disorders.

Data from parents and children are recorded at separate times on a common answer sheet by a single interviewer, which allows for comparison of responses. The data is synthesized using the interviewer's best clinical judgment in order to generate DSM-IV Axis I child psychiatric diagnoses. The scale uses a 0-3 point rating scale. The K-SADS-PL also provides global and diagnostic-specific impairment ratings. Inter-rater reliability was 1.0 for depressive disorders, and test-retest kappa coefficients for MDD, and other affective disorders were in the excellent range, from .77 to 1.00.

b) The Children's Depression Rating Scale – Revised (CDRS-R) (Poznanski et al., 1984).

The CDRS-R is a 17-item clinician-rated instrument, modeled after the Hamilton Depression Rating Scales for adults, and is used to measure the presence and severity of depressive symptomatology in children and adolescents. It is a modified version of the CDRS (Poznanski, Cook, and Carroll, 1979) which was a diagnostic tool and severity measure of depression in children. It is a semi-structured interview which can be administered to children, ages 6 to 12, adolescents, their parents, teachers, case workers, or other sources of information in approximately 30 minutes. Seventeen (17) symptom areas are assessed by the scale, the last three (3) of which are evaluated using the child's nonverbal characteristics. Each item is rated on a 1 to 5 or 1 to 7 point scale, with a 1 describing absence of the given symptom. The CDRS-R yields a total score from

17 to 113, with a score of 40 or greater considered to be compatible with a diagnosis of depression. Poznanski et al. (1984) conducted reliability and validity studies in a hospitalized pediatric population, a child psychiatric inpatient population, three outpatient child psychiatry clinics, and in an elementary school. The inter-rater reliability yielded a correlation coefficient of .86 (N=53). The CDRS-R was found to be a reliable measure of the severity of depression with sound internal consistency, which was able to discriminate depressed from non-depressed children and was insensitive to the age of the child interviewed (Poznanski et al., 1984). High interrater reliability, with four raters and 25 subjects, was evidenced by a product-moment correlation of .92 (Poznanski et al., 1984). The CDRS-R has been used successfully in psychopharmacology studies for some time and allows for ready comparison to be made across studies. In a recent study, the CDRS-R has good interrater reliability with an intra class correlation of .95; it also correlated highly with global ratings of improvement (Emslie, et al., 1997).

c) The Clinical Global Improvement Scale (CGI) (National Institute of Mental Health, 1985).

This scale is used as a clinician assessment of overall symptom severity and improvement, each with a seven point scale, with lower values being more favorable. It was developed during the PRB collaborative schizophrenia studies. The items are considered “universal” and formatted for use in pediatric and adult

populations. Only Clinical Global Severity (CGS) can be measured at intake. In subsequent assessments, both severity and Clinical Global Improvement (CGI) will be rated. This is a standard scale for affective disorders treatment research, and a CGI improvement score of 1 (very much) or 2 (much) improved is considered to be an acceptable response to acute treatment, as is a clinical severity rating of less than or equal to 3 (mildly ill). In this study, subjects were rated as responders if they received a CGI score of 1 or 2. The intra class correlation for CGI improvement as a continuous variable in the above study was 0.93, and if used as a categorical variable, was k = .95.

d) Children's Global Assessment Scale (CGAS) (Shaffer et al., 1983). The CGAS was adapted from the Global Assessment Scale for Adults (Shaffer, et al., 1983) and provides a rating of adaptive functioning. The subject is rated by a single number, equal to the most impaired level of general functioning over a one month time period. The CGAS ranges from 1 to 100, with a low score indicating greater dysfunction. The advantage offered by this measure is that it provides a measure of global functioning, not limited to the impairment from depression.

e) Child's Family Global Assessment Scale (FGAS). The FGAS rates the child's family's most impaired level of general functioning in the past year. There are four areas of functioning to be considered when rating: Social functioning of parents as related to economic and social goals; marital/parental teamwork; parent understanding of and provision of the

developmental needs of the child; integrity and stability of family relationships. The FGAS ranges from 1 to 100 with a low score indicating a greater level of dysfunction. A recent study reports that children and adolescents with low family global functioning are less likely to recover (Emslie, et al, 1998).

f) Quick Inventory of Depressive Symptomatology – Self-Report (QIDS-SR) (Rush et al., 2003).

The QIDS-SR is a 16-item rating scale constructed by selecting only items from the 30-item IDS-C that assessed DSM-IV criterion diagnostic symptoms. These 16 items convert into the nine DSM-IV symptom domains of: 1) sad mood; 2) concentration; 3) self-criticism; 4) suicidal ideation; 5) interest; 6) energy/fatigue; 7) sleep disturbance; 8) decrease/increase in appetite/weight; 9) psychomotor agitation/retardation. Total scores ranges from 0 to 27. Severity Thresholds are as follows: No Depression = $\leq$5, Mild Depression = 6-10, Moderate Depression = 11-15, Severe Depression = 16-20, and Very Severe Depression $\geq$21. Internal consistency was high for the QIDS-SR (Cronbachs α = .86), the IDS-SR (Cronbachs α = .92) and the HAM-D (Cronbachs α = .88). The QIDS-SR total scores were highly correlated with IDS-SR (.96) and HAM-D (.86) total scores.

2. Family Measures

a) Timberlawn Couple and Family Evaluation Scales (TCFES) (Lewis, et al., 1999).

The TCFES, a revision of the Beavers Timberlawn Family Evaluation Scale (BTFES; Lewis, et al., 1997), is a clinician rated observational measure which consists of 18 scales which measure competence in the larger domains of system structure, autonomy, problem solving, affect regulation, and disagreement/conflict (see below). Recent reliability and validity studies on the TCFES provide support for its use with clinical populations (Housson, M., et al., 1999). Reliabilities for the four family summary scores ranged from .83 to .87; the five a priori family domains ranged from .74 to .85; reliabilities of the family interaction individual scales ranged from .57 to .85, with a median reliability of .71. Family scales significantly distinguished between clinic and non-clinic samples [Sum of Scales (F (1, 72) = 14.75, p¸.001].

Timberlawn Couple and Family Evaluation Scale

I. Structure
- Overt Power
- Adult Leadership
- Inappropriate Parent-Child Coalition
- Closeness

II. Autonomy
- Clarity of Expression
- Respect for Subjective Reality
- Responsibility

III. Problem Solving
- Closure
- Negotiation

IV. Affect Regulation
- Expressiveness
- Responsiveness
- Positive Regard
- Negative Regard
- Mood and Tone
- Empathy

V. Disagreement/Conflict
- Frequency
- Affective Quality
- Generalization & Escalation

VI. Global Competence

b) Self-Report Family Inventory-2 (SFI-2), (Hampson, et al., 1989). This is a 36-item self-report instrument designed to evaluate each family members' perceptions of the domains of health/competence, conflict, cohesion, directive leadership, and emotional expressiveness. The health/competence subscale includes nineteen content items involving family affect, parental coalitions, problem-solving abilities, autonomy and individuality, optimistic versus pessimistic views, and acceptance of family members. The conflict subscale includes twelve content items dealing with overt versus covert conflict, including arguing, blaming, fighting openly, acceptance of responsibility, unresolved conflict, and negative feeling tone. The cohesion subscale includes five content items involving family togetherness, satisfaction received from inside the family versus outside, and spending time together. The leadership subscale includes three content items involving parental leadership, directiveness, and the degree of rigidity of control. Lastly, the expressiveness subscale includes six content items dealing with verbal and nonverbal expression of warmth, caring, and closeness (Hampson and Beavers, 1989). The scale is designed to be completed by family members 11 years of age or older. All items except the last 2 are answered on a Likert-type scale with 1 being "Yes: Fits our family well"; 3 being "Some: Fits our family some"; and 5 being "No: Does not fit our family." The last two questions obtain an overall family rating and an independence of the family rating. Internal consistency has been assessed at between .84 and .88

(Cronbach's alpha). 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. The SFI has demonstrated adequate concurrent validity through high correlations with other family self report instruments. The SFI health/competence scale correlated r=+.87 with the general functioning factor of the McMaster Family Assessment Device (Miller et al., 1985). SFI cohesion correlates r=-.82 with the cohesion scale from the FACES III (Olsen et al., 1985).

Self-Report Family Inventory-2

Health/Competence: family affect, parental coalitions, problem-solving abilities, autonomy and individuality, optimistic versus pessimistic views, and acceptance of family members

Conflict: overt versus covert conflict, including arguing, blaming, fighting openly, acceptance of responsibility, unresolved conflict, and negative feeling tone

Cohesion: family togetherness, satisfaction received from inside the family versus outside, and spending time together.

Directive Leadership: parental leadership, directiveness, and the degree of rigidity of control

Emotional Expressiveness: verbal and nonverbal expression of warmth, caring, and closeness

E. Statistical Analysis

The primary aims of this study were to investigate the relationship between family functioning and severity of illness, determine whether family

functioning serves as a moderator of outcome, and to determine if self-report measures are a better predictor of outcome than observer rated measures.

The study design was within subjects. The continuous independent variables included – a self-report measure of depression (QIDS-SR), family variables (TCFES, SFI-2, FGAS), demographic variables (age), and illness variables (child and adolescent age of onset, number of episodes, and duration of recent episodes). The categorical independent variables included demographic variables (gender) and illness variables (parental history of depression and treatment). The primary continuous dependent variable was CDRS-R score. A secondary categorical dependent variable was the CGI score.

Descriptive statistics were computed for baseline characteristics, including demographic characteristics and illness characteristics. The following were the aims and hypotheses described earlier, with appropriate statistical analyses.

Cross-sectional/Baseline Questions and Hypotheses

A. Investigate the relationship between family functioning and severity of illness.

1. a. Parent, child, and observational ratings on family cohesion and expressiveness (as measured by the SFI-2 and TCFES) were compared with initial depression (as measured by the CDRS-R). Correlations between these measures

and the CDRS-R were computed. We will consider the use of partial correlations which adjust for age and gender if these factors have a clinically meaningful effect on the correlations. We will also test whether each measure contributes to the association with the CDRS-R independently from the other measures. To do this we will compute the partial correlation between two measures adjusted for all the other measures. For example, the correlation between parent-rated cohesion and CDRS-R will be adjusted for child-rated cohesion, parent-rated expressiveness, child-rated expressiveness, and observer-rated affect regulation. (and age, gender if necessary).

We will conduct 5 Pearson product-moment correlations.

Model #1: Pearson product-moment correlation between parent-rated cohesion (SFI-2) and CDRS-R (adjusted for age, gender)

Model #2: Pearson product-moment correlation between child-rated cohesion (SFI-2) and CDRS-R (adjusted for age, gender)

Model #3: Pearson product-moment correlation between parent-rated expressiveness (SFI-2) and CDRS-R (adjusted for age, gender)

Model #4: Pearson product-moment correlation between child-rated expressiveness (SFI-2) and CDRS-R (adjusted for age, gender)

Model #5: Pearson product-moment correlation between observer-rated affect regulation (TCFES) and CDRS-R (adjusted for age, gender)

To correct for the number of tests completed, we will use an alpha level of .01 instead of .05 (with 5 tests).

b. Parent, child, and observational ratings of family conflict (measured by SFI-2 and TCFES) were compared with initial depression (as rated by the CDRS-R). Correlations between the SFI-2 and TCFES measures and the CDRS-R will be computed. We will consider the use of partial correlations which adjust for age and gender if these factors have a clinically meaningful effect on the correlations. We will also test whether each measure contributes to the association with the CDRS-R independently from the other measures. To do this we will compute the partial correlation between two measures adjusted for all the other measures. For example, the correlation between parent-rated conflict and CDRS-R will be adjusted for child-rated conflict and observer-rated conflict (and age, gender if necessary).

We will conduct 3 Pearson product-moment correlations.

Model #1: Pearson product-moment correlation between parent-rated conflict (SFI-2) and CDRS-R (adjusted for age, gender)

Model #2: Pearson product-moment correlation between child-rated conflict (SFI-2) and CDRS-R (adjusted for age, gender)

Model #3: Pearson product-moment correlation between observer-rated disagreement/conflict (TCFES) and CDRS-R (adjusted for age, gender)

To correct for the number of tests completed, we will use an alpha level of .0167 instead of .05 (with 3 tests).

2. a. Maternal depression (as measured by QIDS-SR) was compared with affect regulation and cohesion (as measured by TCFES and SFI-2). Correlations between these measures and the QIDS-SR will be computed. We will consider the use of partial correlations which adjust for age and gender if these factors have a clinically meaningful effect on the correlations. We will also test whether each measure contributes to the association with the QIDS-SR independently from the other measures. To do this we will compute the partial correlation between two measures adjusted for all the other measures. For example, the correlation between observer-rated affect regulation and QIDS-SR will be adjusted for parent-rated cohesion, and child-rated cohesion (and age, gender if necessary). We will conduct 3 Pearson product-moment correlations.

Model #1: Pearson product-moment correlation between observer-rated affect regulation (TCFES) and QIDS-SR (adjusted for age, gender)

Model #2: Pearson product-moment correlation between parent-rated cohesion (SFI-2) and QIDS-SR (adjusted for age, gender)

Model #3: Pearson product-moment correlation between child-rated cohesion (SFI-2) and QIDS-SR (adjusted for age, gender)

To correct for the number of tests completed, we will use an alpha level of .0167 instead of .05 (with 3 tests).

b. Maternal depression (as measured by QIDS-SR) was compared with conflict (as measured by TCFES and SFI-2). Correlations between these measures and the QIDS-SR will be computed. We will consider the use of partial correlations which adjust for age and gender if these factors have a clinically meaningful effect on the correlations. We will also test whether each measure contributes to the association with the QIDS-SR independently from the other measures. To do this we will compute the partial correlation between two measures adjusted for all the other measures. For example, the correlation between parent-rated conflict and QIDS-SR will be adjusted for child-rated conflict and observer-rated conflict (and age, gender if necessary).

We will conduct 3 Pearson product-moment correlations.

Model #1: Pearson product-moment correlation between parent-rated conflict (SFI-2) and QIDS-SR (adjusted for age, gender)

Model #2: Pearson product-moment correlation between child-rated conflict (SFI-2) and QIDS-SR (adjusted for age, gender)

Model #3: Pearson product-moment correlation between observer-rated disagreement/conflict (TCFES) and CDRS-R (adjusted for age, gender)

To correct for the number of tests completed, we will use an alpha level of .0167 instead of .05 (with 3 tests).

Longitudinal/Time 2 Hypotheses

B. Determine whether family functioning serves as a moderator of outcome.

1. Global family functioning at baseline (as measured by TCFES, FGAS, and SFI-2) was compared with symptom improvement (as measured by CDRS-R, CGI) after acute treatment.

Repeated measures ANOVA (also called random-regression, random-effects, or hierarchical linear models) with all 12 CDRS-R & CGI scores will be used to see if the slope is related to baseline characteristics. One model will have CDRS-R as an outcome the other model will have CGI as an outcome. All models will have terms for time (week), baseline characteristics (including the baseline values of the outcome measure), and baseline value by time interaction. The hypothesis will be tested by the significance of the baseline global family functioning measure by time interaction.

2. a. Parent, child, and observer ratings on family cohesion and expressiveness (as measured by the SFI-2 and TCFES) were compared with early response to treatment (4 weeks or less). Patients will be divided into three groups: early responders, late responders, non-responders. The mean baseline

values of parent, child, and observer ratings of family cohesion and expressiveness will be compared between these 3 groups using ANOVA. Also, at each visit the outcome will be categorized as a response or non-response (CGI $\geq$ 3). A Repeated measures ANOVAs (or random-regression model) modified to be used with binary outcome data (Proc GlIMMIX in SAS) will be completed to assess if a response is significantly more likely based on baseline ratings of parent, child, and observer ratings of family cohesion and expressiveness

b. Parent, child, and observational ratings of family conflict (as measured by the SFI-2 and TCFES) were compared with early treatment response. Patients will be divided into three groups: early responders, late responders, non-responders. The mean baseline values of parent, child, and observer ratings of family conflict will be compared between these 3 groups using ANOVA. Also, at each visit the outcome will be categorized as a response or non-response (CGI $\geq$ 3). A Repeated measures ANOVAs (or random-regression model) modified to be used with binary outcome data (Proc GlIMMIX in SAS) will be completed to assess if a response is significantly more likely based on baseline ratings of parent, child, and observer ratings of family conflict.

C. Determine if self-report measures are a better predictor of outcome than observer rated measures.

1. Children and adolescents ratings on self-report measures of family functioning (SFI-2) were compared with parents' ratings the same measure (SFI-2).

Correlations between the child/adolescent measures on the SFI-2 and the parents measures on the SFI-2 will be computed. We will consider the use of partial correlations which adjust for age and gender if these factors have a clinically meaningful effect on the correlations.

2. Child/adolescent ratings of global family functioning on self-report (SFI-2) will be associated with clinician and observer ratings of family functioning on clinician (FGAS) and observational (TCFES) measures. Parent report of family functioning (SFI-2) will not be associated with clinician (FGAS) or observer (TCFES) report.

Correlations between the family measures on the SFI-2 and the observer measures on the FGAS and TCFES will be computed. We will consider the use of partial correlations which adjust for age and gender if these factors have a clinically meaningful effect on the correlations.

3. Baseline ratings of family functioning by SFI-2 will be a better predictor of change in CDRS-R than observer ratings on the FGAS and TCFES.

A linear regression analysis will be done with change in CDRS-R as the dependent variable. The predictors will be family ratings of functioning on the SFI-2, FGAS, and TCFES. The hypothesis will be tested by the size of the regression coefficients. The SFI-2 will have a larger standardized regression coefficient than the FGAS or TCFES.

CHAPTER FIVE

Results

This study was divided into two parts. Part I includes all data collected as part of the acute phase of the NIMH-funded "Childhood Depression: Remission and Relapse" study, and includes all clinician and child/adolescent and parent self-report measures. Part II includes those families who participated in an observationally rated measure of family functioning, the Timberlawn Couple and Family Evaluation Scale (TCFES).

Part I:

Tables 1 through 4 describe the subjects and demographic information for the participants (age, gender, ethnicity, comorbid diagnoses, as well as mother, father, and sibling psychiatric history) in Part I. Appendix A and B present CDRS-R and CGI scores by treatment week for the 168 subjects. Pertaining to treatment response, "early treatment response" was defined as a CGI Improvement score of 2 or less and 50% improvement from baseline on the CDRS-R during the first four weeks of treatment. Table 5 provides the schedule of assessments. Tables 6 through 8 provide descriptive data (number, mean, minimum, maximum, and standard deviation) for all continuous variables.

The sample consisted of 168 children and adolescents. There were more males (n=97, 57.7%) than females (n=71, 42.3%) in the total sample. As shown

in Table 1, the majority of patients were Caucasian (*n*=126, 75%), followed by African American (*n*=18, 10.7%) and Hispanic (*n*=18, 10.7%), and children and adolescents from other ethnic groups (*n*=6, 3.6%). Participants ranged in age from 7 to 18, with a mean of 11.84 years (*SD*=2.83). The mean baseline CDRS-R score was 57.57 (*SD*=7.31).

Characteristics of the primary diagnoses of MDD were also examined (see Table 2). Most participants in the family group met criteria for MDD, Single Episode (*n*=116, 69%). Of those who met criteria for MDD, Recurrent (*n*=52, 30.9%), 41 were in their second episode, 10 were in their third episode, and 1 was in a fourth episode. These children and adolescents had a mean age at onset of the illness of 10.93 years. The mean length of the current episode was 14.33 weeks (*SD*=17.46).

In addition to assessing for MDD, participants were systematically evaluated for all comorbid DSM-IV disorders. Only 43 (25.6%) subjects had no comorbid illnesses. Of the 125 (74.4%) participants with comorbid disorders, 70 (56%) had one comorbid diagnosis, 39 (31.2%) had two comorbid diagnoses, 12 (9.6%) had three comorbid diagnoses, and 4 (3.2%) had four comorbid diagnoses. See Table 3 for the frequency of specific disorders. With regard to family psychiatric history, there were 135 (80.4%) families with a positive history of mental illness in the mother, father, or sibling, 30 (17.9%) families with no

history of mental illness and 3 (1.8%) families where this data is missing. See Table 4 for the frequency of specific disorders.

Of the 168 subjects who entered the acute treatment phase, 31 (18.5%) did not complete the 12 weeks of treatment. Eleven withdrew consent (4 due to need for additional/concomitant treatment, 2 for inconvenient time/involvement, and 5 'other'), 8 were withdrawn due to adverse events (3 hospitalized due to suicidal ideation, 1 due to suicide attempt, 2 due to rash, 1 due to self-injurious behavior, and 1 due to bruising, sunburn, and jitteriness), 6 were withdrawn due to inadequate treatment response, 3 were lost to follow-up, 2 were withdrawn due to non-compliance, and 1 moved away. Four participants are still in the acute phase of treatment.

One-sample *t* tests were conducted on the SFI-2 scores to compare the sample to the normative data on this instrument (see Table 9). With the SFI-2, MDD child/adolescent and parent means for all subscales were significantly less healthy than the "healthiest" family group. They were, however, significantly more healthy than the "least healthy" family group.

Part II:

A subset of the Part I families (n=51) participated in a video taped observational measure of family functioning (TCFES). Procedures used to train raters and to establish interrater reliability are detailed in the Methods section.

This study was initiated in April 2002. Since the first subject was consented, 51 families have entered the study. Of those offered the opportunity to participate (77), 26 families (33%) have refused entry to the study (9 due to the time commitment and 17 due to not being comfortable with the videotaped format of the measure). Table 1 describes the demographic information for the participants including age, gender, and ethnicity.

Demographic characteristics were examined to determine if there were any significant differences between those children and adolescents whose families participated in the videotaped discussion and those refused to participate. There were no significant age, gender, ethnicity or level of depression differences between the group that did not participate in the family study (n=26) and the group that agreed to participate (n=51). Nor were there any significant age, gender, ethnicity or level of depression differences between the group who did not participate in the study (either because they were not offered participation or because they refused) (n=117) and the group who participated in the study (n=51).

Of the 51 subjects who entered the family study, **7** did not complete the second taping. Two refused to return for a final taping for unknown reasons, 2 discontinued treatment due to an adverse event (suicidal ideation), 1 was dropped due to tape error, 1 attended the final session without any family members present, 1 discontinued treatment after dropping out of the lead study and refused

to return for a final taping, and 1 refused because her mother said the patient was uncomfortable during the first taping.

As shown in Table 10, one-sample *t* tests were conducted on the mean TCFES scale scores to evaluate whether the means were significantly different than the means for the normative data collected by the Timberlawn Research Foundation. The normative sample consisted of 28 families that were involved in a longitudinal study investigating the development of competent families (Cox, 1989; Lewis, 1989). Couples with children between the ages birth to seven years old were recruited from 23 obstetricians at a large metropolitan hospital. Of the couples contacted, 74% agreed to participate in the study of the development of healthy families. Forty families began the study at Time 1 (during pregnancy with first child), and 28 families remained in the study until Time 7 (when first child was in first grade). None of the couples referred to the study by the obstetricians were minorities. The sample consisted of 16 (57%) boys and 12 (43%) girls. Twenty-six of the families contained two parent families, while two of the families contained only one parent as a result of divorce. Families had an average of approximately two children (range 1 to 3). None of the families in the "nonclinic" sample had children who were undergoing psychiatric treatment during the time of the study. Due to the confounding age difference, these comparisons are less meaningful than if the sample were more closely matched in

terms of age. However, this data does provide a benchmark for "healthy" family functioning as measured by the TCFES.

The mean scores for our MDD sample differed from the "nonclinic"/normative group in the following ways: the MDD families were less healthy on Power, Leadership, Closeness, Clarity of Expression, Respect for Subjective Reality, Responsibility, Closure, Negotiation, Expressiveness, Responsiveness Mood and Tone, and Empathy; the MDD sample were more healthy on Inappropriate Parent/Child Coalition and the Disagreement/Conflict subscales (Conflict Frequency, Affective Quality, and Generalization/Escalation); and finally, there were no differences between the MDD families and normative families for the Positive and Negative Regard subscales.

A. Family Functioning and Severity of Illness

1. Baseline Depression and Family Functioning

Hypothesis 1: *Healthier child/adolescent, parent and observational ratings on family cohesion and expressiveness (as measured by the SFI-2 and TCFES) will be associated with less severe baseline depression (as measured by the CDRS-R). However, less healthy child/adolescent, parent and observational ratings of family conflict (measured by SFI-2 and TCFES) will be associated with more severe initial depression (as rated by the CDRS-R).*

Part I: *Self-Report Family Functioning (SFI-2) and Baseline Depression (CDRS-R)*

Pearson correlations were made between SFI-2 child/adolescent and parent ratings of cohesion, expressiveness, and conflict and the CDRS-R initial depression rating. No significant correlations were found and results are presented in Table 11. Partial correlations adjusting for age, gender, and the other measures (SFI-2 child/adolescent and parent ratings of cohesion, expressiveness) had no clinically meaningful effect on the correlations.

Part II: *Observational Family Functioning (TCFES) and Initial Depression (CDRS-R).* Correlations comparisons were made between TCFES observational ratings of affect regulation and disagreement/conflict and the CDRS-R initial depression rating for the family study subset. No significant correlations were found and results are presented in Table 11. Partial correlations adjusting for age, gender, other measures (TCFES ratings of affect regulation and disagreement/conflict) had no clinically meaningful effect on the correlations.

2. Maternal Depression and Family Functioning

Of the 168 families who participated in the study, 142 biological mothers filled out a self report measure of depressive symptomatology (QIDS-SR) on themselves at baseline, and these scores were used to investigate the relationship between parent psychopathology and family functioning. As seen in Table 12, only 48 (33.3%) mothers reported no depressive symptoms, 53 (36.8%) mothers reported mild depressive symptomatology, 30 (20.8%) mothers reported moderate depressive symptomatology, and 13 (9 %) mothers reported severe depressive symptomatology.

Prior to investigating the specific hypotheses, pearson correlation comparisons were made between QIDS-SR and all global measures of family functioning (child and parent Health Competence ratings, FGAS clinician ratings, and TCFES observational Sum of Scales and Global Competence ratings), as shown in Table 13. Using the Bonferroni approach to control for Type I error across the 5 correlations, a *p* value of less than .01 (.05/5 = .01) was required for significance.

Part I: *Self Report Family Functioning (SFI-2), Clinician rated Family Functioning (FGAS) and Maternal Depression (QIDS-SR).* Significant correlations were yielded for maternal depression and parent rated Health Competence (r=.330, p<.000), such that more maternal depression was

associated with parent ratings of healthier family functioning. Child rated Health Competence (r=.187, p<.017) and Clinician rated FGAS (r=-.172, p<.027) also approached significance, such that higher maternal depression was associated with less healthy child and clinician rated family functioning. It should be noted that lower scores on the SFI-2 denote lower levels of health, whereas higher scores on the FGAS denote greater levels of health.

Part II: *Observational Family Functioning (TCFES) and Maternal Depression (QIDS-SR).* Significant correlations were found between maternal depression and observer rated family functioning: TCFES Sum of Scores (r=-.415, p<.003) and Global Competence (r=-.402, p<.004), such that the higher the maternal depression, the less healthy the family was rated observationally. It should be noted that higher scores on the TCFES denote greater levels of health.

A one –way analysis of variance (ANOVA) was conducted to determine the effect of severity of maternal depression (mild, moderate, severe, or no depression based recommended QIDS-SR severity thresholds) on the five global family functioning measures (SFI-2 child/adolescent and parent Health Competence, FGAS, and TCFES Sum of Scales and Global

Competence). Using the Bonferroni approach to control for Type I error across the 5 correlations, a *p* value of less than .01 (.05/5 = .01) was required for significance. A significant difference was found between levels of depression severity and parent rated Health Competence (SFI-2), F (3, 137) = 6.886, $p<.000$, *partial* $\eta^2 = .131$. Post hoc analyses show that the mothers with severe depression rated their families as having significantly less health competence than mothers with mild or no depression (See Table 14).

Hypothesis 2: *Families with more maternal depression (as measured by QIDS-SR) will be associated with lower affect regulation and lower cohesion (as measured by TCFES and SFI-2). Families with more maternal depression (as measured by QIDS-SR) will be associated with higher rates of conflict (as measured by TCFES and SFI-2).*

Part I: *Self-Report Family Functioning (SFI-2) and Maternal Depression (QIDS-SR).* Correlation comparisons were made between SFI-2 child/adolescent and parent ratings of cohesion and conflict and the QIDS-SR maternal depression rating. Using the Bonferroni approach to control for Type I error across the 4 correlations, a *p* value of less than .0125 (.05/4 = .0125) was required for significance. The results of the correlational analyses are presented in Table 15. High ratings of maternal depression were correlated

with child/adolescent rated family conflict (r=.234, p<.006) and parent rated family conflict (r=.299, p<.000), such that the higher the mother's rating of depression, the higher the child/adolescent and parent rated family conflict. The relationship between maternal depression and parent rated family cohesion approached significance (r=.167, p<.047), such that the higher the mother's rating of depression, the higher the parent's rated their families' level of cohesion (meaning low cohesion in the family, as lower scores on the SFI-2 denote greater health). As seen in Table 16, when using partial correlations adjusted for child's age and gender, the relationships between maternal depression and child/adolescent and parent rated cohesion approached significance.

Part II: *Observational Family Functioning (TCFES) and Maternal Depression (QIDS-SR).* Correlations were made between TCFES observational ratings of affect regulation and disagreement/conflict and the QIDS-SR maternal depression rating. Using the Bonferroni approach to control for Type I error across the 2 correlations, a *p* value of less than .025 (.05/2 = .025) was required for significance. Ratings of maternal depression were negatively correlated with observer rated family affect regulation (r=-.438, p<.003) (Table 15), such that the higher the level of depression in the mother, the lower the observational rating of affect regulation. The

relationships between maternal depression (QIDS-SR) and observer rated disagreement/conflict (TCFES) approached significance (r=-.361, p<.016), such that the higher the mother's rating of depression, the less disagreement/conflict observed in the family. It should be noted that higher scores on the TCFES denote greater levels of health. Partial correlations adjusting for age, gender, other measures (TCFES ratings of affect regulation and disagreement/conflict) had no clinically meaningful effect on the correlations.

B. Family Functioning as a Moderator of Outcome

1. Treatment Response and Family Functioning

Hypothesis 1: *Families with higher global functioning at baseline (as measured by TCFES, FGAS, and SFI-2) will be associated with significant symptom improvement (as measured by CDRS-R, CGI) after acute treatment.*

Part I: *Self report/Clinician report of Family Functioning (SFI-2 and FGAS) and Outcome (CDRS-R and CGI-I).* Repeated measures ANOVA (also called random-regression, random-effects, or hierarchical linear models) with all 9 CDRS-R & CGI-I scores were used to see if the slope was related to baseline family characteristics (SFI-2 Child and Parent Health Competence, FGAS). One model had CDRS-R as an outcome the other

model had CGI-I as an outcome. All models had terms for time (week), baseline characteristics (SFI-2 Health Competence, FGAS, TCFES Sum of Scales and Global Competence), and baseline value by time interaction. The hypothesis was tested by the significance of the baseline by time interaction. No significant relationships were observed and results are presented in Tables 17 and 18. The estimate shows the change in slope of the outcome measure (CDRS-R or CGI-I) per one point increase in the family characteristic measure.

Part II: *Observational report Family Functioning (TCFES) and Outcome (CDRS-R and CGI).* Repeated measures ANOVA (also called random-regression, random-effects, or hierarchical linear models) with all 9 CDRS-R & CGI-I scores were used to see if the slope was related to observed baseline family characteristics (TCFES Sum of Scales and Global Competence). One model had CDRS-R as an outcome the other model had CGI-I as an outcome. All models had terms for time (week), baseline characteristics (TCFES), and baseline value by time interaction. The hypothesis was tested by the significance of the baseline by time interaction. No significant relationships were observed and results are presented in Tables 17 and 18. The estimate shows the change in slope of the outcome

measure (CDRS-R or CGI-I) per one point increase in the family characteristic measure.

2. Early Response to Treatment and Family Functioning

Hypothesis 2: *Healthier parent, child, and observations ratings on family cohesion, expressiveness, and affect regulation (as measured by the SFI-2 and TCFES) will predict early response to treatment (Response is defined by: over 50% improvement on the CDRS-R and a score of 1-2 on the CGI) in children and adolescent with MDD. However, less healthy parent, child, and observational ratings of family conflict (as measured by the SFI-2 and TCFES) will not predict early treatment response in child and adolescent populations with MDD.*

Part I: *Self report/Clinician report of Family Functioning (SFI-2 and FGAS) and Early Response to Treatment.* Parent, child, and observer ratings on family cohesion, expressiveness and conflict (as measured by the SFI-2) were compared with early response to treatment. Patients were divided into three groups: early responders, late responders, non-responders (see Table 19). The mean baseline values of child/adolescent and parent ratings of family cohesion, expressiveness, and conflict (SFI-2) were compared between these 3 groups using ANOVA. Using the Bonferroni

approach to control for Type I error across the 6 tests, a *p* value of less than .008 (.05/6 = .008) was required for significance. SFI-2 child rated cohesion approached significance for the 3 groups, F (2, 160) = 3.18, *p* = .044, *partial* η^2 = .038. Although not significant, post hoc analyses show that early responders (*M* = 2.76, *SD* = .777) rated their families as more cohesive than late responders (*M* = 3.11, *SD* = .664) (See Table 20).

Part II: *Observational report Family Functioning (TCFES) and Early Response to Treatment.* TCFES observational ratings of family affect regulation and disagreement/conflict were compared with early response to treatment. Patients were divided into three groups: early responders, late responders, non-responders (see Table 19). The mean baseline values of observer rated of affect regulation and disagreement/conflict (TCFES) were compared between these 3 groups using ANOVA. No significant differences were found (see Table 20).

Also, at each visit the outcome was categorized as a response or non-response. A Repeated measures ANOVA (or random-regression model) modified to be used with binary outcome data (Proc GlIMMIX in SAS) was completed to assess if a response was significantly more likely based on baseline parent, child, and observer ratings of family cohesion, expressiveness, and conflict (SFI-2 and TCFES). All analyses used

response at a visit defined as a CGI-I of 1 or 2 and a 50% or more improvement from baseline in CDRS as the outcome measure. No significant differences were found and results are presented in Table 21. The estimate shows how change over time in the odds ratio for response is affected by a one point increase in the baseline family functioning measure.

Participants were further divided into two groups: early responders and late/nonresponders. Independent-samples *t* tests were conducted to evaluate the hypothesis that early responders to treatment would have higher baseline ratings of family functioning. Differences between early and late/nonresponders for SFI-2 approached significance as follows: SFI-2 child rated cohesion $t(161) = -2.41$, $p = .017$, SFI-2 child rated expressiveness $t(161) = -2.06$, $p = .041$, and parent rated expressiveness $t(165) = -2.39$, $p = .018$, such that early responders to treatment had better family functioning in the areas of cohesion and expressiveness. See Table 22 for a summary of results.

C. Self-Report vs. Observational and Clinician Report

Hypothesis 1a: *Children and adolescents will rate themselves lower on self-report measures of family functioning (SFI-2) than parents will rate their functioning on the same measure (SFI-2).* Table 23 presents correlations

made between child/adolescent ratings of all SFI-2 subscales and parent ratings of all SFI-2 subscales. Using the Bonferroni approach to control for Type I error across the 5 correlations, a p value of less than .01 (.05/5 = .01) was required for significance.

Significant correlations were found between child/adolescent and parent rating of Health Competence, Cohesion, Conflict, and Expressiveness (r=.27, .28, .39, and .28, p <.000, respectively), such that the higher the child/adolescent's reported family functioning, the higher the parent's reported family functioning. In addition, child/adolescent and parent ratings of Leadership approached significance (r=.177, p<.024). Partial correlations adjusting for age and gender had no clinically meaningful effect on the correlations.

In order to determine if children and adolescents rated themselves lower than parents on the SFI-2, paired sample *t* tests were conducted between child/adolescent and parent ratings of all SFI-2 subscales (see Table 24). Mean differences were found for all subscales of the SFI-2: Health Competence (M=.246, SD=.83, $t(161) = 3.76$, $p<.000$), Cohesion (M=.331, SD=.85, $t(162) = 4.95$, $p<.000$), Conflict (M=.175, SD=.71, $t(162) = 3.16$, $p<.002$), Leadership (M=.218, SD=1.00, $t(163) = 2.80$,

p<.006), and Expressiveness (M=.394, SD=.97, *t*(162) = 5.19, *p*<.000), such that child/adolescent scores of family functioning significantly reflected lower health than parent ratings. It should be noted that lower scores on the SFI-2 denote greater levels of health.

Hypothesis 1b: *Child/adolescent ratings of global family functioning on self-report (SFI-2) will be associated with clinician and observer ratings of family functioning on clinician (FGAS) and observational (TCFES) measures. Parent report of family functioning (SFI-2) will not be associated with clinician (FGAS) or observer (TCFES) report.*

Self/Parent-report vs. Observational/Clinician-report

Pearson correlations were made between SFI-2 child/adolescent and parent Health Competence ratings, TCFES observational Sum of Scales and Global Competence ratings, and FGAS clinician ratings of family functioning. Using the Bonferroni approach to control for Type I error across the 4 correlations, a *p* value of less than .0125 (.05/4 = .0125) was required for significance.

Significant correlations were yielded for parent rated Health Competence and clinician rated FGAS (r-.259, p<.001), such that clinician ratings of

healthier family functioning were associated with parent ratings of healthier family functioning. It should be noted that lower scores on the SFI-2 denote greater levels of health, whereas higher scores on the FGAS denote greater levels of health. Results are presented in Table 25. Partial correlations adjusting for age and gender had no clinically meaningful effect on the correlations.

Hypothesis 1c: *Baseline parent and child/adolescent ratings of family functioning (SFI-2) will be a better predictor of change in CDRS-R than clinician (FGAS) or observer ratings (TCFES)*. A multiple regression analysis was conducted to evaluate how well family functioning predicted change in CDRS-R. The predictors were five family functioning ratings (as measured by child and parent rated SFI-2, clinician rated FGAS, and observer rated TCFES), while the criterion variable was the overall % change in CDRS-R score from baseline to exit. This model was not found to predict change in CDRS-R to a significant degree (R^2 = .055, $F(5,42)$ = .49, p <.78) and results are presented in Table 26.

Exploratory Analyses

Paired-samples *t*-tests were conducted to evaluate whether family functioning improved after 12 weeks of open treatment with fluoxetine. The

results, presented in Tables 27 and 28, indicated that the mean child rated family functioning improved in the areas of Health Competence (M=.222, SD=.67, t(144) = 3.97, p<.000), Cohesion (M=.201, SD=.79, t(144) = 3.06, p<.003), and Expressiveness (M=.203, SD=.73, t(144) = 3.33, p<.001). Parent rated family functioning improved from baseline to exit in the areas of Health Competence (M=.148, SD=.44, t(141) = 3.97, p<.000) and Conflict (M=.168, SD=.50, t(141) = 4.00, p<.000). Clinician rated family functioning, as measured by the FGAS, also improved from baseline to exit (M=-6.913, SD=9.67, t(149) = -8.76, p<.000). It should be noted that lower scores on the SFI-2 denote greater levels of health, whereas higher scores on the FGAS denote greater levels of health.

Observer-rated family functioning (TCFES) did not significantly improve after treatment. The failure to find a significant difference was not because this study was underpowered. A general power analysis (Erdfelder, Faul, & Buchner, 1996) (Borenstein, Rothstein, Cohen, Scheonfeld, & Berlin, 2001) found that with the TCFES, 648 cases would be necessary to obtain power of .80, with an alpha set at .05.

Independent-samples t tests were conducted to evaluate the hypothesis that families who rate themselves as “more healthy” at baseline would have lower levels of depression at baseline and exit, a higher % change in CDRS-R from baseline to exit score, and higher ratings of family functioning on clinician and observer reported measures at baseline. Healthy/less healthy cutoff scores on the

SFI-2 were established to divide the group according to overall level of family functioning at the acute stage of treatment. These scores, 1-2 = more healthy and ≥3 = less healthy were obtained from Robert B. Hampson, one of the primary creators of the scale. The tests for child ratings of more healthy vs. less healthy were not significant and results are presented in Table 29.

Significant differences were found for parent "more healthy" vs "less healthy" groups for clinician rated family functioning (FGAS), $t(158) = -3.10$, $p = .002$, such that parents who rated their families as "more healthy" were rated significantly higher via clinician rating of family functioning (FGAS).

Differences between more healthy and less healthy parent ratings on the SFI-2 and percent change in CDRS-R scores from baseline to exit approached significance $t(161) = -2.09$, $p = .038$, such that parents who rated their family as "more healthy" at baseline had a higher percent change in CDRS-R from baseline to exit. In addition, Differences between more healthy and less healthy parent ratings on the SFI-2 and TCFES Global Competence approached significance $t(46) = -2.00$, $p = .052$, such that parents who rated their family as "more healthy" at baseline had a higher observational rating of global competence at baseline. Results are presented in Table 30.

Finally, a one-way analysis of variance (ANOVA) was conducted to compare family functioning measure between three outcome groups: Remission (CGI-I = 1 or 2 *and* CDRS-R≤28), Adequate Clinical Response (CGI-I = 1 or 2

and CDRS-R decrease $\geq$ 50%), and nonresponders. No significant differences were found and results are presented in Table 31.

CHAPTER SIX

Discussion

The goal of the present study was to gain a clearer understanding of patterns of family functioning over the course of an acute depressive episode. Family environmental factors have been found to profoundly influence the course of major affective illness (Keitner and Miller, 1990). This study sought to identify specific characteristics of family interaction that are most influential in the recovery process as well as address a number of methodological limitations, such as reliance on self-report as the sole method of data collection and not taking maternal affective state into account, which have hampered previous studies.

Data presented here was collected during the acute phase of the NIMH-funded "Childhood Depression: Remission and Relapse" study, which examines the effect of continuation phase treatment on relapse rates in childhood Major Depressive Disorder. The present study focused on the acute phase data for 181 child and adolescent participants in this medication trial. These participants were enrolled in treatment after a comprehensive evaluation, using the K-SADS-PL, to verify that they met strict inclusion/exclusion criteria. At study entry, information was collected about the primary diagnosis of MDD, the presence of any comorbid disorders, and self, parent, clinician, and observer (in 51 cases) reported family functioning. Participants were then provided 12 weeks of open treatment with

fluoxetine, using flexible dosing (10mg-40mg) in order to maximize treatment response. During the acute treatment phase, participants were evaluated regularly with measures of depression severity (CDRS-R) and global improvement (CGI). At the end of treatment, or at early termination, a final CDRS-R and CGI-Severity and Improvement score were obtained as the primary outcome measure. In addition, family measures were completed at outcome.

All measures of treatment outcome for depressive symptoms were quite positive. Overall, participants showed significant improvement in depression severity over the course of treatment. At baseline, the mean Clinical Global Severity score was 5 (Markedly Ill). By the end of 12 weeks of treatment, the mean CGI-S score was 2 (Borderline Mentally Ill). Overall, 110 (65.5%) of the participants met full criteria for Remission (CGI-I = 1 or 2 *and* CDRS-R$\leq$28) and 20 (11.9%) met criteria for Adequate Clinical Response (CGI-I = 1 or 2 *and* CDRS-R decrease $\geq$ 50%), representing an overall response rate of 77.4%. This is consistent with other open trials of SSRI's (Birmaher & Brent, 1998). Only 38 (22.6%) of the children and adolescents were classified as non-responders.

Summary of Findings

A primary aim of this study was to determine if an association between family functioning and depression existed. Research has shown that family environmental factors profoundly influence the course of major affective illness in adults (Keitner and Miller, 1990). Family functioning was hypothesized to

predict the level of depression of a child or adolescent within that family. Contrary to this, family functioning (as measured by self report, clinician report, and observation) was not found to significantly correlate with a child or adolescent's level of depression. A study by Miller et al. (1992) found that depressed patients with functional families did not differ significantly from those with dysfunctional families on severity of depression until 12-month follow-up, when patients from functional families reported significantly better levels of cohesion, expressiveness, conflict, and organization (on the Family Environment Scale).

Although there were families within this group who could be categorized as healthier than the "least healthy" normative group, all of the families were significantly less healthy than the "healthiest" normative group. It is likely that this group of participants was a very homogenous group, with high levels of depression and low levels of family functioning overall, making it difficult to find an association between more or less healthy families. In addition, the CDRS-R is a measure of individual depression symptom severity and may not account for adaptive or functional impairment, which may be more related to family or environmental factors. It is also important to note that many of the studies which examined family functioning as it related to level of depression were community studies which most likely had a larger variability in level of depression and family functioning.

Another major aim of the study was to determine if there was an association between high maternal depression and lower family functioning. The majority of the mothers in this sample (67.6%) reported *at least* mild depressive symptomatology, with 29.6% reporting moderate to severe depression. Maternal depression was found to be correlated with parent rated Health Competence (the SFI-2 scale considered to be the best indicator of overall family functioning) as well as both overall scales of observational family functioning (TCFES Sum of Scales and Global Competence). In addition, child rated Health competence and clinician rated global assessment of functioning (FGAS) approached significance. As expected, higher levels of maternal depression were negatively correlated with family functioning. Thus, although child/adolescent depression was not associated with family functioning, maternal depression was found to be significantly correlated or approaching significance for all five global measures of family functioning examined in this study (including self report, clinician report, and observational report).

Further analyses examining the severity of maternal depression as it related to family functioning revealed significant differences between mothers with severe depression and mothers with mild or no depression, such that mothers with severe depression tended to rate their family health competence lower. It is difficult to discern the extent to which reports by these depressed mothers are

accurate descriptions of family functioning or reflections of a negative response set consistent with their own depressive state.

Based on the above results, a closer examination of maternal depression and family functioning was conducted, specifically looking at the relationship between maternal depression, cohesion, affect regulation and conflict. As was hypothesized, high ratings of maternal depression were associated with less observed affect regulation (which is made up of expressiveness, responsiveness, positive regard, negative regard, mood, tone and empathy) in the family. This is consistent with previous research which examined depressed mothers and found them to be more negative in expressed affect, more critical, and less supportive (McCauley and Myers, 1992; Weissman et al., 1972). In addition children with depressive disorders have been found to be significantly more likely to have parents who expressed high levels of critical and emotionally overinvolved attitudes than were normal control children (Asarnow et al., 1994).

While we hypothesized that families with more maternal depression would be associated with lower cohesion, there was no significant relationship found between child/adolescent or parent rated cohesion (SFI-2) and maternal depression (QIDS-SR), although parent rated cohesion approached significance. Although this is in contrast to literature in this area, which has consistently found high levels of maternal depression to be associated with low levels of family cohesion (Fendrich et al., 1990; Kaslow et al., 1990; Shiner et al., 1998;

Weissman et al., 1972), it was noted that cohesion (when members feel emotionally close to other members and there is emphasis on togetherness, shared time, and motives) was the least healthy of all SFI-2 subscales per both child/adolescent and parent report. The majority of the past studies in this area have relied on adolescent only report of family functioning, with most of the adolescents populations coming from the community. In addition, many of these studies did not take into account both parent and child psychopathology.

Associations were found between maternal depression and conflict, with the child/adolescent and parent conflict ratings being statistically higher in families where the mother reported more depression. These results are consistent with the literature which has found that parental psychopathology has been found to be a correlate of family discord (Fendrich et al., 1990; Shiner et al., 1998; Weissman et al., 1972).

Observer rated disagreement/conflict, however, showed a non significant association with more maternal depression, such that higher maternal depression was associated with less observed family conflict. Overall there were low levels of conflict observationally noted (TCFES) in this group, with only 32% of the sample showing at least "one or a small number of conflicts during the observed interactions." In fact, the current sample showed significantly lower ratings of conflict than the normal control sample used for this measure, thus reducing the range of scores available to detect a difference. One possibility for the lower

level of observed conflict is related to methodological issues with the TCFES. It is possible that the TCFES is not sensitive to picking up on conflict within families during a one time taping. The normative sample included families who were taped multiple times throughout a 7 year period. In addition, it is important to note that parent-child discord was an index of any conflict between parents and any child in the family and in this sample the majority of families observed had only a parent-child dyad present, as compared to the normal control sample described above who regularly had 2 parents and 1 to 3 children. The level of conflict reported on self report measures may not have been evident during the observational task if certain family members were not present. It is also possible that the depressed mothers were more withdrawn than mothers in other families, which resulted in less open disagreement/conflict.

Another aim of the study was to examine whether higher global functioning at baseline (as measured by TCFES, FGAS, and SFI-2) was associated with significant symptom improvement (on the CDRS-R). No significant associations were found. Methodologically, the TCFES and SFI-2 may not be sensitive enough to pick up on family differences in the acute phase of treatment. It is also important to note that the overall response rate for the study was 77.4%, indicating that the majority of children/adolescents in the study improved regardless of their level of family functioning. Again, it should be noted that family functioning may be more related to functional difficulties in a

child/adolescent who is depressed, which are not picked up on by the symptom severity based CDRS-R.

Family factors were examined to determine their association with early response to treatment. It was hypothesized that higher family functioning would predict earlier response to treatment. Mean baseline comparisons of family factors between early responders, late responders, and nonresponders showed a significant difference for early and late responders for child rated cohesion (SFI-2). Children/adolescents who responded early to treatment had reported significantly healthier family cohesion than late responders to treatment. No significant differences were found between the three groups for parent rated cohesion, child/adolescent or parent rated expressiveness or conflict, or observational ratings of affect regulation and disagreement/conflict.

Participants were further divided into two groups: early responders and late/nonresponders. Differences between early and late/nonresponders for SFI-2 approached significance for SFI-2 child rated cohesion, child rated expressiveness, and parent rated expressiveness such that early responders to treatment had significantly better self rated family functioning in the areas of cohesion and expressiveness.

Although few studies, including just one child/adolescent study, have addressed family functioning and its relationship to time to recovery, it has been shown that patients from families with good functioning have better prognosis

than patients who have poor functioning, and that family functioning improves the course of the depressive episode (Keitner et al., 1987). The association between child rated cohesion and early response to treatment is important, suggesting that treatment that target increasing a family's cohesion may increase the rate of response to depression treatment in the child/adolescent. In addition, emotional expressiveness (verbal and nonverbal expression of warmth, caring, and closeness) appears to be an important factor in early response to treatment. Perhaps families who were more cohesive and emotionally expressive invested more time into the depressed child/adolescent, which positively impacted treatment response.

Interestingly, these some studies in the literature used an average score of all reporting family members for the family functioning, which some researchers have argued may result in a net loss of valuable information (Cole & McPherson, 1993). As the current study (and previous research) showed that adolescents consistently rate their families lower on measures of family functioning, it is possible that the averaged family scores from other studies did not represent "true" family functioning, as reported individually by both children and parents. In addition, the current study was a short term, acute treatment study which may not have been long enough to pick up on the more stable relationship between family functioning and course of depression. Thus, future studies may wish to

implement a longitudinal design with multiple samplings and a larger, potentially more varied sample size.

Finally, the treatment in this study was aimed at the reduction of child/adolescent symptoms and not environmental change in the family as a unit specifically. Methodologically, the TCFES and SFI-2 may not be sensitive enough to pick up on family differences in the acute phase of treatment. A twelve week period of treatment is probably too short to effect significant family change.

A shortcoming of many previous studies is that few have included multiple sources to assess family functioning. Observational measures of family functioning in addition to self-report measures have rarely been used. There has been little in the literature on assessing family functioning using three different perspectives. In this study, we assessed family functioning as it relates to depression in children and adolescents using multiple sources of data including child/adolescent report, parent report, clinician report, and finally blind observational report measures.

Paired t-tests were conducted to address the relationship between child/adolescent report and parent report of family functioning. Significant differences were found between nearly all child/adolescent and parent ratings of family functioning (with Leadership approaching significance). As was hypothesized, children and adolescents tended to report lower family functioning than their parents. As stated in the literature review, this can potentially be

understood in terms of the "generational stake" hypothesis, which states that children and adolescents have a stake in minimizing the similarities between themselves and their parents in order to strengthen their autonomy and independence, while parents have a stake in maximizing similarities between themselves and their children (Bengston and Kuypers, 1971). Similarly, Reiss (1981) theorized that while adolescents are willing to see the family from an "outside" perspective, parents desire to maintain a positive image of themselves from the vantage point of investment and control. In addition, Kolevzon et al. (1988) found that a participant who is suffering from an acute depressive episode will likely have a distorted (potentially more negative) view of the family, which may explain why these depressed children/adolescents rated their families lower than their parents.

Correlational comparisons were also conducted to address the relationship between child/adolescent report and parent, clinician, and observer rated family functioning. A significant correlation was observed between parent rated Health Competence and clinician rated FGAS, such that as parents rated their family's health competence functioning in the healthy direction, so did clinicians. The literature on self report compared to clinician or observer report has been mixed, at times finding that mothers' perceptions of cohesion showed the least convergence with observed behavior (Feldman et al., 1989), at other times finding parents' Self-report Family Inventory (SFI) scores to be in the most competent

direction (closer to those of observer-rated) (Beavers and Hampson, 1993). However, few studies have examined the relationship between multiple measures of functioning: self report by both child/adolescent and parent, clinician report, and observational report.

Parents and clinicians in this study were likely more removed from the acute depressive episode than the child/adolescent whose depression may have impacted his/her family functioning ratings. In addition, parents had frequent contact with the clinician who rated their family's functioning, giving the clinician more exposure to the parent's perception of family functioning than observers, who were blind to treatment stage and were only exposed to one 24 minute sample of videotaped family behavior.

A final aim of this study was to determine if baseline child/adolescent and parent reports of family functioning would be a better predictor of change in CDRS-R than clinician or observer ratings. No models were found to predict change in CDRS-R. Although research has shown that subjective perception of family functioning more clearly predicted the subsequent outcome of the depression that did objective ratings (Keitner, et al., 1995), our results did not support this conclusion. Other studies (Asarnow et al., 1993; Sanford et al., 1995) have shown that the quality of parent-adolescent interactions have been shown to predict the clinical course of depression, such that better parent-child relationships predict remission of depressive symptoms at follow-up. However, almost all of

the studies which have examined family functioning as a predictor of remission of depressive symptoms have examined these variables at 12 month follow-up, and this study, which lasted 12 weeks may not have been long enough to predict a relationship between these variables. In addition, as noted above, family functioning in this group was significantly below the "healthiest" normal control group, and the majority of patients (77.4%) were classified as having at least an "adequate clinical response", resulting in little variability in this group to be able to predict a change.

Exploratory analyses showed that self reported and clinician reported family functioning improved significantly from baseline to treatment exit. Although the family was not being treated, it's possible that as the child/adolescent's depression improved, those who were not blind to the treatment also saw changes in the family's functioning. However, family functioning did not show improvement via observational report. It should be noted that the observers were blind to time of treatment (baseline or exit). In addition, family functioning is relatively stable and it is difficult to observe change over such a short period of time (12 weeks). Additionally, the literature suggests that observers tend to see families as more pathological than the family members themselves (Feldman et al., 1989; Noller & Callan, 1988). A twelve week period of treatment is probably too short to effect significant family change, although the

observed increase in child/adolescent mood may have influenced parent and clinician report of family functioning.

In order to assess for other relationships between depression and family functioning, the participants were divided a number of ways including into child and parent rated "more healthy" and "less healthy" groups. There were no relationships found for child rated "more healthy" vs "less healthy" on any of the depression or family functioning measures. Parents who rated their families as "more healthy", however, were associated with clinician ratings of healthier family functioning (see similar results above). Children/adolescents whose parents rated their family as "more healthy" approached a significant association with both higher percent change in CDRS-R from baseline to exit and TCFES Global Competence ratings at baseline. These results are consistent with literature that has found families that perceived themselves as functioning well were generally able to maintain a healthy level of functioning throughout the depressive episode and make more gains in treatment (Hampson and Beavers, 1996b; Keitner et al., 1995).

Finally, analyses were conducted to compare family functioning between remitters, adequate clinical responders, and nonremitters. No significant differences were found. This is not surprising given the difference in number of participants in each group. As stated above, 110 (65.5%) of the participants met full criteria for Remission (CGI-I = 1 or 2 *and* CDRS-R$\leq$28) and 20 (11.9%) met

criteria for Adequate Clinical Response (CGI-I = 1 or 2 *and* CDRS-R decrease ≥ 50%), representing an overall response rate of 77.4%.

Methodological Considerations

A major methodological flaw in this study was that there was no non-depressed psychiatric control group or normal control group, which makes it difficult to interpret some of the findings. With only one treatment cell, it is not possible to attribute treatment gains to SSRI treatment. While poor family functioning did not predict a poor treatment response for these participants, we cannot say for sure that this is because SSRI's are uniquely able to treat depression in the face of poor family functioning. Further research comparing SSRI treatment to other approaches in children and adolescents with depression is necessary before that conclusion can be drawn.

A second limitation is the small sample size with the observational measure of family functioning, which limits the generalizability of positive findings. This part of the study was added on after many subjects had already entered the study and was only offered to a subset of participants due to time constraints.

It is important to note that 17 of the 23 families who refused to participate in the family study did so because of their discomfort with being videotaped. Although this is a more convenient way to collect data than live observation, the families who did participate may have been uncomfortable and may have acted in

ways that do not reflect their typical family functioning, thus not allowing for a "true" observation of functioning.

This study demonstrated very high response rates overall. The low rate of non-responders may have reduced the statistical power to find significant differences between groups. The participants consisted of acute phase treatment patients only, and those who did not respond to treatment were eliminated from the study early on, often with no exit data collected, leading to little variation among the subjects. If these analyses were repeated with a larger number of participants, even with the same response rate, there would be more statistical power to pick up on subtle differences between groups.

As the research was conducted within a university medical setting, these findings may not be generalizable to other clinical settings (Weisz, Donenberg, Han, & Kauneckis, 1995). However, the liberal inclusion criteria, in terms of acceptable comorbid disorders and use of psychostimulants, suggest that the population studied here is probably quite similar to that in other clinical settings.

Another limitation is that many statistical comparisons were conducted which increases the risk of Type I error, thus, interpretation of positive results should be considered tentatively pending replication in other studies. In addition, data was collected over a 12-week period, with 18.5% of the sample exiting before the 12th week.

A confounding factor which must be noted is the missing data, which may reflect noncompliance associated with increased depression or decreased depression. In addition, although the SFI-2 manual states it can be used with children aged 11 years of age and older, 64 (38.1%) of the participants who completed the SFI-2 were under age 11.

Despite these limitations, this study did provide some positive points. First, the diagnostic procedure was based on all available information (i.e., from clinicians, parents, and self-report), therefore biases introduced by a restrictive focus on one particular observer (i.e., the child and/or parent alone) were reduced. In addition, a wide array of factors including not just child/adolescent psychopathology but maternal depression ratings, family, and demographic variables were examined.

Clinical Implications and Issues for Future Research

It is clear that childhood depression is a serious problem. The relationship between family dysfunction and subsequent course of illness suggests that it is very important to include families in the treatment process for depressed patients. This study addressed many methodological limitations present in others studies, such that child/adolescent and maternal depression were comprehensively assessed and family functioning was measured from multiple points of view.

A primary finding from this study is that maternal depression is highly correlated with family functioning. In families where mothers reported

depressive symptomatology, family functioning was lower via all perspectives measured– child/adolescent, parent, clinician, and observer. The literature on maternal depression has shown that children of depressed parents who themselves develop an affective disorder often evidence particularly severe episodes, with disruptions in multiple domains of functioning (Beardslee et al., 1985). In addition, it has been noted that children of depressed parents have a younger age of onset of depression (12-13 years) than children of non-depressed parents (16-17 years) (Weissman et al., 1987). The current findings, along with those from the literature, underscore the importance of assessing and addressing parental psychopathology concurrent with treating child/adolescent depression. Specifically in this study, maternal depression was found to be related to areas such as affect regulation, cohesion, and conflict – areas which may be important to address and/or target with treatment.

Another important finding from this study was the relationship between family factors and early response to treatment. Children/adolescents who reported higher levels of cohesion and expressiveness in their families were more likely to respond early to treatment. Parents who reported higher levels of expressiveness in their families were also more likely to have children/adolescent who responded early to treatment. Therefore, treatments which specifically target increasing a family's sense of cohesion and expressiveness may decrease the time

needed for improvement in depressive symptomatology in children and adolescents.

In addition, this study examined family functioning from multiple perspectives over the course of treatment. Family functioning was found to improve based on self-report and clinician report after 12 weeks (or at early termination) of treatment. Overall, children and adolescents rated their families significantly more dysfunctional than parents' ratings. This is important because many studies only take one perspective into account, which may bias the results. Overall, parent family functioning ratings related to clinician ratings. In addition, as noted above, maternal affective state was associated with family functioning ratings, again showing that it is important not just to assess multiple perspectives of family functioning but to assess the affective state of those responding to the measures.

Although observational reports of family functioning in this study did not improve over the short treatment time, family functioning is relatively stable and it is difficult to observe change over such a short period of time (12 weeks). Studies that examine family functioning observationally over a longer period of time may be able to better measure changes in the family as a depressive disorder remits. As mentioned above, the use of a control group for comparison to the depression group may be more effective as the use of observational measures in addition to self-report is a more methodologically rigorous design, which can be

used to identify discrete behaviors that distinguish families with depressed members from those without, and may thus be helpful in identifying intervention targets.

As participants in this study were part of a larger study that will examine the effect of discontinuation of pharmacotherapy on the rate of relapse of depressive symptoms, further research with the majority of this study sample are presently underway. Those who have achieved at least an Adequate Clinical Response by 12 weeks will be eligible to participate in the double-blind, placebo-controlled continuation phase of treatment which examines the effect of discontinuation on relapse rates. Future research should examine the impact of family functioning during this treatment phase. It is important to learn whether children and adolescents with lower functioning families are more likely to relapse when pharmacotherapy is discontinued, particularly in light of the finding in this sample of residual low family functioning after acute phase treatment. Results of this study reflect the complexity of the family system in children and adolescents with major depressive disorder.

Despite poor family functioning, these children and adolescents did recover from a depressive episode. Addressing maternal depression as an early treatment target might be important in improving family functioning, which may impact the child/adolescent's functioning. In addition, specific areas to target such as family cohesion, expressiveness, and conflict have been identified.

Studies assessing the usefulness of adding family therapy to pharmacological and individual therapy treatment of major depressive disorder in children and adolescents are needed.

CHAPTER SEVEN

Tables

Table 1

Subject Variables

	168 R & R Patients					51 Family Study Patients				
	n	Min	Max	M	SD	n	Min	Max	M	SD
Demographic:										
Age of child/adolescent*	168	7	18	11.84	2.83	51	7	18	11.55	2.64
Child and adolescent illness variables:										
Current Episode No.	168	1	4	1.38	.63	51	1	3	1.25	.48
Current Episode Duration,wks	168	3	152	25.25	21.15	51	4	152	26.88	24.13
Current Episode Age of onset	168	7	18	11.40	2.76	51	7	18	11.10	2.66
Length of illness, mos	168	1	96	14.33	17.46	51	2	52	11.12	10.01
Gender										
Male	97 (57.7%)					27 (52.9%)				
Female	71 (42.3%)					24 (47.1%)				
Ethnicity										
Caucasian	126 (75%)					34 (66.7%)				
African American	18 (10.7%)					7 (13.7%)				
Hispanic	18 (10.7%)					9 (17.6%)				
Other	6 (3.6%)					1 (2%)				

* age at initial intake

Table 2

Illness Characteristics

	n (%)
Single vs. Recurrent	
Single Episode	116 (69%)
Recurrent	52 (31%)
Current Episode Number	
1	116 (69%)
2	41 (24.4%)
3	10 (6%)
4	1 (.6%)

Table 3

Frequency of Child/Adolescent Comorbid DSM-IV Diagnoses

DSM-IV Diagnosis	*Frequency*
Attention Deficit-Hyperactivity Disorder	67
Anxiety Disorders	
Generalized Anxiety Disorder	25
Separation Anxiety Disorder	11
Social Phobia	4
Specific Phobia	5
Post Traumatic Stress Disorder	1
Obsessive Compulsive Disorder	3
Anxiety Disorder NOS	1
Trichotillomania	3
Tic Disorder NOS	1
Dysthymic Disorder	53
Oppositional Defiant Disorder	15
Conduct Disorder	1
Enuresis	6
Encopresis	4
Total	200

Note. Total is greater than number of subjects because more than one comorbid diagnosis may be given.

Table 4

Frequency of Mother, Father, and Sibling Psychiatric History

	Mother	Father	Sibling
Depression (Dys, sought tx/counseling)	101	41	18
Bipolar I/II	3	1	2
Alcohol or Substance Abuse (last 6 mths)	3	31	0
Anxiety Disorder	13	4	3
Attention Deficit-Hyperactivity Disorder	6	12	26
Schizophrenia	2	1	0
Antisocial Personality Disorder	0	4	0
Independent Sleep Disorder	1	0	0
Other	0	1	7
Total	135 Families with Positive History of Mental Illness in Mother, Father, or Sibling		

Note. Total is greater than number of subjects because more than one comorbid diagnosis may be given.

Table 5

Schedule of Assessments

Weeks	-1 - 0	1	2	3	4	6	8	10	12
Measures									
SYMPTOM/DIAGNOSIS									
Clinician Rated									
K- SADS-PL	x								
CDRS-R	x	x	x	x	x	x	x	x	x
CGI	x	x	x	x	x	x	x	x	x
FUNCTIONING									
Clinician Rated									
CGAS	x					x			x
Parent Reports									
QIDS-SR	x								x
ENVIRONMENTS									
Clinician Rated:									
FGAS	x								x
Observer Rated:									
TCFES	x								x
Self/Parent Reports:									
SFI-II	x								x

Table 6

Summary of Dependent and Independent Variables at Baseline and Exit

Depression measures:	n	Min	Max	M	SD
CDRS-R – Baseline	168	44	88	57.57	7.31
CDRS-R – Exit	168	17	82	28.05	10.48
QIDS-SR – Baseline	142	1	22	8.40	4.73
QIDS-SR – Exit	126	0	22	6.26	4.76
FGAS - Baseline	165	41	90	61.84	10.69
FGAS – Exit	153	42	91	69.34	10.33
SFI-2					
Child/Adolescent					
Health Competence – Baseline	163	1	5	2.53	.75
Health Competence – Exit	149	1	5	2.30	.76
Cohesion – Baseline	163	1	5	2.88	.76
Cohesion – Exit	149	1	5	2.67	.78
Conflict – Baseline	163	1	4	2.43	.67
Conflict – Exit	146	1	4	2.33	.73
Leadership – Baseline	164	1	5	2.53	.81
Leadership – Exit	150	1	5	2.39	.89
Expressiveness – Baseline	163	1	5	2.34	.87
Expressiveness – Exit	149	1	4	2.09	.81
Parent					
Health Competence – Baseline	166	1	4	2.28	.62
Health Competence – Exit	144	1	4	2.09	.61
Cohesion – Baseline	167	1	4	2.54	.66
Cohesion – Exit	144	1	4	2.51	.64
Conflict – Baseline	167	1	4	2.25	.62
Conflict – Exit	143	1	4	2.07	.52
Leadership – Baseline	167	1	4	2.31	.74
Leadership – Exit	146	1	4	2.24	.79
Expressiveness – Baseline	167	1	4	1.93	.73
Expressiveness – Exit	145	1	5	1.82	.72

Note. CDRS-R, QIDS-SR, and SFI-2 lower score = more health; FGAS higher score = more health

Table 7

Summary of TCFES at Baseline and Exit

	n	Min	Max	M	SD
TCFES					
Structure – Baseline	50	7	18	12.68	3.13
Structure – Exit	44	7	20	12.93	3.02
Autonomy – Baseline	50	5	13	8.90	2.01
Autonomy – Exit	44	6	14	8.57	2.02
Problem Solving – Baseline	50	3	9	5.94	1.39
Problem Solving – Exit	44	2	10	5.70	1.79
Affect Regulation – Baseline	50	9	26	18.48	4.26
Affect Regulation – Exit	44	10	28	18.11	4.53
Disagreement/Conflict – Baseline	50	5	15	11.94	3.13
Disagreement/Conflict – Exit	44	3	15	11.27	3.35
Sum of Scores – Baseline	50	29	80	57.94	12.59
Sum of Scores – Exit	44	38	86	56.59	12.79
Global Competence – Baseline	50	3	16	9.10	3.09
Global Competence – Exit	44	2	16	8.89	3.23

Note. TCFES higher score = more health

Table 8

CDRS-R Percent Change Scores

	n	Min	Max	M	SD
*CDRS-R % Change Scores**					
Baseline to Visit 1	168	-19	74	20.32	17.654
Baseline to Visit 2	160	3	90	40.39	20.692
Baseline to Visit 3	156	-15	100	52.07	22.835
Baseline to Visit 4	161	8	100	61.26	21.476
Baseline to Visit 6	156	-19	100	67.94	23.376
Baseline to Visit 8	148	-48	100	72.19	21.820
Baseline to Visit 10	140	16	100	77.71	18.377
Baseline to Visit 12	137	13	100	79.77	18.434
Baseline to Exit	168	-48	100	72.37	25.998

* (Baseline CDRS-R score – Visit CDRS-R score)/(Baseline CDRS-R score – 17) x 100

Table 9

Comparison of MDD Sample to Normative Data for SFI-2

SFI-2		Normative Sample			
	Total Group (N=168)	Healthiest		Least Healthy	
Child	M (SD)	M	p	M	p
Health Competence	2.53 (.75)	2.06	.000*	3.03	.000*
Cohesion	2.88 (.76)	2.72	.008*	3.56	.000*
Conflict	2.43 (.67)	2.16	.000*	3.34	.000*
Leadership	2.53 (.81)	1.91	.000*	2.63	.108
Expressiveness	2.34 (.87)	1.80	.000*	2.50	.017**
Parent/Mother					
Health Competence	2.28 (.62)	1.96	.000*	3.01	.000*
Cohesion	2.54 (.66)	2.29	.000*	3.20	.000*
Conflict	2.25 (.62)	2.17	.075	3.37	.000*
Leadership	2.31 (.74)	2.00	.000*	2.68	.000*
Expressiveness	1.93 (.73)	1.65	.000*	2.55	.000*

Note. SFI-2 lower score = more health

*p<.01, **p<.05

Table 10

Comparison of MDD Sample to Normative Data for TCFES

Scale	MDD Group (n=50)	"Nonclinic"/Normal Controls (n=28)	*p*
	M (SD)	M (SD)	
I. Structure			
Overt Power	3.02 (.82)	3.86 (.93)	.000*
Adult Leadership	3.02 (.89)	3.46 (1.07)	.001*
Inappropriate Parent Child Coalition	3.60 (1.12)	3.29 (.94)	.053**
Closeness	3.04 (.99)	3.64 (.87)	.000*
II. Autonomy			
Clarity of Expression	3.12 (.85)	3.71 (.81)	.000*
Respect for Subjective Reality	3.00 (.88)	3.50 (.79)	.000*
Responsibility	2.78 (.76)	3.69 (.91)	.000*
III. Problem Solving			
Closure	2.88 (.72)	3.46 (1.11)	.000*
Negotiation	3.06 (.82)	3.29 (.86)	.053**
IV. Affect Regulation			
Expressiveness	3.12 (.80)	3.61 (.74)	.000*
Responsiveness	2.90 (.86)	3.54 (.88)	.000*
Positive Regard	3.30 (1.06)	3.57 (.92)	.076
Negative Regard	3.36 (1.03)	3.36 (.91)	1.00
Mood and Tone	3.14 (.70)	3.93 (.77)	.000*
Empathy	2.66 (.90)	3.11 (.83)	.001*
V. Disagreement/Conflict			
Frequency	3.78 (1.22)	3.11 (.96)	.000*
Affective Quality	4.00 (1.03)	3.39 (.79)	.000*
Generalization/Escalation	4.16 (1.02)	3.75 (.52)	.006*
Sum of Scales	57.94 (12.59)	68.25 (11.79)	.000*
Global Competence	9.10 (3.09)	11.12 (3.94)	.000*

Note. TCFES higher score = more health

*$p<.01$, **$p<.05$

Table 11

Correlational Comparison of Baseline SFI-2 and TCFES with CDRS-R

		n	r	Sig.
CDRS-R	SFI-2 P Coh	167	-.047	.548
	SFI-2 C Coh	163	-.015	.848
	SFI-2 P Expr	167	.004	.958
	SFI-2 C Expr	163	.036	.651
	TCFES AR	50	-.219	.127
	SFI-2 P Con	167	-.072	.354
	SFI-2 C Con	163	.026	.742
	TCFES Con	50	-.280	.049

Note. SFI-2 lower score = more health; TCFES higher score = more health

Using the Bonferroni approach to control for Type I error across the 8 correlations, a *p* value of less than .006(.05/8)= .006 was required for significance.

Table 12

Maternal Depression Ratings on the QIDS-SR

QIDS-SR		Baseline (n)	Exit (n)
	No Depression (≤5)	48 (33.3%)	67 (52.3%)
	Mild (6-10)	53 (36.8%)	39 (30.5%)
	Moderate (11-15)	30 (20.8%)	16 (12.5%)
	Severe (≥16)	13 (9%)	6 (4.7%)
Total		144	128

Note. 16 mothers were missing data at Exit.

Table 13

Correlations between Baseline Family and Maternal Depression Measures

		n	r	Sig.
QIDS-SR	SFI-2 Parent Health Competence	166	.330	.000*
	SFI-2 Child Health Competence	163	.187	.017
	FGAS	164	-.172	.027
	TCFES Sum of Scales	50	-.415	.003*
	TCFES Global Competence	50	-.402	.004*

Note. SFI-2 lower score = more health; TCFES and FGAS higher score = more health
*p<.01

Using the Bonferroni approach to control for Type I error across the 5 correlations, a p value of less than .01(.05/5)= .01 was required for significance.

Table 14

Analysis of Variance between Severity of Maternal Depression and Family Variables

Measure	*Group*							
	No Depression N = 46 *M (SD)*	Mild Depression N = 54 *M (SD)*	Moderate Depression N = 29 *M (SD)*	Severe Depression N = 13 *M (SD)*	Statistic	*p*	Tukey HSD Post hoc	*p*
SFI-2 Child Health Comp	2.42 (.61)	2.44 (.83)	2.81 (.74)	2.91 (.84)	F (3, 135) = 2.940	.036		
SFI-2 Parent Health Comp	2.17 (.61)	2.13 (.58)	2.47 (.57)	2.87 (.68)	F (3, 137) = 6.886	.000*	No depr vs Severe Mild vs Severe	.001 .001
FGAS	64.80 (10.27)	61.85 (10.38)	59.38 (12.02)	59.25 (9.07)	F (3, 136) = 1.907	.131		
TCFES Sum of Scales	67.09 (11.42)	57.59 (12.66)	52.07 (12.05)	50.00 (2.83)	F (3, 40) = 3.542	.023	No depr vs Mod	.018
TCFES Global Comp	11.09 (3.42)	9.06 (2.90)	7.79 (2.75)	6.50 (.71)	F (3, 40) = 3.087	.038	No depr vs Mod	.040

Note. SFI-2 lower score = more health, TCFES and FGAS higher score = more health
**p*<.01 Using the Bonferroni approach to control for Type I error across the 5 correlations, a *p* value of less than .01 (.05/5 = .01) was required for significance.

Table 15

Baseline Family and Maternal Depression Measures Correlated

		n	r	Sig.
QIDS-SR	SFI-2 P Coh	142	.167	.047
	SFI-2 C Coh	139	.137	.107
	TCFES AR	44	-.438	.003*
	SFI-2 P Con	142	.299	.000*
	SFI-2 C Con	139	.234	.006*
	TCFES Con	44	-.361	.016

Note. SFI-2 lower score = more health, TCFES higher score = more health

**p*<.008 Using the Bonferroni approach to control for Type I error across the 6 correlations, a *p* value of less than .008 (.05/6 = .008) was required for significance.

Table 16

Baseline Family and Maternal Depression Measures Correlated – Partial out Age, Gender

		n	r	Sig.
QIDS-SR	SFI-2 P Coh	138	.191	.024
	SFI-2 C Coh	135	.180	.035
	TCFES AR	40	-.448	.003*
	SFI-2 P Con	138	.297	.000*
	SFI-2 C Con	135	.262	.002*
	TCFES Con	40	-.372	.015

Note. SFI-2 lower score = more health, TCFES higher score = more health

**p*<.008 Using the Bonferroni approach to control for Type I error across the 6 correlations, a *p* value of less than .008 (.05/6 = .008) was required for significance.

Table 17

Weekly CDRS-R (number of points per week that the CDRS is changing) by Baseline Family Functioning

Effect	Estimate	Std. Error	df	t	Sig.
SFI C Health Competence	-.0188	.1217	722	-.15	.878
SFI P Health Competence	.0048	.1452	738	.03	.974
TCFES Sum of Scores	-.0071	.0133	221	-.53	.594
TCFES Global Competence	-.0086	.0531	222	-.16	.872
FGAS	.0030	.0085	742	.36	.722

Note. SFI-2 lower score = more health, TCFES and FGAS higher score = more health

Table 18

Weekly CGI-I (number of points per week that the CGI-I is changing) by Family Functioning

Effect	Estimate	Std. Error	df	t	Sig.
SFI C Health Competence	-.0089	.0097	198	-.92	.360
SFI P Health Competence	-.0085	.0115	197	-.73	.464
TCFES Sum of Scores	-.0009	.0011	39.3	-.86	.394
TCFES Global Competence	-.0015	.0043	39.4	-.34	.734
FGAS	.0003	.0007	204	.38	.707

Note. SFI-2 lower score = more health, TCFES and FGAS higher score = more health

Table 19

Frequency of Early Responder, Late Responder, Nonresponders

	Frequency	Percent	Valid Percent	Cumulative Percent
Nonresponder	36	21.4	21.4	21.4
Early Responder (CGI-I =1 or 2 & CDRS-R decrease 50% Visit 1 - 4)	97	57.7	57.7	79.2
Late Responder (CGI-I =1 or 2 & CDRS-R decrease 50% Visit 6 - 12)	35	20.8	20.8	100.0
Total	168	100.0	100.0	

Table 20

Analysis of Variance: Early Responder, Late Responder, and Nonresponder on Baseline Family Variables

Measure	*Group*						
	Early Responder N = 97 *M (SD)*	Late Responder N = 35 *M (SD)*	Nonresponder N = 36 *M (SD)*	Statistic	*p*	Tukey HSD Post hoc	*p*
SFI-2 C Cohesion	2.76 (.777)	3.11 (.664)	2.98 (.741)	F (2, 160) = 3.18	.044	Early vs Late	.049
SFI-2 P Cohesion	2.49 (.634)	2.59 (.564)	2.64 (.786)	F (2, 164) = .850	.429		
SFI-2 C Expressiveness	2.22 (.892)	2.34 (.872)	2.51 (.882)	F (2, 160) = 2.12	.124		
SFI-2 P Expressiveness	1.82 (.730)	2.06 (.712)	2.11 (.713)	F (2, 164) = 2.88	.059		
SFI-2 C Conflict	2.35 (.691)	2.56 (.630)	2.52 (.631)	F (2, 160) = 1.63	.200		
SFI-2 P Conflict	2.22 (.617)	2.26 (.642)	2.32 (.600)	F (2, 164) = .348	.706		
TCFES Affect Regulation	18.47 (4.485)	18.08 (4.757)	19.13 (2.748)	F (2, 47) = .139	.871		
TCFES Disagreement/ Conflict	11.80 (3.448)	11.58 (2.712)	13.00 (2.507)	F (2, 47) = .556	.578		

Note. SFI-2 lower score = more health, TCFES and FGAS higher score = more health
Early Response (CGI-I = 1 or 2 *and* CDRS-R decrease ≥ 50% Visit 1-4); Late Response (CGI-I = 1 or 2 *and* CDRS-R decrease ≥ 50% Visit 6-12)

Table 21

Repeated measures ANOVA on Family Variables and Time to Respond to Treatment

Effect	Estimate	Std. Error	df	t	Sig.
SFI C Cohesion	.0154	.0342	1024	.45	.653
SFI P Cohesion	.0258	.0402	1048	.64	.521
SFI C Expressiveness	.0333	.0313	1024	1.06	.288
SFI P Expressiveness	-.0030	.0445	1048	-.07	.947
TCFES Sum Affect	.0801	.1177	321	.68	.497
Regulation					
SFI C Conflict	-.0055	.0380	1024	-.14	.885
SFI P Conflict	-.0097	.0420	1048	-.23	.817
TCFES Sum Disagreement/Conflict	-.0022	.0124	322	-.18	.861

Note. SFI-2 lower score = more health, TCFES higher score = more health

Table 22

Independent Samples t test comparisons of Early Responders to Treatment, Late Responders to Treatment & Nonresponders

Group and Measure	Early Responders N = 97	Late & Nonresponders N = 71			
	M (SD)	*M (SD)*	t	df	Sig.
SFI-2 C Cohesion	2.76 (.777)	3.04 (.701)	-2.414	161	.017
SFI-2 P Cohesion	2.49 (.634)	2.62 (.681)	-1.262	165	.209
SFI-2 C Expressiveness	2.22 (.892)	2.50 (.823)	-2.061	161	.041
SFI-2 P Expressiveness	1.82 (.730)	2.09 (.708)	-2.387	165	.018
SFI-2 C Conflict	2.35 (.691)	2.54 (.626)	-1.784	161	.076
SFI-2 P Conflict	2.22 (.617)	2.29 (.618)	-.715	165	.476

Note. SFI-2 lower score = more health

Using the Bonferroni approach to control for Type I error across the 6 correlations, a *p* value of less than .008 (.05/6 = .008) was required for significance.

Table 23

Baseline Child and Adolescent Family Functioning and Parent Family Functioning Correlated

Child	Parent	n	r	Sig.
SFI-2 HC	SFI-2 HC	162	.274	.000*
SFI-2 Coh	SFI-2 Coh	163	.277	.000*
SFI-2 Con	SFI-2 Con	163	.394	.000*
SFI-2 Lead	SFI-2 Lead	164	.177	.024
SFI-2 Expr	SFI-2 Expr	163	.282	.000*

*p<.01 Using the Bonferroni approach to control for Type I error across the 5 correlations, a p value of less than .01 (.05/5 = .01) was required for significance.

Table 24

Baseline Child/Adolescent and Parent rated SFI-2 scores- Paired t-tests

	Mean**	Std. Deviation	Std. Error Mean	t	df	Sig
Health Competence	.246	.831	.065	3.762	161	.000*
Cohesion	.331	.854	.067	4.952	162	.000*
Conflict	.175	.710	.056	3.155	162	.002*
Leadership	.218	1.001	.078	2.795	163	.006*
Expressiveness	.394	.969	.076	5.193	162	.000*

*p<.01 Using the Bonferroni approach to control for Type I error across the 5 correlations, a p value of less than .01 (.05/5 = .01) was required for significance.
** Parent Score – Child Score

Table 25

Baseline Child/Adolescent, Parent, Clinician, and Observer Family Functioning Measures Correlated

r (*p*)	Clinician - FGAS	Child Health Competence – SFI-2	Parent Health Competence – SFI-2	Observer Sum of Scales - TCFES	Observer Global Competence - TCFES
Clinician – FGAS					
Child Health Competence – SFI-2	-.031 (*p*=.693)				
Parent Health Competence – SFI-2	-.259 (*p*=.001)*	.274 (*p*=.000)*			
Observer Sum of Scales – TCFES	.228 (*p*=.111)	.011 (*p*=.943)	.085 (*p*=.559)		
Observer Global Competence – TCFES	.238 (*p*=.096)	.036 (*p*=.806)	-.234 (*p*=.102)	.915 (*p*=.000)*	

Note. SFI-2 lower score = more health, TCFES and FGAS higher score = more health
*$p<.01$

Table 26

All Baseline Family Measures Multiple Regression Models of Percent Change in CDRS-R

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1. FGAS	.118	.386	.049	.305	.762
2. Child HC	-3.358	5.537	-.096	-.607	.547
3. Parent HC	-7.080	7.496	-.168	-.945	.350
4. TCFES SS	.626	.829	.303	.755	.454
5. TCFES GC	-2.167	3.460	-.258	-.626	.534

Note. Dependent Variable: CDRS-R Baseline to Exit % Change
SFI-2 lower score = more health, TCFES and FGAS higher score = more health

Table 27

Paired t-tests - Baseline to Exit SFI-2 Child/Adolescent and Parent rated SFI-2 scores

	Mean	Std. Deviation	Std. Error Mean	t	df	Sig
Child						
Health Competence	.222	.673	.056	3.973	144	.000*
Cohesion	.201	.789	.066	3.061	144	.003*
Conflict	.118	.731	.061	1.918	141	.057
Leadership	.127	.996	.082	1.545	146	.124
Expressiveness	.222	.673	.061	3.329	144	.001*
Parent						
Health Competence	.148	.435	.036	4.059	141	.000*
Cohesion	.014	.547	.046	.313	142	.755
Conflict	.168	.502	.042	3.996	141	.000*
Leadership	.030	.811	.067	.444	144	.658
Expressiveness	.148	.435	.054	1.544	143	.125

*p<.01

Table 28

Paired t-tests - Baseline to Exit FGAS and TCFES Scores

	Mean	Std. Deviation	Std. Error Mean	t	df	Sig
FGAS	-6.913	9.668	.789	-8.758	149	.000*
TCFES – Sum of Scales	1.325	12.444	1.898	.699	42	.489
TCFES – Global Competence	.256	3.339	.509	.502	42	.618

Note. TCFES and FGAS higher score = more health
*p<.01

Table 29

Independent Samples t-tests – Child Ratings of Healthy vs Less Healthy (based on SFI-2 Health Competence Ratings) compared with Family and Depressive Measures

Group and Measure	Less Healthy N = 72	More Healthy N = 91			
Child Ratings	M (SD)	M (SD)	t	df	Sig
Baseline CDRS-R	57.88 (7.74)	57.29 (7.18)	.503	161	.616
Exit CDRS-R	28.92 (12.25)	27.22 (8.54)	1.04	161	.300
Baseline to Exit % Change CDRS-R	70.06 (30.64)	74.47 (21.03)	-1.09	161	.278
FGAS	61.36 (11.54)	62.17 (10.02)	-.475	158	.636
TCFES Sum of Scales	58.39 (12.57)	56.92 (13.11)	.40	46	.694
TCFES Global Competence	9.22 (3.22)	8.80 (3.04)	.46	46	.646

Note. TCFES and FGAS higher score = more health

Table 30

Independent Samples t-tests –Parent Ratings of Healthy vs Less Healthy (based on SFI-2 Health Competence Ratings) compared with Family and Depressive Measures

Group and Measure	Less Healthy N = 60	More Healthy N = 103			
Parent Ratings	M (SD)	M (SD)	t	df	Sig
Baseline CDRS-R	57.37 (8.17)	58.01 (6.73)	-.543	161	.588
Exit CDRS-R	30.05 (9.75)	27.30 (10.85)	1.618	161	.108
Baseline to Exit % Change CDRS-R	66.20 (27.60)	74.96 (24.75)	-2.088	161	.038
FGAS	58.63 (11.58)	63.95 (9.82)	-3.096	158	.002*
TCFES Sum of Scales	54.48 (11.80)	59.63 (12.78)	-1.43	46	.159
TCFES Global Competence	8.00 (2.85)	9.74 (3.11)	-2.00	46	.052

Note. TCFES and FGAS higher score = more health

*p<.008 Using the Bonferroni approach to control for Type I error across the 6 correlations, a p value of less than .008 (.05/6 = .008) was required for significance.

Table 31

Analysis of Variance: Early Responder, Late Responder, and Nonresponder on Baseline Family Variables

Measure	*Group*				
	Remission N = 110 *M (SD)*	Adequate Clinical Response N = 20 *M (SD)*	Nonresponders N = 38 *M (SD)*	Statistic	*p*
SFI-2 Child Health Comp	2.48 (.76)	2.65 (.80)	2.61 (.67)	F (2, 160) = .735	.481
SFI-2 Parent Health Comp	2.20 (.60)	2.43 (.61)	2.43 (.65)	F (2, 163) = 2.70	.070
FGAS	62.29 (11.12)	62.45 (10.90)	60.22 (9.33)	F (2, 162) = .551	.577
TCFES Sum of Scales	58.16 (13.45)	56.00 (10.74)	57.89 (10.58)	F (2, 47) = .051	.950
TCFES Global Comp	9.08 (3.23)	8.50 (2.65)	9.44 (2.96)	F (2, 47) = .127	.881

Note. SFI-2 lower score = more health, TCFES and FGAS higher score = more health
Remission (CGI-I = 1 or 2 *and* CDRS-R$\leq$28); Adequate Clinical Response (CGI-I = 1 or 2 *and* CDRS-R decrease $\geq$ 50%)

CHAPTER EIGHT

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CHAPTER NINE

Appendices

A. Summary of Findings

Appendix A: Summary of Findings

Hypothesis	Finding
A1a. Healthier parent-ratings and child or observational ratings on family cohesion and expressiveness (as measured by the SFI-2 and TCFES) will be associated with less severe initial depression (as measured by the CDRS-R).	No significant association found.
A1b. Less healthy parent, child, and observational ratings of family conflict (measured by SFI-2 and TCFES) will be associated with more severe initial depression (as rated by the CDRS-R).	No significant association found.
A2. Higher maternal depression (as measured by QIDS-SR) will be associated with less healthy global family functioning (as measured by SFI-2, FGAS, TCFES)	Significant correlations were yielded for maternal depression and parent rated Health Competence (r=.330, p<.000), such that more maternal depression was associated with parent ratings of healthier family functioning. Child rated Health Competence (r=.187, p<.017) and Clinician rated FGAS (r=-.172, p<.027) also *approached significance*, such that higher maternal depression was associated with less healthy child and clinician rated family functioning. Significant correlations were found between maternal depression and observer rated family functioning: TCFES Sum of Scores (r=-.415, p<.003) and Global Competence (r=-.402, p<.004), such that the higher the maternal depression, the less healthy the family was rated observationally. A significant difference was found between depression severity and parent rated Health Competence (SFI-2), F (3, 137) = 6.886, p<.000, *partial* η^2 = .131. Post hoc analyses show that the mothers with severe depression rated their families as having significantly less health competence than mothers with mild or no depression.
A2a. Families with more maternal depression (as measured by QIDS-SR) will be associated with lower affect regulation and lower cohesion (as measured by TCFES, FGAS, and SFI-2.	Ratings of maternal depression were negatively correlated with observer rated family affect regulation (r=-.438, p<.003), such that the higher the level of depression in the mother, the lower the observational rating of affect regulation. The relationship between maternal depression and parent rated family cohesion approached significance (r=.167, p<.047), such that the higher the mother's rating of depression, the higher the parent's rated their families' level of cohesion (meaning low cohesion in the family, as lower scores on the SFI-2 denote greater health).

Appendix A: Summary of Findings Continued

Hypothesis	Finding
A2b. Families with more maternal depression (as measured by QIDS-SR) will be associated with higher rates of conflict (as measured by TCFES, FGAS, and SFI-2).	High ratings of maternal depression were correlated with child/adolescent rated family conflict (r=.234, p<.006) and parent rated family conflict (r=.299, p<.000), such that the higher the mother's rating of depression, the higher the child/adolescent and parent rated family conflict. The relationships between maternal depression (QIDS-SR) and observer rated disagreement/conflict (TCFES) approached significance (r=-.361, p<.016), such that the higher the mother's rating of depression, the less disagreement/conflict observed in the family.
B1. Families with higher global functioning at baseline (as measured by TCFES, FGAS, and SFI-2) will be associated with significant symptom improvement (as measured by CDRS-R, CGI) after acute treatment.	No significant relationships were observed.
B2a. Healthier parent, child, and observations ratings on family cohesion and expressiveness (as measured by the higher ratings on the SFI-2 and TCFES) will predict early response to treatment (Response is defined by: over 50% improvement on the CDRS and/or a score of 1-2 on the CGI *AND/OR* Time to response as a continuous variable by week 4) in children and adolescent with MDD.	A significant difference was found for SFI-2 child rated cohesion for the 3 groups, F (2, 160) 3.18, p = .044, *partial* η^2 = .038. Post hoc analyses show that early responders (M = 2.76, SD = .777) rated their families as significantly more cohesive than late responders (M = 3.11, SD = .664) (See Table 20).
B2b. Less healthy parent, child, and observational ratings of family conflict (as measured by the SFI-2 and TCFES) will not predict early treatment response in child and adolescent populations with MDD.	No significant relationships were observed.
B. Continued. Participants were further divided into two groups: early responders and late/nonresponders. Independent-samples t tests were conducted to evaluate the hypothesis that early responders to treatment would have higher baseline ratings of family functioning.	Differences between early and late/nonresponders for SFI-2 approached significance as follows: SFI-2 child rated cohesion $t(161)$ = -2.41, p = .017, SFI-2 child rated expressiveness $t(161)$ = -2.06, p = .041, and parent rated expressiveness $t(165)$ = -2.39, p = .018, such that early responders to treatment had significantly better family functioning in the areas of cohesion and expressiveness.

Appendix A: Summary of Findings Continued

Hypothesis	Finding
C1a. Children and adolescents will rate themselves lower on self-report measures of family functioning (SFI-2) than parents will rate their functioning on the same measure (SFI-2).	Significant correlations were found between child/adolescent and parent rating of Health Competence, Cohesion, Conflict, and Expressiveness (r=.27, .28, .39, and .28, p <.000, respectively), such that the higher the child/adolescent's reported family functioning, the higher the parent's reported family functioning. In addition, child/adolescent and parent ratings of Leadership approached significance (r=.177, p<.024). Mean differences were found for all subscales of the SFI-2: Health Competence (M=.246, SD=.83, $t(161) = 3.76$, $p<.000$), Cohesion (M=.331, SD=.85, $t(162) = 4.95$, $p<.000$), Conflict (M=.175, SD=.71, $t(162) = 3.16$, $p<.002$), Leadership (M=.218, SD=1.00, $t(163) = 2.80$, $p<.006$), and Expressiveness (M=.394, SD=.97, $t(162) = 5.19$, $p<.000$), such that child/adolescent scores of family functioning significantly reflected lower health than parent ratings.
C1b. Families will rate their global family functioning on self-report measures of family functioning (SFI-2) higher than clinicians or observers will rate the family's functioning on clinician (FGAS) and observational (TCFES) measures.	Significant correlations were yielded for parent rated Health Competence and clinician rated FGAS (r-.259, p<.001), such that clinician ratings of healthier family functioning were associated with parent ratings of healthier family functioning.
C1c. Baseline parent and child/adolescent ratings of family functioning (SFI-2) will be a better predictor of change in CDRS-R than clinician (FGAS) or observer ratings (TCFES).	This model was not found to predict change in CDRS-R to a significant degree.
Paired-samples *t*-tests were conducted to evaluate whether family functioning improved after 12 weeks of open treatment with fluoxetine.	The mean child rated family functioning improved in the areas of Health Competence (M=.222, SD=.67, $t(144) = 3.97$, $p<.000$), Cohesion (M=.201, SD=.79, $t(144) = 3.06$, $p<.003$), and Expressiveness (M=.203, SD=.73, $t(144) = 3.33$, $p<.001$). Parent rated family functioning improved from baseline to exit in the areas of Health Competence (M=.148, SD=.44, $t(141) = 3.97$, $p<.000$) and Conflict (M=.168, SD=.50, $t(141) = 4.00$, $p<.000$). Clinician rated family functioning, as measured by the FGAS, also improved from baseline to exit (M=-6.913, SD=9.67, $t(149) = -8.76$, $p<.000$). It should be noted that lower scores on the SFI-2 denote greater levels of health, whereas higher scores on the FGAS denote greater levels of health. Observer-rated family functioning (TCFES) did not significantly improve after treatment.

Appendix A: Summary of Findings Continued

Independent-samples *t* tests were conducted to evaluate the hypothesis that families who rate themselves as "more healthy" at baseline would have lower levels of depression at baseline and exit, a higher % change in CDRS-R from baseline to exit score, and higher ratings of family functioning on clinician and observer reported measures.	The tests for child ratings of more healthy vs. less healthy were not significant. Significant differences were found for parent "more healthy" vs "less healthy" groups for clinician rated family functioning (FGAS), $t(158) = -3.10$, $p = .002$, such that parents who rated their families as "more healthy" were rated significantly higher via clinician rating of family functioning (FGAS). Differences between more healthy and less healthy parent ratings on the SFI-2 and percent change in CDRS-R scores from baseline to exit approached significance $t(161) = -2.09$, $p = .038$, such that parents who rated their family as "more healthy" at baseline had a higher percent change in CDRS-R from baseline to exit. In addition, Differences between more healthy and less healthy parent ratings on the SFI-2 and TCFES Global Competence approached significance $t(46) = -2.00$, $p = .052$, such that parents who rated their family as "more healthy" at baseline had a higher observational rating of global competence at baseline.
A one-way analysis of variance (ANOVA) was conducted to compare family functioning measure between three outcome groups: Remission (CGI-I = 1 or 2 *and* CDRS-R$\leq$28), Adequate Clinical Response (CGI-I = 1 or 2 *and* CDRS-R decrease $\geq$ 50%), and nonresponders.	No significant differences were found.

VITAE

Ann Siobhan O'Malley was born in Manassas, Virginia, on February 24, 1976, the daughter of Catherine and Michael O'Malley. After completing high school at Notre Dame Academy in Middleburg, Virginia in May 1994, she entered Virginia Polytechnic Institute and State University in Blacksburg, Virginia. She received the degree of Bachelor of Science with a major in psychology and a minor in sociology from "Virginia Tech" in December, 1997. During the following two years she was employed as a Childhood Support Worker and National Research Officer for the Irish Society for the Prevention of Cruelty to Children in Dublin, Ireland. She then traveled to Madrid, Spain to teach English for one year. In September, 2001 she entered the Clinical Psychology Doctoral Program at the University of Texas Southwestern Medical School at Dallas. In April 2002, she married Mairtin OhAilin of Co. Galway, Ireland. They plan to return to Virginia in August 2005.

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