PREDICTING TREATMENT RESPONSE OF ADOLESCENTS WITH SERIOUS EMOTIONAL DISTURBANCE

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DEDICATION

My dissertation is dedicated to my first academic mentor, Dr. Joan K. Austin. Joan took me under her wings when I was only a young and naïve, baccalaureate student in 1992. I was invited to participate in the Summer Research Opportunity Program (SROP). Joan graciously agreed and was my SROP mentor in 1992 and 1993. She encouraged me to return for Master's training and served as mentor and chair for my Master's thesis. Joan hired me as research assistant for the last two years of my baccalaureate training and throughout my Masters training. She provided multiple opportunities for professional growth. I returned in 2007 to begin my doctoral training, for the most part, because of Joan's urging and encouragement. Joan was there for me to the end. It is also fitting that I am Joan's 60th and last PhD student as she begins her retirement from academia.

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ABSTRACT

Ukamaka Marian Oruche

PREDICTING TREATMENT RESPONSE OF ADOLESCENTS WITH SERIOUS EMOTIONAL DISTURBANCE

Serious emotional disturbance, including disruptive disorders (i.e., attention deficit hyperactivity disorder, oppositional defiant disorder, and conduct disorder), affects large numbers of adolescents, with costly and tragic consequences. Adolescents with disruptive disorders are likely to be arrested, drop out of school, and have poor treatment outcomes. There is an urgent need to identify strengths-based factors associated with improvement in adolescents' behavioral and social functioning to help them achieve their full potential.

The purpose of this study was to determine whether change in adolescent personal strengths and change in family functioning over 12 months predicted changes in behavioral and social functioning for adolescents with disruptive disorders who participated in a System of Care (SOC) program and if findings varied by race.

De-identified data from 179 adolescents, aged 12 - 17 years, with disruptive disorders and their caregivers were included in this secondary analysis. Data were analyzed using Pearson correlations, t-tests, chi-square tests, and multivariate multiple regressions.

Upon admission to the program, caregiver ratings indicated that African American adolescents had greater personal strengths ($p = .001$), fewer behavior problems ($p < .001$), and less functional impairment ($p < .001$) compared to their Caucasian counterparts. Girls had more behavior problems ($p = .05$) and fewer personal strengths than boys ($p < .001$). Increase in caregiver-rated adolescent personal strengths was significantly associated with improvement in caregiver-rated adolescent behavioral and social functioning ($p < .001$). Change in caregiver-rated family functioning was not significantly associated with change in caregiver-rated adolescent behavioral and social functioning ($p = .171$). The strength and direction of predictors did not vary by race. The adolescents in the study participated in a SOC program that emphasized their

strengths versus, primarily, focusing on their deficits. Change in caregiver ratings of adolescent personal strengths was a significant predictor of change in adolescent behavioral and social functioning over a 12 month period. Findings provide evidence for psychiatric mental health professionals to focus on enhancing adolescent personal strengths to improve behavioral and social functioning in adolescents with disruptive disorders. Future research is needed to understand the impact of family variables on adolescents' treatment outcomes.

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AA	African American
ADHD	Attention Deficit Hyperactivity Disorder
BERS	Behavioral and Emotional Rating Scale
CAFAS	Child and Adolescent Functional Assessment Scale
CBCL	Child Behavior Checklist
CMHS	Center for Mental Health Services
DIQ	Demographic Information Questionnaire
DOC	Department of Corrections
DPES	Dawn Project Evaluation Study
FAD	Family Assessment Device
ODD	Oppositional Defiant Disorder
SED	Serious Emotional Disturbance
SOC	System of Care
YSR	Youth Self Report Questionnaire
Δ	Change

CHAPTER ONE. NATURE OF THE STUDY

Adolescents with serious emotional disturbance (SED), including disruptive disorders, merit our attention because they are often under-identified, inappropriately served, and in need of an array of services from multiple child-serving agencies such as mental health, child welfare, school, and juvenile justice (Costello, Copeland, Cowell, & Keeler, 2007; U.S. Public Health Service, 2000; Wang, Sherrill, & Vitiello, 2007). There is an urgent need to better understand factors associated with improvement in these adolescents' behavioral and social functioning to help guide mental health treatments and to help them achieve their full potential (Huang, et al., 2005; Koplan & Fleming, 2000).

According to a report of the Surgeon General (U.S. Public Health Service, 2000), the burden and suffering associated with unmet mental health needs of youths have led to a crisis in our country. Approximately 5% to 7% of all American youths use mental health specialty services every year, and the cost of these services is estimated at $11.75 billion (Costello, et al., 2007; Koplan & Fleming, 2000). On a priority list of the country's ten most pressing health challenges, mental health for youths is ranked third (Koplan & Fleming, 2000).

Imagine, for example, the case of K.R., a 17 year-old male detained in a juvenile detention center for assault, drug possession, and resisting arrest. He is awaiting a court hearing in which the judge will determine if he will be released for specialized mental health treatment (i.e., residential treatment), put on probation again, or sent to the department of corrections to serve time for his crimes. K.R. has been in the mental health system for about seven years. In that time, he and his family have had multiple contacts with several child-serving agencies, including child welfare, outpatient mental health, schools, and the juvenile court.

K.R. was only 10 years old the first time his mother brought him to a child and adolescent mental health clinic for treatment. Like his two brothers before him, he demonstrated symptoms of hyperactivity, impulsivity, and oppositional and defiant behaviors. He got into fights with peers and had difficulty following directions at school and at home. He was failing all

of his classes. He had already repeated one grade. He was diagnosed with attention deficit hyperactivity disorder (ADHD) and oppositional defiant disorder (ODD). With his mother's consent, he received both medication management from an advanced practice registered nurse and behavioral management counseling from a licensed clinical social worker.

K.R. missed many appointments for various reasons. For one thing, his clinic appointments were usually during the day and conflicted with his school hours. K.R. and his family did not live in the best neighborhood. K.R.'s mother had other competing demands and challenges: two other children with mental health disorders, limited finances, and being a single mother with very limited social support. K.R.'s father was not involved in his life.

However, K.R. and his mother also presented with some notable strengths. K.R. was an intelligent young man, but seemed caught up in negative peer pressure and low self-expectations. His mother was very bright, appreciated the importance of an education, and wanted the best for her children. Despite the mental health treatments that K.R. received, he had been arrested for the third time in 18 months. What went wrong? Given all the services he received over the last six years, why was he in a juvenile detention center? Did the mental health system fail K.R.? What could a health care provider have done differently? K.R. is one example of an estimated 4.5 million youths with SED in the United States (Walrath, et al., 2009) who are the focus of this research.

SED affects large numbers of adolescents and has consequences for them, their families, and society that are costly and often tragic (Huang, et al., 2005; Rew, 2007). SED refers to having both a psychiatric diagnosis and a functional impairment (Costello, et al., 1996; Farmer, Mustillo, Burns, & Costello, 2005) and includes disruptive disorders, anxiety, and mood disorders. Disruptive disorders are the most common diagnoses of all SED in youths, with an estimated prevalence rate of 19% in all children 6 to 19 years old (Flory, Milich, Donald, Leukefeld, & Clayton, 2003; Grizenko & Pawliuk, 1994). They are the most frequent reason for referral to psychiatric clinics.

Disruptive disorders include attention deficit disorder, oppositional defiant disorder, and conduct disorder (Diagnostic and Statistical Manual of Mental Disorders-IV-TR [DSM-IV.TR], 2000). Compared to youths with other SED, youths with disruptive disorders have very severe functional impairments in many life domains that often persist into adulthood (Flory, et al., 2003; Grizenko & Pawliuk, 1994; Hodges & Wotring, 2000). Functional impairment occurs when adolescents' abilities to achieve or maintain developmentally appropriate social, behavioral, cognitive, communicative, and/or adaptive skills are substantially limited (Farmer, et al., 2005; Greenbaum, et al., 1996; U.S. Public Health Service, 2000; Urajnick, Shaw, Barwick, & McVay, 2006). For example, adolescents with disruptive disorders are more likely than general population adolescents to drop out of school, use drugs, or be arrested (Armstrong, Dedrick, & Greenbaum, 2003).

Most adolescents with disruptive disorders have poor treatment outcomes in traditional mental health programs (Anderson, Effland, Kooreman, & Wright, 2006; Cook & Kilmer, 2004; Manteuffel, Stephens, & Santiago, 2002; Walrath, Ybarra, & Holden, 2006). Recent strengths-based approaches for delivery of mental health services, such as the Center for Mental Health Services (CMHS) System of Care (SOC) initiative, have yielded moderately improved outcomes for children and adolescents (i.e., youths) compared to traditional mental health programs (Anderson, Wright, Kelley, & Kooreman, 2008). It is important to understand why those adolescents who improve do so.

The SOC initiative was designed to better meet the complex and multifaceted needs of youths with SED and their families. SOC refers to the organization and delivery of traditional mental health care in a manner that ensures that services and supports are coordinated across multiple agencies to meet the needs of youths with SED and their families. SOC focuses on strengths of youths and their families to address their needs (i.e., strengths-based approaches; Stroul & Blau, 2010). Longitudinal studies have evaluated SOC in large populations (Anderson, et al., 2006; Anderson, et al., 2008; Manteuffel, et al., 2002). Data from these studies can be used

to identify factors that may predict positive outcomes of these programs, specifically improvement in behavioral and social functioning among adolescents with disruptive disorders (Cook & Kilmer, 2004; Manteuffel, et al., 2002; Stephens & Fisher, 2008).

Two factors associated with improved treatment outcomes that deserve further study were youth, particularly adolescent, personal strengths (Harniss & Esptein, 2005) and family functioning (Friesen, Pullmann, Koroloff, & Rea, 2005; Lee, et al., 2009; Mandara, 2006b; Thompson, et al., 2007). The research on strengths-based approaches to treatment suggests that increasing adolescent personal strengths will enhance their behavioral and social functioning (Lyons, Uziel-Miller, Reyes, & Sokol, 2000). Moreover, enhancing family functioning has been shown to improve youths' treatment outcomes because children and adolescents often depend upon their family members as they work to regain function; the family also can help buffer them from negative peer influences (Rutter & Conger, 1995).

However, studies of the association of adolescent personal strengths and family functioning with behavioral and social functioning in adolescents with SED have used descriptive correlational designs. No previous study was found that investigated both adolescent personal strengths and family functioning. Because family involvement is pivotal to the effective treatment of adolescents, there is a need to study changes in both of these adolescent and family variables and their relationships to changes in adolescent behavioral and social functioning within the same sample.

The SOC philosophy of child-guided and family-driven organization and delivery of services provided an ideal context within which to study how adolescents and families' strengths (i.e., change in adolescent personal strength and change in family functioning) may be associated with change in adolescent behavioral and social functioning. To help frame this research, the concepts of resources and adaptation were borrowed from the McCubbin and Patterson Double ABCX Model of family stress and adaptation (McCubbin & Patterson, 1983). The Double ABCX Model shares the strength-based philosophy of SOC. The Double ABCX Model assumes that

individuals and families have strengths and resources that can be harnessed in periods of transitions to reduce disruption and foster adaptation.

Purpose

The purpose of this study was to determine whether change in adolescent personal strengths and change in family functioning over 12 months predicted changes in behavioral and social functioning for adolescents with disruptive disorders who participated in a SOC program. It was assumed that focusing on adolescents' and their families' strengths to meet the adolescents' treatment needs may lead to more desirable change in outcomes (i.e., behavioral and social functioning). De-identified data were obtained from the Dawn Project Evaluation Study (DPES). The Dawn Project was a federally funded CMHS SOC program (Stroul & Friedman, 1986). Secondary analyses was carried out using data from 179 adolescents (ages 12 – 17 years) with disruptive disorders and their caregivers. It is noteworthy that evaluation of the effectiveness of SOC was not a primary focus of this study; however, information was gained about the effectiveness of the Dawn Project. Because SOC emphasizes the families' involvement and engagement in the treatments of their adolescents, its strength-based treatment philosophy provided the most ideal context to conduct this study.

Specific aims are to:

Aim 1. Describe baseline differences in caregiver-rated adolescent personal strengths, family functioning, and adolescent behavioral and social functioning by adolescent demographics, caregiver type, and participation at 12 months.

H1a. There will be no differences in caregiver-rated adolescent personal strengths, family functioning, or adolescent behavioral and social functioning by adolescent demographics (age, race, and gender).

H1b. There will be no differences in caregiver-rated adolescent personal strengths, family functioning, or adolescent behavioral and social functioning by caregiver type (primary family member versus other).

H1c. There will be no differences between those who provided 12-month data and those who did not on adolescent demographics, caregiver type, or caregiver-rated adolescent personal strengths, family functioning, or adolescent behavioral and social functioning.

Aim 2. Examine changes from baseline to 12 months in caregiver-rated adolescent personal strengths and family functioning as predictors of caregiver-rated adolescent behavioral and social functioning after controlling for relevant adolescent demographics and caregiver type.

H2a. Changes in adolescent personal strengths between baseline and 12 months will be negatively associated with changes in adolescent behavioral and social functioning at 12 months.

H2b. Changes in family functioning between baseline and 12 months will be negatively associated with changes in adolescent behavioral and social functioning at 12 months.

H2c. The strength and direction of predictors will not vary by race (African American versus Caucasian).

Exploratory Aim 3. Explore differences between adolescent ratings and caregiver ratings of adolescent personal strengths, family functioning, and adolescent behavioral and social functioning at baseline and 12 months.

Data analyses included descriptive statistics, multivariate multiple regression, and linear mixed models. Using McCubbin and Patterson's Double ABCX Model (McCubbin & Patterson, 1983) as a guiding framework, it was anticipated that changes in adolescent personal strengths and family functioning would be related to changes in adolescent behavioral and social functioning at 12 months.

Theoretical Framework

The following sections provide a description of the conceptual model for the study (see Figure 1) that was derived from McCubbin and Patterson's Double ABCX Model (McCubbin & Patterson, 1983). To establish the relevance and application of the Double ABCX Model to this study, the following subtopics were included: the historical background for the Double ABCX Model, definition of concepts in the model, assumptions of the model, application of the model in the literature, and the model's application to this study. The conceptual and operational definitions of the key study variables have also been provided.

Adolescents who have disruptive disorders enter treatment with severe clinical symptoms and serious levels of functional impairment (Manteuffel et al., 2002). Having a disruptive disorder is a major stressor for these adolescents and their families (Epstein, Kutash, & Duchnowski, 2005). The goal of treatment is to help adolescents adapt and achieve positive outcomes (i.e., improvement in behavioral and social functioning).

To frame this study, two concepts (i.e., resources and adaptation) were selected from McCubbin and Patterson's Double ABCX Model of family stress and adaptation (McCubbin & Patterson, 1983). An historical background of the Double ABCX Model has been provided to further enhance understanding of its application to this study.

Historical background for the Double ABCX Model. The Double ABCX Model of family stress and adaptation was developed from Hill's ABCX family crisis model, which has its roots in sociology. The development of the model was related to observations of family responses to war, war separation, and reunion (Hill, 1949, 1958). The major concepts of the Double ABCX Model are stressor, resources, perception of the stressor, coping, and adaptation (McCubbin & Patterson, 1983). Resources and adaptation were the focus of this study (see Figure 1).

Definition of concepts in the Double ABCX Model. A stressor is defined as a challenging life event that impacts the family unit and can potentially change the family social system. Resources include properties, attributes, or skills that individuals and families possess

that can help them adapt to stressor events. Examples include personal resources and family resources. Perception of the stressor is the meaning ascribed by the family and its members to the stressor and circumstances surrounding it: Is it manageable or unmanageable? If viewed as unmanageable, the current stressor is likely to pile up on top of other co-existing stressors. The desired outcome is a dynamic process of adjustment and, ultimately, adaptation. Adaptation refers to the individual and family's efforts to achieve a level of balance after a crisis. Remember the story of K.R? In this study, adaptation for K.R. includes two different measures. The first would be a decrease or improvement in symptoms of hyperactivity, impulsivity, and oppositional and defiant behaviors. The second would be improved functioning at school and within the community with less involvement in legal problems. If K.R. improves, his family, especially his mother, would have more time to focus on other things, such as her other children and seeking paid employment (Deardorff, 1992).

Assumptions of the Double ABCX Model. The Double ABCX Model has a number of assumptions. First, it assumes that transitions and changes, and thus disruptions, are expected in the lives of individuals and their families. Second, it assumes that individuals possess unique strengths and vulnerabilities. Similarly, families possess basic competencies, patterns of functioning, and strengths to minimize and prevent disruptions and promote growth and development of individuals and the family unit. Third, individuals and their families view stressors and resources according to their own perceptions. The model assumes that, in the event of non-normative or unexpected disruptions or stressors, families draw on these basic competencies, patterns of functioning, and strengths in an effort to restore order and foster recovery. The last, but not the least, assumption states that the family affects the individual and the individual affects the family in the process of adapting to chronic illness (McCubbin & Patterson, 1983).

Applications of the Double ABCX Model in the literature. The Double ABCX Model has been used widely to guide research inquiry and practice across different age groups, illness

types, and professional disciplines (LoBiondo-Wood, 2003). It has been utilized frequently in studies of families of children with chronic illness, such as childhood epilepsy (Austin, 1987; Oruche, 1992), liver transplant (LoBiondo-Wood, bernier-Henn, & Williams, 1992), autism and other related communication disorders (Bristol, 1987), intellectual and developmental disabilities in infants and young children (Deardorff, 1992; Saloviita, Italinna, & Leinonen, 2003), and emotional and behavioral disorders (Lancaster, 2007). Existing studies have often focused on the impact of the child's illness on the family caregivers. Researchers have examined the differences between caregivers or parents of children with chronic illness and those without (Deardorff, 1992) or what factors in the model were associated with positive outcomes (Nachshen & Minnes, 2005).

Findings support that families play significant roles in the illness trajectory and adaptation of the individual member and that individuals and families influence each others' adaptation to stressors (LoBiondo-Wood, 2003). For example, Nachshen and Minnes (2005) examined factors that contribute to empowerment in parents of school-aged children with and without developmental disabilities using the Double ABCX Model. Parents completed questionnaires related to their child's behavior problems, parental stress, well-being, and support. Parents of children with developmental disorders reported more child behavior problems, more stress, and less well-being than parents of children without disability (Nachshen & Minnes, 2005). In addition, a linear relationship was found in which parents' well-being and resources mediated the relationship between child behavior problems and parents' empowerment. Findings support the need to deliver services that are family-centered. For example, to improve parents' well-being, services need to include the parent in planning and decision making, respect their knowledge as caregivers, and support their hopes for their child (Nachshen & Minnes, 2005).

There are few studies that used the Double ABCX Model and focused on both the youths with chronic illness and their caregivers, and even fewer studies focused on the youths with chronic illness as the primary targets of investigation or intervention (Austin, 1987; Laosa, 1989).

Additionally, studies that used this model were overwhelmingly focused on families of infants and younger children who were less than 12 years old (LoBiondo-Wood, et al., 1992; Nachshen & Minnes, 2005). Only two studies used the Double ABCX Model to study youths with mental health disorders (Lancaster, 2007; Laosa, 1989), but not exclusively youths with SED.

Application of the Double ABCX Model to this Study. The Double ABCX Model offers an opportunity to study the impact of adolescent personal strengths and family functioning on adolescent behavioral and social functioning using a strength-based treatment approach (Deardorff, 1992), such as that advocated by the SOC philisophy. According to Saleeby (2008), the strength-based approach allows different providers to view the delivery of mental health services in a more positive way. For example, health care providers or clinicians focus primarily on identifying the adolescents' and their families' strengths and not just on their problems. Then the clinician works collaboratively with the youth and family to use these strengths to target needs and promote change (Saleebey, 2008).

Consistent with SOC philosophy, the Double ABCX Model assumes that transitions and changes are expected in the lives of adolescents and their families (McCubbin & Patterson, 1983). Adolescents with SED, including disruptive disorders, possess unique strengths (e.g., individual resources). Similarly, their families possess patterns of functioning (e.g., family resources) that can reduce disruptions and promote growth and development of individuals within the family and the family unit as a whole. In the event of disruptions in this context (i.e., stress of having an adolescent with a disruptive disorder), adolescents and their families can draw on their strengths and patterns of functioning (i.e., resources) in an effort to restore order and foster recovery. In the model (Figure 1), the concept of adolescent personal strengths represents individual resources and family functioning represents family resources. Change in adolescent behavioral and social functioning during the first 12 months after enrollment in the SOC program represents adaptation. Relationships were explored between change in adolescent personal strengths and change in family functioning with change in adolescent behavioral and social functioning, respectively.

Because adolescent age, race, and gender have been implicated in differential treatment response, these demographics and caregiver type were included as covariates in this study.

Participation in strengths-based treatment approaches like the SOC program was hypothesized to lead to improvements in both adolescent personal strengths and family functioning. Further, these changes were proposed to be associated with improvement in behavioral and social functioning (Aim 2; Hodges & Kim, 2000; Hodges & Wong, 1996). The improvements in adolescent personal strengths and family functioning likely occur through a number of coordinated mechanisms targeted at the adolescent and family levels and also at a system level. The SOC values of adolescent-driven and family-centered care emphasizes that services must be delivered in a way that enhances dignity, respects wishes and goals, and maximizes opportunities for active involvement for the adolescents and their families. Treatment focuses primarily on the strengths of the adolescents versus judging their behavior problems. In addition, their families are viewed as full partners or collaborators in the treatment of the adolescents versus blaming them for the adolescents' behavior problems. By focusing on adolescents' and their family's strengths and working collaboratively with them, the adolescents and their families are motivated, hopeful, and likely to engage in the treatment process, increasing the likelihood of positive outcomes or adaptation.

Conceptual and Operational Definitions of Key Study Variables

Adolescent Behavioral and Social Functioning

Conceptual definition. Adolescent behavioral and social functioning, the main outcome variables in this study, were made up of two components, namely, behavior problems and functional impairment. Behavioral problems refer to the clinical symptoms of a disruptive disorder, and functional impairments refer to the difficulties in meeting appropriate developmental tasks in the home, school, and within the community (Anderson, et al., 2006; Manteuffel, et al., 2002).

Clinical symptoms of attention deficit disorder include hyperactivity, inattention, and/or poor impulse control. Hyperactivity includes behaviors such as difficulty sitting still to complete tasks. Inattention refers to difficulty staying focused. Impulsivity includes difficulty with stopping to think about consequences of one's actions that are likely to result in negative outcomes.

Oppositional defiant disorder (ODD) refers to a pattern of negative, hostile, and defiant behaviors. Adolescents who have this disorder have difficulty following rules and directions. They are very argumentative, challenge others, and act disrespectfully towards adults in authority positions. Conduct disorder is the most severe of all the disruptive disorders. It refers to a repetitive and persistent pattern of behavior in which the basic rights of others and/or major age-appropriate norms are violated. These behaviors include aggression toward people and animals, destruction of property, theft, and serious violation of rules.

Clinical symptoms and behaviors associated with disruptive disorders often lead to serious impairment in functioning at home, at school, and in the community. For example, affected adolescents often have poor grades in different subjects, difficulty with peer interactions, truancy, dropout, difficulty interacting with family members and other adults, and arrests and/or detention within the legal system. When there are psychiatric or clinical symptoms and impaired functioning in one or more domains of life (e.g., home, school, and community), an adolescent is said to have serious emotional disturbance or SED (Epstein, et al., 2005).

Operational definition. Behavior problems were assessed using the caregiver-rated Child Behavioral Checklist (CBCL; Achenbach, 1991a) and Youth-Self Report (YSR; Achenbach, 1991b). Level of functioning (i.e., functional impairment) was assessed using the caregiver-rated Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1994).

Adolescent Personal Strengths

Conceptual definition. Adolescent personal strengths refer to the positive emotions, behaviors, and characteristics that create a sense of accomplishment, build satisfying relationships, and promote achievement of age-appropriate tasks at school, at home, and in the

community (Epstein & Sharma, 1998). Personal strengths for this study refer to the strengths of adolescents with SED. Adolescent personal strengths fall into five areas: (a) Interpersonal Strength (ability to control emotions and behaviors in social situations); (b) Family Involvement (adolescent's participation in and relationship with his or her family); (c) Intrapersonal Strength (adolescent's view of his or her competence and accomplishments); (d) School Functioning (adolescent's competence in school and classroom tasks); and (e) Affective Strength (ability to accept affection from others and express feelings towards others; Epstein & Sharma, 1998).

Operational definition. The caregiver-rated Behavioral and Emotional Rating Scale (BERS; Epstein, Ryser, & Pearson, 2002) was used to assess adolescents' personal strengths.

Family Functioning

Conceptual definition. Family functioning refers to how well families communicate, work together, and problem solve together (Epstein, Baldwin, & Bishop, 1983).

Operational definition. The General Functioning subscale (FAD-GF) of the McMaster Family Assessment Device (FAD; Epstein, et al., 1983) was used to measure family functioning. For simplicity and consistency with the DAWN Project Evaluation Study, FAD-GF will be referred to as FAD in all text materials.

Demographics

Conceptual definition. Demographic variables are social and personal factors of the adolescent and family. Adolescent factors include age, race, and gender. The family factor is caregiver type.

Operational definition. A questionnaire was used for caregivers to report adolescents' date of birth, gender, and race. To measure caregiver type, caregivers reported on their relationship to the adolescent. For ease of data analyses and guided by clinical knowledge, caregivers were divided into two groups: primary family caregivers (biological, adoptive, or step parents) and other family caregivers (grandparents, foster parents, aunts/uncles, or cousins).

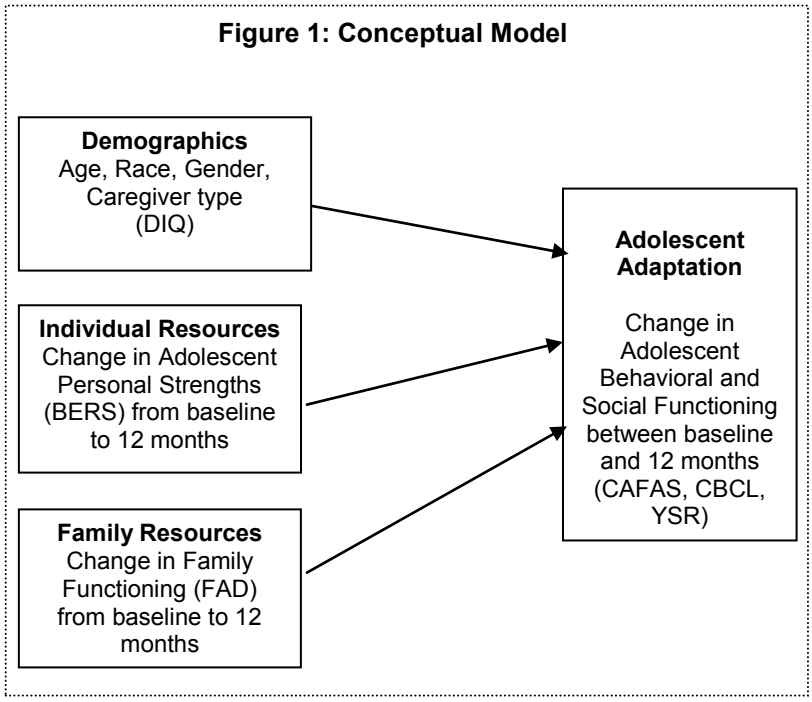
Change scores were used in analyses for Aim 2. Therefore, change was defined as 12 months minus baseline scores on each key study variable, except demographics and caregiver type.

Summary and Contribution of this Study

The SOC approach builds on the adolescents' strengths and resources to improve their adaptation. A number of positive, albeit moderate, improvements in adolescents have been found to occur after participation in an SOC. It is important to understand why adolescents who improve do so. Adolescent personal strengths and family functioning have been identified as factors that merit attention. Studies of the association of adolescent personal strengths or family functioning with clinical behavior problems and functional impairments have been primarily descriptive or cross sectional in design. Using existing data and a longitudinal design, this study addressed a gap in the literature related to examining the influence of change in adolescent personal strengths and change in family functioning on change in behavioral and social functioning within an SOC program that utilized strengths-based treatment approaches. One of the strengths of the dataset was the large percentage of AA in the sample (52%) that provided an opportunity to examine if the strength and direction of predictors varied by race (African American versus Caucasian). Findings from this study provided needed evidence that increasing adolescent personal strengths was associated with improvement in the adolescent behavioral and social functioning in the Dawn Project (Bartlett, et al., 2006; Evans, 2006).

Chapter one included the introduction to the study problem, purpose, specific aims, and theoretical framework. The conceptual model, derived from the Double ABCX Model, and the conceptual and operational definitions for key study variables were also discussed, providing the template for the literature review in Chapter two.

Figure 1. Conceptual Model for Proposed Study



Note. DIQ = Demographic Information Questionnaire;
BERS = Behavioral and Emotional Rating Scale;
FAD = Family Assessment Device
CAFAS = Child and Adolescent Functional Assessment Scale;
CBCL= Child Behavioral Checklist;
YSR = Youth Self Report.
Change = 12 months minus baseline scores

CHAPTER TWO. REVIEW OF THE LITERATURE

Chapter two provides a synthesis of the empirical literature in relation to the theoretical framework. The major topics focus on the key study variables of change in adolescent behavioral and social functioning (i.e., adaptation), change in adolescent personal strengths (i.e., individual resources), and change in family functioning (i.e., family resources). Research in the area of gender, age, race, and caregiver type were also reviewed. Because SOC provides the context within which the key study variables were examined, this section starts with a review of the research literature on SOC, including descriptions of SOC values, principles, history, and development.

Relevant research studies and associated papers were identified by searching the following electronic databases: CINAHL, Medline, PsychINFO, PsychArticles, and Sociological Abstracts from 1975 to 2010. Relevant papers were hand searched for additional citations. Key words and their combinations were used in searching the databases. The following key words were used: (a) behavioral and social functioning including mental disorders, adolescent, mental health services, program evaluation, program development, wraparound, and system of care; (b) adolescent personal strengths including mental disorders, mental health services, behavioral symptoms, wraparound, system of care, strength, and adolescent; and (c) family functioning including mental disorders, mental health services, behavioral symptoms, wraparound, family functioning, and adolescent.

System of Care (SOC)

The primary focus of this study was to examine whether participation in strengths-based treatment approaches leads to improvement in behavioral and social functioning of adolescents with disruptive disorders. The strength-based treatment approach of SOC provided an ideal context to conduct this study. Therefore, it was necessary to provide some pertinent information about SOC. This section focuses on the research literature about system of care (SOC) in general, the Dawn Project specifically, and a report card on the impact of system of care over the last 25 years. Sub-topics of system of care values and principles, as well as the history and development of SOC are provided to set the backdrop for the Dawn Project and its evaluation study.

A system of care is defined as "a coordinated network of community-based services and supports that are organized to meet the challenges of youths (i.e., children and adolescents) with mental health disorders and their families" (Stroul & Freidman, 1986, p. 3). Families and youths work with child-serving agencies to design mental health services and supports that are effective and build on their strengths. System of care (SOC) is a philosophy of how care should be organized and delivered to these youths and their families (Stroul, Lourie, Bruns, Walker, & Penn, 2010).

System of care values. System of care includes a set of core values and principles to guide the organization and delivery of services to youths with mental health challenges and their families. The core values of SOC specified that services should be: (a) child-guided and family-driven, (b) community-based, and (c) culturally and linguistically competent (Stroul & Blau, 2010; Stroul & Friedman, 1986). The value of child-guided and family-driven care emphasizes that services are provided in a way that enhances the dignity of children and their families, respects their wishes and individual goals, and maximizes opportunities for active involvement in decision-making regarding treatment. Within this individualized approach that is driven by the unique needs and strengths of the child and family, varied interventions occur (Stroul & Friedman, 1986). For example, an array of traditional mental health and other necessary ancillary

services such as mentoring, respite care, and recreational activities are delivered to the child and family within their natural environment. That is, the services are community-based to enhance family involvement care. The emphasis on community-based care means that the services must be provided in less restrictive settings within or close to the child's community, including their home and school.

Inherent in the principles of child-guided, family-driven, and community-based care is the principle of culturally and linguistically competent care. Culturally and linguistically-competent care refers to provision of services in a manner that acknowledges and respects the influence of cultural, racial, ethnic, and linguistic differences on the individual youth and family's definition of their mental disorder, symptom presentations, patterns of coping, and health-seeking behaviors, as well as use of and response to treatment (Stroul & Blau, 2010).Taken together, child-guided, family-driven, community-based, and culturally and linguistically competent care strives to acknowledge the strengths of the youth and family and partner with them to improve their adaptation (Saleebey, 2008). Proponents of SOC argue that providing integrated and community-based care should be the standard of care for all youths with SED (McGuinness, 2009; Pierpoint & McGinty, 2004).

System of care principles. The principles describe how the SOC core values are practiced (Stroul & Friedman, 1986). According to Stroul and Friedman (1986), the principles stipulate that services:

1. Include a comprehensive array of effective services to meet the multiple and complex needs of the youths;
2. Be tailored to the unique needs of each youth and family, and guided by a strength-based service planning process;
3. Be provided in the least restrictive and clinically appropriate environment;
4. Engage family caregivers and youths as full partners in all aspects of the planning and delivery of their own services;

5. Be coordinated and integrated among various child-serving agencies;

6. Include case management to ensure that multiple services are delivered in a coordinated and therapeutic manner; and enable youths and families to move through the systems of services according to their changing needs (i.e., wraparound);

7. Include early intervention efforts to enhance the likelihood of positive outcomes;

8. Include smooth transition to the adult systems as these youths reach maturity;

9. Protect the rights of youths and families and promote advocacy efforts;

10. Uphold a policy of nondiscrimination in delivery of services so that all youths and their families have access to quality services, including minority children and those with special needs, such as physical disabilities.

An 11th principle has been proposed that suggests the SOC approach needs to incorporate continuous accountability mechanisms to track, monitor, and manage the: (a) achievement of SOC goals; (b) fidelity to the SOC philosophy; and (c) quality and outcomes at the system level, practice level, and youth and family level (Stroul & Blau, 2010). This study focuses on the youth and family level outcomes.

History and development of system of care. The SOC initiative developed within a larger historical context. Therefore, it is important to acknowledge the historical roots and the pioneers who were involved. Further, the history underscores the importance and relevance of SOC to mental health outcomes of adolescents with SED, including disruptive disorders. There were several events and legislative actions that shaped delivery of mental health services for youth. In particular, findings from two national studies stimulated action specific to children's mental health (Behar & Hydaker, 2009; Shore & Mannino, 1976): (a) the congressionally-appointed Joint Commission on Mental Health for Children (1969), and (b) the Children's Defense Fund study conducted by Jane Knitzer (1982).

Findings from these studies are especially relevant because they formed the framework on which the SOC values and principles were developed. Both the Joint Commission (1962) and

Knitzer (1982) reported that many youths were not getting needed mental health services, and that delivery of services was very inefficient. They found that treatment options were limited to inpatient or residential facilities; services were fragmented, child-serving agencies operated in isolation from one another; and professionals often blamed parents for their children's behavioral problems. In addition, Knitzer (1984) found that certain groups of these youths were especially vulnerable: older adolescents, youth who were at risk of hospitalization or had already been hospitalized, and youths who were involved with multiple child-serving agencies. This vulnerable population of youths was described as having SED and would become the target of SOC initiatives.

Knitzer (1984) found that many youths with SED often only received mental health office visits because Medicaid requirements permitted only reimbursement for traditional, medically-oriented mental health interventions. Medicaid is the publicly funded and government-operated health care coverage for children and the poor. However, youths with SED also needed additional services described as case advocacy (i.e., case management). Case advocacy ensured that these youths were appropriately served by other agencies and helped the families to secure assistance for non-mental health needs (Knitzer, 1984).

Interestingly, Knitzer found programs that were effective, but their successes were not disseminated throughout the child mental health system (Knitzer, 1984). Effective programs shared several characteristics including that they: (a) typically worked intensively with youth in their own homes and communities; (b) involved parents in treatment as much as possible; (c) showed sensitivity to the youths' ages; (d) helped youths move easily from one treatment setting to another; and (e) provided case advocacy as a core component of treatment (Knitzer, 1984). These components, or key characteristics, of effective child mental health programs provided an initial framework for SOC values and principles.

In response to the Joint Commission and Knitzer's reports, the federal government marshaled two phases of reform in children's mental health. The first phase began in 1984 with

the Child and Adolescent Service System Program (CASSP). CASSP was initiated to encourage states to build their capacities to develop systems of care that were particularly targeted for youths with serious and complex needs who were involved with multiple child-serving sectors, such as mental health, special education, child welfare, and juvenile justice.

With the infrastructure in place, the next steps were to implement SOC into practice. In 1993, the Comprehensive Community Mental Health Services Program for Children and Their Families legislation began the second phase of systems reform. This act provided funds to improve and expand community-based system of care (CMHS SOC) sites in states, communities, territories, and tribes. The federal agency responsible for managing SOC is the Child and Family Branch of the Center for Mental Health Services, Substance Abuse and Mental Health Services Administration (SAMHSA). The first SOC site was funded in 1994. Each site receives about $5 million in funding over a 6-year period. There are 57 communities currently funded and 121 communities that have graduated. It is estimated that over 90,000 children have been served in these communities (Behar & Hydaker, 2009; Walrath, et al., 2009). The Dawn Project in Indiana is one such SOC site (Friedman, et al., 2010).

With funding and emphasis on implementation came a need to evaluate the effectiveness of this new way of delivering services to youths with SED. CMHS hired MACRO International to oversee a large scale national evaluation study for the Comprehensive Mental Health Services for Children and their Families. MACRO consulted and provided assistance to all CMHS SOC sites. The Dawn Project Evaluation study (DPES) was conducted by the Center for Health Policy, Indiana University-Purdue University in Indianapolis (McIntyre, 1999).

The Dawn Project

Existing data from the Dawn Project Evaluation Study (DPES) was used for this study. The Dawn Project was created in 1997 from a grassroots initiative involving local leaders of child-serving agencies, such as the State Division of Special Education, officials of the local

Family and Social Services Administration's Office of Family and Children, Juvenile Court, and local providers from community mental health centers.

Headed by the Indiana Division of Mental Health, these leaders gathered together and pooled funds, including donations from charitable foundations such as Robert Wood Johnson Foundation, and formed the Indiana Cost Sharing Project to improve mental health service delivery and child and family outcomes (McIntyre, 1999). With this pilot program in place, Marion County, Indiana, was poised to seek federal funding through CMHS SOC. The pilot project was expanded and called the Dawn Project (McIntyre, 1999).

The Dawn Project was funded from 1999 to 2005 as part of the CMHS SOC grants. Eligibility criteria for entry into the Dawn Project required that the youths were: (a) residents of Marion County, Indiana; (b) ages 5 - 17 years; (c) involved in two or more of the child-serving systems of special education, mental health, child welfare, or juvenile courts; (d) at risk for or already in an out-of-home residential placement, and (e) recipients of a Diagnostic Statistical Manual for Mental Health Disorders-Fourth Revision (DSM-IV) diagnosis or special education label (Anderson, Wright, Kooreman, & Mohr, 2003).

Youths were referred to the Dawn Project from a variety of sources, including caregivers and child-serving agencies such as child welfare, courts, mental health agencies, and schools. Once enrolled, a service or case coordinator was assigned to the case. The case coordinator conducted an intake assessment to determine the composition of the treatment team. The team included representatives from each system and agency working with the youth and family, as well as the youth and family and their natural supports, such as relatives and friends from their church or any part of their community (Wright, Russell, Anderson, Kooreman, & Wright, 2006).

Youths and their families played a key role in deciding the array of services to meet their identified needs. The team developed treatment objectives and plans for achieving them, such as increased attendance and improved achievement at school. The team discussed progress at monthly meetings and adjusted the treatment objectives and plans as needed. Youths exited the

Dawn Project when their team agreed that treatment goals had been met. The average length of stay in the Dawn Project SOC program was 14 months. The Dawn Project SOC teams (i.e., child serving providers, child and family, and other natural supports) exhibited above average scores on adherence to SOC values and principles compared to a national sample of SOC teams (Bruns, 2004).

Using the dataset from the DPES

Of all models of mental health care, the SOC strength-based treatment approach provided the most ideal context in which to study family processes and engagement in mental health care because SOC is predicated on family involvement in the care of the child. This study is not an evaluation of the efficacy of SOC. Rather, this study examined whether change in adolescent personal strengths and change in family functioning from baseline to 12 months predicted change in adolescent behavioral and social functioning at 12 months. Existing data from the Dawn Project Evaluation Study (DPES) was used for this study.

Inclusion criteria for the DPES were broad, resulting in a heterogeneous sample of adolescents with multiple disorders. The largest group was youths with disruptive disorders (82%). Therefore, this study was limited to the 179 adolescents with disruptive disorders, resulting in a relatively homogeneous sample to allow for a more meaningful interpretation of findings.

Report card on the SOC initiative after 25 years. Much progress in children's mental health services has been made over the last 25 years with the advent and evolution of the SOC initiative. There is increased awareness and knowledge of the impact of SED on our nation's youths and their families; growing awareness of the critical importance of involving families in the treatment of their children; and a slow, but steady shift in adoption of a strength-based approach in delivery of services (Pierpoint & McGinty, 2004). The progress made was summed up in this statement by Robert Friedman: "We will never go back to where we were 25 years ago before the inception of SOC" (personal communication, March, 8th, 2010).

There are still some gaps to fill because not all youths who participated in SOC showed improvement in behavioral and social functioning. For example, older adolescents and youths from ethnic minority groups, such as African Americans, were less likely to show improvement following treatment (Anderson, et al., 2006; Anderson, et al., 2008; Stambaugh, et al., 2007; Walrath, et al., 2006). Differences in study findings have been attributed to a number of potential factors. First, studying the different components of SOC is complex because the relationships amongst them are not linear. Second, the SOC approach has evolved over these past 25 years as needed improvements were identified and made. Consequently, there is the challenge of comparing study findings, given that definitions of different study components (sample, variables of interests, service components) might have differed across studies. There is also a need to increase development and use of research designs, measures, and statistical techniques to match the complex nature of SOC components (Bruns & Walker, 2010; Stroul & Blau, 2010; Stroul, et al., 2010).

There has been growing emphasis on accountability for continuous quality improvement and for measuring fidelity to the SOC approach (Bruns, Suter, & Leverentz-Brady, 2006; Bruns & Walker, 2010). Continuous quality improvement would allow service providers, youths, and families to measure and monitor response to treatment on an ongoing basis and use the feedback obtained to make concurrent changes to the treatment plan. Similarly, measures of fidelity to the model would help the treatment teams to adhere to the principles of SOC to enhance quality of services provided and improve child and family outcomes (Kelly, 2010).

Although in its infancy, some studies have already shown that there was a direct association between fidelity to the SOC values and principles and treatment outcomes (Alfred, 2009; Pierpoint & McGinty, 2004). For example, Graves (2005) examined the relationship between perceived adherence to SOC philosophy and change in internalizing and externalizing behavioral problems in 5 to 18 year-old youths (n = 98) who were participating in a SOC site. He found that the amount of change in internalizing and externalizing symptoms was directly linked

with the level of perceived adherence to SOC philosophy based on caregiver and youth reports on the CBCL (Achenbach, 1991a) and YSR (Achenbach, 1991b). In other words, youths were able to achieve greater amounts of emotional and behavioral change compared to children whose services were perceived as less consistent with the SOC philosophy. However, study findings have been limited by the lack of an objective measure of adherence to SOC philosophy.

Guided by research findings, as well as observations from leaders and service providers in the SOC field, it has been recommended that researchers put greater emphasis on clearer delineation of outcomes to measure and how best to measure them. Further, development and use of study designs that tease out factors that distinguish participants who benefit from those who do not has been recommended (Bruns & Walker, 2010; Stroul & Blau, 2010; Stroul, et al., 2010).

There is a crucial need to better understand which specific factors predict improved treatment outcomes (Anderson, et al., 2008; Stephens & Fisher, 2008), especially because SOC programs are costly (Anderson, et al., 2008; Bickman, Smith, Lambert, & Andrade, 2003; Huang, et al., 2005; Manteuffel, et al., 2002). Investigators of children's mental health and the SOC literature indicate that, to better understand improvement in functioning; we need to figure out what lies in the black box between enrollment into SOC and outcome (Stroul, 2010). Two variables deserve more attention: adolescent personal strengths (Barrow, Armstrong, Vargo, & Boothroyd, 2007; Brody, et al., 2004; Ma, Kibler, Dollar, Sly, Samuels, White-Benford, et al., 2008; Swenson & Prelow, 2005) and family functioning (Derisley, Libby, Clark, & Reynolds, 2005; Friesen, et al., 2005; Mandara & Murray, 2000).

Adolescent Adaptation: Change in Adolescent Behavioral and Social Functioning

In this study, the theoretical concept of adaptation refers to change in clinical psychiatric symptoms and functioning (i.e., change in behavioral and social functioning). Adaptation to having SED, including disruptive disorders, reflects the extent to which adolescents' emotional and behavioral disturbance disrupts their everyday functioning in several domains (e.g., school, home, self-harm, and disordered thinking; Hodges, 1999). Of all categories of SED, rates of

disruptive disorders are higher than those for anxiety and mood disorders combined at 66% and 17%, respectively (Garland, Hough, Landsverk, & Brown, 2001; Manteuffel, et al., 2002). Compared to adolescents with anxiety and mood disorders, adolescents with disruptive disorders are more likely to drop out of school, abuse drugs, or be arrested; and they are less likely to transition successfully into young adulthood (Garland, Hough, McCabe, et al., 2001; Loeber, et al., 2002; Walrath, et al., 2006). The following sections provide a review of existing research regarding behavioral and social functioning at baseline and following participation in SOC; variations in findings, and contributing factors for those variations, including study limitations and existing gaps in the literature.

Evaluative studies of SOC show that youths generally enter SOC with moderate to severe impairment in behavioral and social functioning (Anderson, et al., 2008; Foster, Qaseem, & Connor, 2004; Manteuffel, et al., 2002; Stambaugh, et al., 2007; Walrath, et al., 2009). For example, youths participating in the Dawn Project evaluative studies (Anderson, et al., 2008) presented with average impairment scores in the clinical range on the Child Behavior Checklist (Achenbach, 1991a) and marked impairment in the Child and Adolescent Functional Assessment Scale (Hodges, 1994). A study, using the national CMHS SOC dataset, also found that youths had more externalizing (e.g., aggressive) than internalizing (e.g., withdrawn or anxious) problems and had challenges with functioning at home and at school (Manteuffel, et al., 2002).

Overall, SOC are effective in most studies. For example, many youths had lower externalizing and internalizing scores at follow up compared to baseline (Graves, 2005; Kaufman & Whitman, 2009; Pagkos, Milch, & Mansoor, 2009), as well as improvements in overall functioning at school, home, and the community (Cox, 2010; Walrath, 2006; Manteuffel, 2002). Manteuffel, Stephens, and Santiago (2002) analyzed outcome data from a large sample of youths, ages 5 - 17 years old, with SED (n = 18,884). Data were collected from 23 different SOC sites funded in 1993 and 1994 to examine change in clinical functioning from baseline (entry into SOC) to 24 months following participation in SOC. The investigators found that youths who

entered with significant behavioral and functional impairments improved significantly from baseline to 24 months. For example, 42.8% of the youths exhibited clinically significant improvement in internalizing, externalizing, and total problem scores and moderate improvement in CAFAS scores.

Although the large sample size is a strength of this study, findings may be limited by the heterogeneous sample of youths drawn from 23 different SOC sites. However, it has been noted that studies conducted with a sample from one SOC site, have similarly demonstrated the effectiveness of SOC. For example, Anderson, Wright, Kelly, and Kooreman (2008) examined the pattern of clinical improvement over time in a sample of youths (5 - 17 years) from the Dawn Project. Data were gathered from youths at the time of enrollment in the SOC and every 6 months thereafter over a period of 36 months. Findings show that the sample of youths for this study demonstrated both clinical and statistically significant improvement in behavior and social functioning over time (Anderson et al., 2008).

In another study, Pagakos and colleagues (2009) found that 75% of youths with SED displayed improvement in functioning after six months of participating in SOC. In addition, about 51% of those discharged from the SOC site met their treatment goals. However, of those discharged, Caucasians were 2.5 times more likely to be discharged with their treatment goals met than were African American (AA) youths.

Other studies have also found that some youths who participated in SOC did not improve as expected (Anderson, et al., 2006; Carney, 2003; Stephens & Fisher, 2008; Walrath, et al., 2009). For example, Anderson, Effland, Kooreman, and Wright (2006) examined factors that predicted functional improvement over time using a sample from the DPES. They found that 62% of youths showed improvement in functioning. However, adolescents were less likely to show improvement compared to their younger counterparts. The investigators theorized that this finding may be related to the longer duration of exposure of adolescents to the traditional mental health system, so the benefits of participation in SOC may require a longer time for improvement.

These findings also underscore the importance of factoring in the developmental stage of youths who participate in SOC (Anderson, et al., 2006).

There are studies that found no significant difference between youths who participated in SOC programs and those who did not. For example, Copp, Bordnick, Traylor, and Thyer (2007) examined change in clinical symptoms and functioning during the first six months of participation in a small sample of youths (n = 15, mean age = 10.5 years). Results show that there were no significant changes in clinical symptoms or functioning over the first six months. Study limitations included a small sample and lack of clarity about the extent to which fidelity to the SOC model was followed.

In another study, Bickman et al. (1999) evaluated the Fort Bragg Demonstration Project using a randomized control design. This Project was similar to a SOC in organization and delivery of services, incorporating some of the same principles of SOC including provision of advocacy or case management services directed to the needs of the youths and families. The clinical outcomes for the SOC-like group were compared to a group of youths who received treatment as usual. In general, both groups showed a decrease in behavior problems, but there was no significant difference between the two groups. However, the SOC-like groups were able to access needed services sooner, received more services, and incurred more cost than the treatment as usual group.

Proponents of SOC argued that the Fort Bragg study may not have found differences between groups for several reasons. For instance, because the project evaluation occurred before implementation of the CMHS SOC initiative, this was not a true SOC program. Further, the Fort Bragg project evaluation may have occurred too soon (i.e., six months post enrollment into the program), so the dose and duration of exposure to the program may have been inadequate. The variations in treatment outcomes observed in different studies have been attributed to the degree of adherence to the SOC (Alfred, 2009; Bruns, et al., 2006; Graves & Shelton, 2007). For example, Graves (2005) found that caregiver and youth perceptions of adherence to SOC

philosophy were directly linked with the amount of positive change in internalizing and externalizing symptoms. That is, youths who perceived that services were consistent with the SOC philosophy were able to achieve greater improvement in behavioral and social functioning compared to those who did not.

However, the Dawn Project is nationally recognized as a model site with a high level of adherence to SOC philosophy based on its high scores on a SOC measure of fidelity called the Wraparound Fidelity Index (Bruns, 2004). Other reasons for variations in findings across studies might be related to study differences in youth's illness severity at enrollment (Walrath, et al., 2006), sample sizes (Copp, Bordnick, Traylor, & Thyer, 2007), measures used (Stambaugh, et al., 2007; Stephens & Fisher, 2008), informants (Rosenblatt & Rosenblatt, 2002), and length of time participants were followed (Manteuffel, et al., 2002).

Summary. Most studies have found that youths with SED, including disruptive disorders, enter treatment with moderate to severe behavior problems and functional impairments. Youths with disruptive disorders are at the greatest risk for poorer treatment outcome. Most studies found that youths who participated in SOC improved in their behavior problems and social functioning. These studies are limited, however, by the use of heterogeneous samples, absence of comparison or control groups, and variations in definition of outcome variables of interest which limit meaningful interpretation of findings.

There are few longitudinal studies that have evaluated the effectiveness of SOC (Anderson, et al., 2008; Manteuffel, et al., 2002). With a couple of exceptions, existing studies have been largely cross-sectional or have focused on outcomes at six months post enrollment into SOC. This study fills important gaps in the literature. It is a response to the call for more effectiveness studies that investigate factors that may influence outcomes, such as adolescent personal strengths and family functioning; and it addresses the need for more longitudinal evaluation studies of SOC (Anderson, et al., 2008; Manteuffel, et al., 2002).

Individual Resources: Change in Adolescent Personal Strengths

Epstein and Sharma (1998) defined strengths as positive emotions, behaviors, and characteristics that create a sense of accomplishment, build satisfying relationships, and promote achievement of age-appropriate tasks in schoolwork, home, and the community. Personal strengths are considered a resource to be harnessed in addressing needs (Saleebey, 2008). In contrast, traditional mental health services primarily focus on identifying problems which then leads to treatments that emphasize fixing those problems (Cowger, 1994; Saleebey, 2008; Weick, Rapp, Sullivan, & Kisthardt, 1989). The following section focuses on a review of the literature related to a strength-based approach in mental health treatment of youths with SED and its impact on change in behavioral and social functioning.

SOC principles emphasize the use of a strength-based approach in assessing, planning, and delivering services to youths with SED, including disruptive disorders (Epstein, et al., 2005; Stroul & Blau, 2010; Stroul & Friedman, 1986). Consistent with the Double ABCX Model's assumption that individuals have unique strengths and vulnerabilities (McCubbin & Patterson, 1983), the strength-based approach assumes that all youths have strengths (i.e., resources) irrespective of their level of functioning or personal situations and are motivated by adults emphasizing positive areas in their lives. Research studies on strengths have been predominately qualitative, descriptive, or cross-sectional in design.

Most of the literature on a strength-based approach described its principles and benefits, including collaboration and therapeutic provider-client relationships that focus on identifying and enhancing existing skills, and developing new ones to address client needs (Carpenter-Aeby & Kurtz, 2000; Clark, 2009; Cox, 2006; Saleebey, 2008). For example, Carpenter-Abbey and Kurtz (2002) described how a strength-based approach was used to help a group of 10 to 18 year-old youths with chronic disruptive disorders transition successfully from alternative to mainstream schools. The investigators conducted qualitative interviews with students and their parents or caregivers. Over the course of their participation in the program, students accepted assignments to

alternative schools and formed new and healthy outlooks about themselves. Their families developed new outlooks about their children and about their roles in their children's education. In other words, the students and families believed and actively participated in the child's transition back to mainstream school.

The underlying principles related to the tasks and processes for this strength-based approach, such as involving students, teachers, administrators, principals, families, and links with other outside resources; are consistent with the SOC philosophy of child-guided, family- driven, and community-based care, as well as interagency collaboration. The portfolio is a tangible product to capture the youth's experiences and amplify their accomplishments in the alternative school. A portfolio contains such items as certificates earned from drug and alcohol classes or conflict resolution classes; a letter of application to the school the student wished to return to after finishing from the alternative school with highlights of community service and involvement in student council; and a resume that detailed the student's academic achievements, awards, and a statement of goals for school (Carpenter-Aeby & Kurtz, 2000). One of the students used the portfolio to get a job at a local fast food restaurant (Carpenter-Aeby & Kurtz, 2000). Proponents have suggested that a strength-based approach reduces dependence on treatment and achieves positive and sustained treatment outcomes (Clark, 2009; Leitz, 2009; Saleebey, 2008).

In other qualitative descriptive studies, investigators used case studies to illustrate the principles, implementation, and effectiveness of a strength-based approach with adolescents (Johnson, 2003; Yip, 2005, 2006). Yip (2005, 2006) described the case of a depressed adolescent female. Using a strength-based approach, the therapist worked with her to identify activities, such as drawing, that had been a source of pleasure in the past and encouraged her to engage in those activities to provide structure and to improve her mood. Though informative, findings from these descriptive studies present a number of limitations. For example, the study design presents statistical and external validity issues because the study findings cannot be generalized to other subjects and conditions.

There are a couple of cross-sectional studies that have examined the association between functional impairments and child strengths. One cross-sectional study of 5 - 17.5 year- old youths (n = 1,838) from the national CMHS SOC evaluation study found that even those with the most severe functional impairments had average to near average strength scores (Walrath, Mandell, Holden, & Santiago, 2004). They also found a moderate, negative association between overall functional impairment and strengths scores. In addition, there were similar moderate and negative relationships between overall functional impairment (assessed using the CAFAS) and each of the subscales or domains of the Behavioral and Emotional Ratings Scale (BERS), including Interpersonal, Intrapersonal, School Functioning, Family Involvement, and Affective strengths. Oswald, Cohen, Best, Jenson, and Lyons (2001) also found that severe psychiatric symptoms and greater functional impairments were directly associated with fewer personal strengths. Other studies have found that the perceptions of strengths varied between caregivers and youths informants (Friedman, et al., 2003a; Taylor, 2003). For example, Friedman, Friedman, and Weaver (2003) examined consistencies and differences among 60 parents and their adolescents with behavioral problems when rating adolescents' strengths. The parents and adolescents agreed on most of the strength categories of the BERS. However, parents rated the adolescents as more involved in family life and adolescents rated themselves as more involved in school activities and less involved in family life (Friedman, et al., 2003a).

Because the strengths-based assessments are proposed to form the foundation for treatment planning, both the caregivers and adolescents' perceptions are important. Therefore, this study explored differences between adolescent and caregiver ratings of adolescent personal strengths at baseline and at 12 months, and explored the strengths of their respective association with adolescents' behavioral and social functioning over time (Exploratory Aim 3).

There was little research on youths' strengths prior to the SOC initiative. The few studies evaluating outcomes of strengths-based approaches that focused on youths with SED were conducted after the advent of SOC (Anderson, et al., 2008; Taylor, 2003; Walrath, Mandell, et al.,

2004). One study found that parents' ratings of externalizing problems and therapists' ratings of functioning were associated with youths' strengths scores (Taylor, 2003). In a randomized controlled study, Cox (2006) examined the impact of strengths-based assessments using the BERS with youths who had SED and those who did not. The investigator found that youths who received strengths-based assessments demonstrated improved functioning only when they received services from highly strengths-oriented therapists. According to the investigator, her findings suggest that it is not enough to complete strengths-based assessments. Clinicians must integrate and use strengths-based approaches in treatment to truly impact mental health outcomes for youths with SED (Cox, 2006).

Summary. Strengths-based approaches are recognized as important components of practice (Cowen & Kilmer, 2002; Saleebey, 1996, 2008; Weick, et al., 1989). However, only a few studies have evaluated its effectiveness in youths with disruptive disorders (Cox, 2006). The literature suggests that there is a need for research to focus on increasing conceptual clarity and measurement of the strengths-based approaches (Leitz, 2009). A variety of measurement instruments exist with varying degrees of psychometric support (Albrecht & Braaten, 2008; Epstein & Sharma, 1998; Ma, Kibler, Dollar, Sly, Samuels, Benford, et al., 2008). There is also no unifying conceptual framework for studying effectiveness of strengths-based interventions. More longitudinal studies are needed to examine whether strengths-based approaches work in practice (Friedman, et al., 2003a; Leitz, 2009). This study contributed to the existing literature by examining if personal strengths change over time with participation in the Dawn Project SOC that emphasizes use of a strength-based approach, and if there is an association between change in personal strengths and change in behavioral and social functioning in this sample of adolescents with SED (Hypothesis 2a).

Family Resources: Change in Family Functioning

Family functioning refers to how well families communicate, work together, and problem solve together (Epstein, et al., 1983b). The following section provides a review of the existing research literature on family functioning and its association with behavioral problems and social functioning in youths with mental health problems or psychiatric illness in general, SED, and disruptive disorders in particular.

The relevance and significance of family functioning is highlighted in the SOC philosophy of involving families as partners in the care of adolescents with SED (McCammon, Spencer, & Friesen, 2001; Stroul & Friedman, 1986; Wright, Anderson, Kelly, & Kooreman, 2007). For example, the Integrated Family and Systems Treatment, I-FAST (Lee, et al., 2009; Stroul & Friedman, 1986) and the Double ABCX Model (McCubbin & Patterson, 1983) assume that: (a) effective treatment of youths with SED necessitates treatment of the family system; and that (b) families have capabilities and competencies (i.e., resources or strengths) that can be harnessed to address youths' current needs and future challenges (Allison, et al., 2003; Lee, et al., 2009; Osher, et al., 2006). Furthermore, the literature suggests that adults control the social context in which youths interact (Sheridan, Warnes, Cowan, Schemm, & Clarke, 2004). Resources available to these adults are critically important in the ultimate development and adaptation of these youths.

Family functioning serves both as a resource and a target for interventions to improve behavioral and social functioning of adolescents with SED (Derisley, et al., 2005; McCammon, et al., 2001; Sheridan, et al., 2004). Thus, interventions are delivered to engage and empower the family in solving the presenting problem instead of mental health professionals telling them what to do or how to fix it. Service delivery utilizes a solution-focused view of helping the family to identify and build on patterns in which the problem does not occur, is less frequent, or the problem has been handled in a more satisfactory manner (McCammon, et al., 2001; Sheridan, et al., 2004).

The relationship between behavior problems in youths and family functioning is demonstrated in the literature. For example, families of children with pediatric bipolar disorders have shown worse functioning than families without a psychiatric illness (Du Rocher Schudlich, Youngstrom, Calabrese, & Findling, 2008). Similarly, adolescents at high risk for major depressive disorder reported more unhealthy family functioning compared to the families of low-risk adolescents (Tamplin & Goodyer, 2001). In one study, Prange, et al. (1992) studied a sample of 353 adolescent one-parent dyads to describe two important dimensions of family functioning, cohesion and adaptability, among families of adolescents, 12 to18 years of age with SED. They found that both adolescents and parents rated their families as more disengaged and less connected compared to a normative sample or counterparts without SED. Similarly, Vandewater (2005) studied the relationship between family process (i.e., did family work well together, have fun together, and show concern and love for one another) in a sample of 755 mother-child dyads who were randomly selected from a national sample. The children ranged in age from 12 - 17 years old. The investigators found that family warmth was negatively related to adolescent externalizing and internalizing behavior problems.

One study was found that did not support a relationship between psychiatric illness and family functioning. Dreisley, Libby, and Reynolds (2005) compared psychiatric symptoms and family functioning among three groups of 118 parents of adolescents: a group with obsessive compulsive disorder, another with anxiety disorders, and a nonclinical group. There was no significant difference in family functioning among groups as operationally defined with the 53-item Family Assessment Device or FAD (Epstein et al., 1983b). However, most available research shows that the degree of family dysfunction increases with child symptom severity. Furthermore, families of youths with externalizing symptoms reported worse family functioning than youths with internalizing symptoms. For example, families of youths with oppositional defiant disorders and conduct disorders have worse family functioning compared to those with mood and anxiety disorders (Green et al., 2001; Greene et al., 2002; Tamplin & Goodyer, 2001).

In a study of 353 adolescent-parent dyads, Prange et al. (1992) assessed the relationship between family cohesion and adaptability with adolescent psychopathology. They also found that adolescents with externalizing symptoms, such as conduct disorders, reported worse cohesion in their families compared to those with internalizing symptoms or depression. In yet another study, Greene and colleagues (2002) compared family interactions, social functioning, and psychiatric co-morbidity among three different groups of youths (643 with oppositional defiant disorder (ODD) alone; 262 with co-morbid ODD and conduct disorder (CD); and 695 with neither ODD or CD; mean age 10.7 years). They found that youths who had ODD with and without CD had significantly higher rates of co-morbid psychiatric disorders and greater problems with family functioning than those who with neither ODD or CD. The study findings are limited by its cross-sectional design and small numbers of ethnic minorities.

A number of studies have also reported that family functioning is associated with outcomes in youths with mental health problems or psychiatric illness (Lee, 2009; Stanton, Thompson et al, 2007; Graves, 2007). For example, treatment approaches that are family-driven, such as the Integrated Family and Systems Treatment (I-FAST), led to reductions in child-behavior symptoms, increased functioning, family cohesion, and adaptability. Further, these positive outcomes were maintained at six-month follow-up (Lee, et al., 2009). I-FAST aims to positively impact the interactional pattern within the family by involving the members in the treatment process, identifying family needs, and enhancing strengths that support youths with SED to get better (Lee, 2009). In another longitudinal study, Graves and Shelton (2007) examined the associations among perceived fidelity to family-centered system of care, family empowerment, and improvements in children's behavior problems. The sample included 79 families with children, 5 - 17 years old (M = 12.05 years), and most had ADHD and ODD. Results showed a significant improvement in child total problem behaviors from baseline to follow-up.

Environmental stressors such as marital difficulties, parenting problems, illness severity, and chronic duration of parental illness have been found to contribute to deficits in problem solving and communication among family members (Thompson, et al., 2007). This has been found to result in a decline in family functioning. For example, Thompson and colleagues (2007) found that vulnerable family environments predicted lowered rates of mental health service use in a longitudinal sample of young children with mental health needs. The investigators explained that there may be two opposing forces at work in homes faced with family problems and child mental health needs: (1) the child mental health needs may pose additional burdens for the parents, motivating them to seek help for the children; or (2) family problems make parents less sensitive to child needs and less capable of effectively seeking help. These findings highlight the need to assess family strengths and challenges because they influence child mental health outcomes.

No studies were found that examined both the challenges and potential solutions for children with SED within the context of their family (Wright, Anderson, Kelly, & Kooreman, 2007). Families of adolescents with SED often have multiple challenges, such as parents' mental health problems and divorce (Huang, et al., 2005), that compromise their ability to cope with the needs of adolescents. Studies suggest that efforts must be made to strengthen these families by addressing their psychosocial needs so that they can more effectively meet the needs of their youths who have SED (Kliewer & Kung, 1998; Osher, et al., 2006; Prange, et al., 1992; Richmond & Stocker, 2006).Improving family cohesion, communication, and problem-solving skills is proposed to be critical to improving the behavioral and social functioning of adolescents with SED (Du Rocher Schudlich, et al., 2008; Lee, et al., 2009; Thompson, et al., 2007). For example, strengths in AA families are associated with strategies that increased parental involvement and parenting skills related to effective communication and clear rule expectations (Harvey & Hill, 2004).

Further, there is limited research on family functioning in adolescents with SED who participated in an SOC (Prange, et al., 1992). Even in the SOC population, available studies have also been cross-sectional in design. For example, one study found that youths of highly engaged families were less likely to experience school detention or expulsion (Osher, et al., 2006). Families reported that empowerment and their own participation in services contributed to positive changes and improved outcomes in their children (Osher, et al., 2006). One longitudinal study was found that used a large sample of 8,158 youths, ages 5 – 17 years old from the national CMHS SOC dataset. Wright et al. (2007) examined the patterns of family functioning and its impact on outcomes in youths with SED over a 24-month period of time. They found that higher family functioning was associated with fewer adolescent behavioral symptoms and more personal strengths (Wright, et al., 2007).

Summary. Family functioning is associated with both child psychiatric problems and treatment outcomes. For example, youths with mental health disorders and their families experience less family cohesion and are more disengaged compared to normative families. The level of dysfunction is relatively greater in youths with disruptive disorders such as ADHD, ODD, and conduct disorders. There are very few studies on family functioning in adolescents with SED. Available studies have focused on parent and youth relationships during illness or examined the association between existing parental illness, the associated family environment, and the development of mental health problems in the youth. The samples in these studies have been mostly non-clinical samples of adolescents who are at risk for mental health problems.

Current evidence about family functioning in SOC suggests that the primary focus in SOC research has been on youth outcomes (Alfred, 2009; Wright, et al., 2007). However, a key component of SOC philosophy is that treatment must also focus on the family. The extent to which family variables, such as family functioning, improve in SOC is unclear. Further, its impact on youth outcomes overtime needs to be studied. There is a need for more longitudinal studies to examine the influence of family functioning on the adaptation of adolescents with

disruptive disorders who participate in SOC (Wright, et al., 2007). Therefore, this study will contribute to the literature by examining the associations between change in family functioning with change in adolescent behavioral and social functioning overtime in adolescents with SED, including disruptive disorders.

Demographics

This section focuses on the associations between age, gender, race, caregiver type and treatment outcomes (i.e., behavioral and social functioning). Where available, current evidence regarding the associations of demographic factors with family functioning and adolescent personal strengths are also included.

Age. Findings are mixed regarding the association between age and behavioral and social functioning in youths with SED. The average age at enrollment into SOC is about 12 years (Manteuffel, et al., 2002; Walrath, et al., 2009). A few studies, including the DPES, found that, upon enrollment, older adolescents had fewer behavioral symptoms (Anderson, et al., 2006; Anderson, et al., 2008; Manteuffel, et al., 2002) but worse functional impairments than their younger counterparts (Anderson, et al., 2006; Manteuffel, et al., 2002). Manteuffel explained that the higher functional impairments on the Child and Adolescent Functional Assessment Scale (CAFAS) observed in adolescents are accounted for predominately by the role community performance scores. The community role scale of the CAFAS assesses behaviors such as stealing, robbery, and damage to community property. Adolescents have greater access to the larger community in which these behaviors are enacted and are more likely to engage in these behaviors than their younger counterparts. Other studies found that youths improved after treatment, irrespective of age (Anderson, et al., 2008; Walrath, et al., 2009; Walrath, Mandell, & Leaf, 2001). In yet another study, adolescents tended to deteriorate in the first six months of treatment in SOC (Walrath, et al., 2006).

A prior study of youths in the Dawn Project found that the probability of improvement in behavioral and social functioning dropped from 82% in younger youths to 47% in adolescents

(Anderson, et al., 2006). The authors explained that this finding may be attributed to the adolescents' longer involvement in treatment that did not use strengths-based approaches and involvement with multiple agencies that did not coordinate care. Further, older children may need to be in SOC treatment longer than six months to experience the benefits of a strength-based approach and be more likely to experience positive outcomes. Anderson et al. (2006) stated that their findings emphasize the need for tailoring interventions to the developmental age of the youths with SED. Their sample of youths was drawn from the DPES, the same dataset that was used for this study. Another DPES that examined the pattern of clinical improvement overtime in over 300 youths with SED, ages 5 - 17 years, found that most youths showed improvement in child behavior, child functioning, and child strengths scores, irrespective of their age (Anderson, 2008).

Race. Current evidence suggests that there is an association between race and behavioral and social functioning. For example, ethnic minorities, such as AA are over- represented in the populations of youths with SED and often have less favorable treatment outcomes (Pagkos, et al., 2009; Walrath, et al., 2006). Pakagos et al. (2009) examined the treatment outcome in 256 youths with SED who participated in SOC site (M =.13 years). Slightly over half (51%) of discharged youths met their treatment goals. Of those discharged, Caucasian youths were 2.5 times more likely to meet their treatment goals than AA youths.

A similar difference in racial outcomes was found using data collected from 624 youths with SED at 36 SOC-funded sites. The sample was made up of 35% female and 34% minority and had mean age of 12 years. The purpose of the study was to identify pre-treatment factors associated with variations in outcome (improvement versus deterioration) six months after entry into SOC. Walrath and colleagues (2006) found that minority youths were four times more likely than non-minority youths to deteriorate within the first six months of treatment and had lower community adjustment scores over time (Armstrong, et al., 2003). In another longitudinal study using a sample from the Dawn Project, investigators found that AA males presented with better

behavioral and social functioning at enrollment than did white males (Anderson, et al., 2008); however, AA males improved at a slower rate on functioning than did white youths (Anderson et al., 2008).

With respect to adolescent personal strengths, there is a paucity of strengths-based approaches in both research and practice among ethnic minorities, particularly AA adolescents. AA adolescents are more likely to have negative mental health outcomes compared to Caucasian youths because of multiple environmental hurdles (Barrow, Armstrong, Vargo, & Boothroyd, 2007). With a couple of exceptions, most studies have focused on identifying risk factors and psychopathology (Brody et al., 2001; Ma, Kibler, Dollar, Sly, Samuels, Benford et al., 2008). Ma and colleagues found that character strengths are associated with fewer negative sexual behaviors and decreased drug use in their sample of AA adolescents. No study was found that focused on AA adolescent personal strengths as a predictor of behavioral and social functioning.

The relationship between family functioning and child mental health outcomes is especially important in AA youths and their families because the focus of treatment in this population has been predominately on deficits in functioning (Ma, Kibler, Dollar, Sly, Samuels, White-Benford et al., 2008). However, recent studies have shown that positive family functioning is associated with better psychological health and higher academic achievement and significantly predicts positive adolescent perception of the family climate in AA adolescents (Derisley et al., 2005; Mandara, 2006a). A limitation in the literature on family functioning is that most studies included a relatively small sample of AA. Therefore generalization of findings to an AA population is limited (Richmond & Stocker, 2006; Vandewater & Lansford, 2005).

Gender. Findings about the association between gender and behavioral and social functioning are also mixed (Anderson, et al., 2006; Anderson, et al., 2008; Stambaugh, et al., 2007; Walrath, et al., 2006). Males consistently present with higher rates of SED and exhibit predominately externalizing symptoms including aggressiveness and truancy. Given the highly disruptive nature of their symptoms, males often enter treatment relatively sooner than their

female counterparts. On the other hand, females tend to have more internalizing problems, which are less likely to be disruptive to others. However, females enter services with greater behavior problems on the CBCL and higher levels of impairment than males at enrollment into an SOC (Walrath, et al., 2009; Walrath, Petras, et al., 2004). Other studies indicate that gender is not associated with behavior and social functioning (Walrath, et al., 2001; Walrath, et al., 2006). The reasons for this finding are unclear.

With respect to personal strengths, females have demonstrated that they have higher strength and social competence scores compared to males (Anderson, et al., 2008; Walrath, Mandell, et al., 2004). Social competence was defined by a variety of behavioral and cognitive measures, as well as different aspects of emotional adjustment that are useful and necessary in developing adequate social relations and obtaining desirable outcomes (Albrecht & Braaten, 2008).

Caregiver Type. Caregiver type was included as a covariate in this study and included biological parents, adoptive parents, foster parents, step parents, grandparents, aunts, and uncles. A small number of youths in the Dawn Project study moved to a different placement during the course of the study, which also resulted in a change in caregiver. For example, a youth may move from a biological parent to a foster parent and vice versa. Therefore, to account for the potential influence on the youth's behavior and social functioning, caregiver type was considered in data analyses. No studies were found that focused on the relationship between caregiver type and child behavioral and social functioning.

There is some indication, however, that the caregiver type may be an important factor to consider. For example, Thompson, and colleagues (2007) studied the role of family factors, such as family environment, family social support, and family functioning in a sample of 1,075 four year-old children who were maltreated or at risk for maltreatment. The investigators found that, among children with mental health needs, a vulnerable family environment was associated with lower rates of mental health service use. However, there were no lowered rates of mental health

utilization among foster families (i.e., where caregiver type was a foster parent) because foster parents have better access to mental health services (Thompson et al., 2007). The study sample was predominately younger youths compared to adolescents. The caregivers were mostly single parents. Therefore, the study findings may not be generalizable to other populations, such as adolescents, married parents, or other caregiver types besides foster parents.

In another study with a large data set from the National SOC evaluation, Walrath found that children with higher levels of functional impairment at service initiation were 60% less likely than children with less impairment to deteriorate. In previous studies, family environment has been shown to be associated with psychopathology and social functioning (Richmond & Stocker, 2006; Tamplin & Goodyer, 2001). Therefore, it was important to examine if change in behavior and social functioning of adolescents in this study differed between youths whose caregivers changed from baseline to 12 months and those youths who had the same caregivers at both time points.

Summary of demographics. The findings regarding the association between age and treatment outcomes in youths with SED are mixed. Overall, the literature indicates that older age may put youths at greater risk for less favorable outcomes. For example, they are more likely to require multiple placements outside of the home (Farmer, 2009), a factor associated with less improvement in outcome.

The youths' race may be an important variable in predicting treatment outcomes in youths with SED. Ethnic minorities, such as AA, are over-represented in the population of youths with SED, even though they present with less behavior problems. Furthermore, they improve at a slower rate compared to their Caucasian counterparts.

Given that culturally competent care is a core value in SOC, it is important to determine if there are racial disparities in treatment outcomes, particularly in behavioral and social functioning. The large percentage of African Americans (52%) in this study provides an opportunity to examine variations in adolescent personal strengths and family functioning, and the direction and strength

of their respective associations with behavioral and social functioning by race (See Specific Aim 2, Hypothesis 2c).

With respect to gender, there are more males with SED than females. Although females are fewer in number, they tend to enter into care with more severe behavioral problems than males. Most studies seem to support that both males and females improve in behavioral and social functioning irrespective of their gender.

No studies were found that focused on the relationship between caregiver type and child behavioral and social functioning. But, there is some indication that the caregiver type may be an important factor to consider.

CHAPTER THREE. METHODS

This study involved secondary data analyses of the Dawn Project Evaluation Study (DPES) dataset. This chapter is divided into three major parts: (a) description of the DPES, including its purpose, design, recruitment, and data collection procedures; (b) description of this study, including its purpose and specific aims, sample, procedures, potential risks and benefits, key study variables and detailed descriptions of the instruments used to measure them; and (c) description of the data analysis conducted, including detailed descriptions of statistical procedures for the specific aims and hypotheses.

Two closely related terms were used that deserve clarification. The Dawn Project is the SOC-funded treatment program. The Dawn Project Evaluation Study (DPES) was conducted to evaluate the effectiveness of the Dawn Project and its impact on the children and families that were served. Researchers from the Center for Health Policy at Indiana University Purdue University Indianapolis, Indiana, conducted the DPES. Part of the data collected during the DPES was used for this study.

The Dawn Project Evaluation Study

Design and purpose. The Dawn Project was evaluated using a longitudinal research design. The purpose of the study was to examine how participation in the Dawn Project affected the behavioral and social functioning of youths with SED and their families' lives.

Recruitment and data collection procedures. The DPES was carried out between 1999 and 2006. Data were collected from November 1st, 2000 to December 30th, 2005.

Recruitment. The Dawn Project began to serve families in 1997, and referrals came from child welfare, probation, and the Indiana Department of Education. Criteria for the original referral to Dawn Project included being a child who: (a) had an impairment that impacted two or more functional areas, such as, self-care, interpersonal relationships, self-direction, emotional adjustment; (b) had a DSM-IV diagnosis and functional impairment that lasted more than six months; (c) was between the ages of 5 and 17 years; (d) was at risk of separation or was separated

from the family; (e) was a resident of Marion County; (f) was qualified for services from two or more of the following child-serving agencies: child welfare, probation, special education, mental health; and (g) had some expectation that services would result in improved level of functioning, family satisfaction, and more cost-effective utilization of services.

Over the time period of the federal grant from 1999 to 2006, five groups of youth with slightly different referral criteria were identified for potential entry into the DPES. They came from some of the same agencies noted above, including child welfare, Larue Carter State Hospital, the Department of Corrections (DOC), and Indianapolis Public Schools (J. McIntyre, personal communication, May 2010). Referral criteria for these groups of youths to the DPES were as follows:

1. Child welfare referrals who met similar criteria as the original referrals but with no history of residential placement.
2. Juvenile court referrals who also met the original criteria but with no history of residential treatment.
3. Larue Carter Hospital is the state's long-term stay hospital in Indiana for children and adults. These referrals to Dawn Project included youths who were leaving the hospital and going to Marion County homes but needed substantial support in the home, family, and school to maintain them in the community.
4. Department of Correction (DOC) referrals included youths who had been in the Dawn Project but were sent to DOC by the juvenile court judge and were now returning from DOC. They could be referred back to Dawn under this pilot.
5. Indianapolis Public School (IPS) referrals were for students who had serious behavior problems in school, but not necessarily at home or in the community (J. McIntyre, personal communication, May 6th, 2010). Additionally, this group was viewed as being "less severe" than the other groups and was added to help reach youth that were more at risk for further problems.

Throughout the Federal grant period (1999-2006), the Dawn Project took referrals from all of these groups including the original Dawn Project youths. All youths in the Dawn Project were referred as potential subjects to the DPES. They were all eligible to be enrolled in the DPES if the families signed consents to be contacted. For the first year, however, care coordinators were not presenting the evaluation in a positive light, so only a limited number of youths were enrolled in the evaluation study (J. McIntyre, personal communication, May 6th, 2010). Efforts were made to decrease the burden of enrolling in the study, and enrollments increased. There continued to be a fair number of families who refused, however, because the multiple instruments were not family friendly and required a lot of time for them to complete. The DPES stopped taking new referrals in June, 2004, because funding ended in 2005. The Dawn Project, however, had a no-cost extension that provided funding into part of 2006 (J. McIntyre, personal communication, May 6th, 2010).

Data Collection for the DPES. Data were collected through in-depth interviews with youths and their caregivers enrolled in the program. A caregiver was defined as the person who had primary caretaking responsibility during a given assessment period. Those youths and their caregivers who chose not to participate continued to receive care and were not affected in any way. If the caregiver and youth (11 years or older) agreed, informed consent and assent were obtained and an interview was scheduled. For the DPES, only caregivers were interviewed if the youth was less than 11 years old. Trained interviewers met with the caregivers and the youths at a location that was convenient for the family. Of 1,065 youth and families who received services over the five years when the DPES was active, 354 (33%) volunteered to participate in data collection (SAMSHA, 2001).

All instruments were read to both youths and caregivers by trained research assistants or interviewers to minimize possible error because of differential reading abilities. Interviews with the caregiver lasted about one and a half hours; interviews with youths lasted about one hour.

Dawn Project staff or clinicians were not involved in the research. The principal investigator hired research assistants (called field interviewers) who received 40 hours of training before they collected data. The training included 20 hours of computer-aided, classroom instructions followed by 20 hours of supervised field training. A supervisor regularly observed interviews to ensure the quality of data collection (Anderson, et al., 2008).

Baseline data were collected within 30 days of enrollment and at 6-month intervals over 36 months. The 6-month (n = 351) and 12-month (n = 278) follow-up time points had the most participants, followed by the 18-month (n = 167), 24-month (n = 127), 30-month (n = 75), and 36-month (n = 31) data collections (Anderson, et al., 2008). To enhance data collection, there was a 12-week window (6 weeks before or 6 weeks after the 6-month point) within which data could still be collected. For example, if baseline data were collected on January 6th, then the 6-month data collection was due July 6th. Data could be collected anytime within the time frame of six weeks before or after July sixth.

Because DPES was part of the national evaluation study, the SOC National evaluation Team (MACRO) provided a spreadsheet for entering the raw data. Data were entered into data tables by DPES interviewers. These data were synchronized regularly with MACRO. MACRO coded the data into SPSS. DPES had access to their site-specific data for analyses. DPES collected additional data beyond what MACRO required. These data were kept in-house and not synchronized. One such instrument was the youth-reported Behavioral and Emotional Rating Scale (BERS).

Incentives. Per Institutional Review Board or IRB approval, incentives were offered to participants for their time and to increase adherence to study protocol. The DPES investigators provided incentives in 2000 with $25 gift-cards to the caregivers and $10 gift-cards to the youths, but very quickly learned that they needed to increase the amount to increase participation. Therefore, the amounts were graduated at 6 months and 12 months, and the maximum amount

was about $75 for caregivers and $20 or $25 for children for each data collection point (L. Kouns, personal communication, May 25th, 2010).

Attrition. Various reasons were identified for attrition (Anderson, et al., 2008). For example, many participants moved and rarely left forwarding addresses or any contact information. Therefore, finding them became increasingly difficult over time, especially if they were no longer in the Dawn Project. Also, some participants simply did not return phone calls or failed multiple times to meet with the interviewer as scheduled. Occasionally, the youth was in residential treatment and a ward of the state; in which case the youth could be interviewed, but the caregiver would refuse an interview. At times, some participants got tired of participating and refused one wave of interviews, but then agreed to be interviewed when they were called in subsequent waves.

The SOC national evaluation team provided guidance to each SOC-funded site, including the Dawn Project, regarding the number of families to enroll in the child and family outcomes study. For example, each site enrolled at least 300 families based on the sample size required to maintain sufficient power to detect differences overtime in each community-specific sample (Walrath, et al., 2009). The Dawn Project's sample size was 318 participants and met this cut point. The Dawn Project's baseline and 12-month datasets were used for secondary data analysis in this study.

*Secondary data analysis***.** Secondary data analysis is analysis of data that were gathered either by someone else (e.g., researcher, institutions, etc) or for other purposes than the one currently being considered (McCaston, 1998). Secondary data analysis provides an excellent opportunity for learning the research process and a cost-effective way to gain broader knowledge about a given phenomenon. Further, secondary data analysis poses minimal to no risk to the subjects. In contrast to other sources of secondary data, research data bases are more likely to have quality controls built into the data collection plan, measurements that are precisely collected, and procedures that are in place to minimize incomplete data (Nail & Lange, 1996). However,

limitations such as sampling criteria inherent in the original study design can introduce the same types of bias in the secondary analysis. This study capitalized on the availability of an existing longitudinal dataset containing a rich array of outcome-related variables to test the proposed model in Figure 1.

Study Purpose

Aims. This study differed from the DPES by focusing only on adolescents with disruptive disorders who were aged 12 - 17 years old and their caregivers and examining the degree to which changes in adolescent personal strengths and family functioning predicted changes in adolescent behavioral and social functioning. On the other hand, the DPES focused on youths ages 5 -17 years and examined: (a) the degree to which demographic variables, referral source, Medicaid status, presenting problems, and restrictiveness of living arrangement predicted changes in clinical functioning (Allen, et al., 2006); (b) the impact of SOC treatment on changes over time in restrictiveness of living arrangements and on rates of recidivism of program completers (Anderson, McIntyre, & Somers, 2004); (c) the impact of team structure on achieving treatment goals (Wright, et al., 2006); and (d) patterns of clinical improvement over time in both children and adolescents (Anderson, et al., 2008).

Sample for this study and Inclusion criteria. The sample for this study was adolescents with disruptive disorders, ages 12-17 years, and their caregivers who were enrolled in the DPES. Based on preliminary data analyses, a total sample of 179 adolescents with disruptive disorders (i.e., 82% of the SED sample) and their caregivers from the de-identified DPES dataset were included in the analysis. These caregivers and adolescents provided information about the adolescents and the family. The adolescent sample consisted of 127 males and 52 females, of which 48% were Caucasian (n = 85) and 52% minority (n = 94). Of the minority participants, 99% were African American. Tables 1 and 2 provide information on the gender, ethnicity, and race information for both groups of participants who provided baseline data. Of the 179 caregivers, 60% were biological parents, 16% grandparents, 12% adoptive/step-parents, 6% foster

parents, 4% aunts/uncles, 1% siblings, <1% cousins, and < 1% other relatives. Of these 179 caregivers, 126 (71%) participated in the interviews at 12 months providing data about their adolescents. A total of 114 of these adolescents had complete data on the Internalizing CBCL, Externalizing CBCL, Total CBCL, Child and Adolescent Functional Assessment, Behavioral and Emotional Rating Scale, and Family Assessment Device.

Table 1

Gender, Ethnicity, and Race of Adolescent Participants for the Study

ADOLESCENTS **Ethnic Category**	**Gender**		
	Females **N (%)**	**Males** **N (%)**	**Total** **N (%)**
Hispanic or Latino	0	1 (100%)	1 (100%)
Not Hispanic or Latino	52 (29%)	126 (71%)	178 (100%)
Unknown (individuals not reporting ethnicity)			0
Ethnic Category: Total of All Subjects	52 (29%)	127 (71%)	179 (100%)
Racial Categories			
American Indian/Alaska Native	0	0	
Asian	0	0	
Native Hawaiian or Other Pacific Islander	0	0	
Black or African American	28 (30%)	66 (70%)	94 (100%)
White	24 (28%)	61 (72%)	85 (100%)
More than One Race	0	0	
Unknown or Not Reported			
Racial Categories: Total of All Subjects	52 (29%)	127 (71%)	179 (100%)

Table 2

Gender, Ethnicity, and Race of Caregiver Participants for the Study

CAREGIVERS ***Ethnic Category***	***Gender***		
	Females N (%)	**Males N (%)**	**Total N (%)**
Hispanic or Latino	1 (100%)	0	1 (100%)
Not Hispanic or Latino	117 (85%)	21 (15%)	138 (100%)
Unknown (individuals not reporting ethnicity)	36 (90%)	4 (10%)	40 (100%)
Ethnic Category: Total of All Subjects	154 (86%)	25 (14%)	179 (100%)
Racial Categories			
American Indian/Alaska Native	0	0	0
Asian	0	0	0
Native Hawaiian or Other Pacific Islander	0	0	0
Black or African American	56 (82%)	12 (18%)	68 (100%)
White	63 (88%)	9 (12%)	72 (100%)
More than One Race		0	
Unknown or Not Reported	35 (90%)	4 (10%)	39 (100%)
Racial Categories: Total of All Subjects	154 (86%)	25 (14%)	179 (100%)

Rationale for including ages 12 - 17 years. The rationale for including 12 - 17 year-olds was based upon research findings. For example, the cross-sectional study of the Great Smoky Mountains (Costello, et al., 1996) found that the prevalence of SED, including disruptive disorders, increased and nearly doubled between ages 12 and 13 years, a finding also supported by Arnold, Walsh, Oldham, and Rapp,(2007). There was also increased likelihood that a youth with a psychiatric diagnosis would display significant functional impairment about the age of 12 years. In addition, SED progressed through adolescence and peaked before transition to young adulthood (i.e., 18 – 24 years). Because only children 5 - 17 years old participated in the DPES, this study included adolescents 12 - 17 years old.

Rationale for selecting the 12-month follow-up time point. The average length of stay (ALOS) in the Dawn Project was 14 months (Anderson, et al., 2006). The 12-month time point was chosen because it was the closest to the ALOS when participants exited treatment, providing the best opportunity to examine relationships of interest.

Rationale for investigating racial differences. Hypothesis 2c is included because findings on race are mixed and the racial distribution of this dataset provided an opportunity to examine the influence of race on outcomes.

Rationale for using caregiver ratings of adolescent behavior. These were the data available in the DPES dataset. Per the national evaluation protocol, youths were not expected to provide reports on the CAFAS and BERS. The DPES dataset had only adolescents' reports of the FAD, YSR, and BERS. It was noted that the BERS used in the national evaluation and DPES was not the youth version of this scale. Therefore, any findings from adolescents' ratings of the BERS had to be interpreted with caution.

Furthermore, these adolescents had SED, which can affect their ability to reflect on and describe their own behaviors. Caregivers tend to provide more accurate assessment of symptoms and functioning than the adolescents (Huberty, Austin, Harezlak, Dunn, & Ambrosius, 2000). A previous study found that correlations between ratings made by caregivers on the CBCL and

youth on YSR were .40 for internalizing, .44 for externalizing, and .41 for total scores (Rosenblatt & Rosenblatt, 2002). However, examining differences in perspectives from different informants could provide useful information and might result in a more comprehensive understanding of adolescent strengths and outcomes (Friedman, Friedman, & Weaver, 2003b; Rosenblatt & Rosenblatt, 2002). Thus, both adolescent and caregiver ratings of key study variables were compared (Exploratory Aim 3).

Reasons for smaller sample size at 12 months. Of the 179 participants who were enrolled and provided baseline data, 126 (71%) adolescents and their caregivers participated in interviews at 12 months. Reasons for not completing 12-month interviews included: (a) participant moved and did not leave contact information; (b) participant did not return calls or missed appointments; (c) the youth was in residential care or a ward of the state; and (d) youth or caregiver refused the interview. Previous Dawn Project studies conducted with the whole sample found no significant differences between participants with and without available data on demographic characteristics, such as age, gender, and ethnicity (Anderson, et al., 2006) at baseline. Differences between groups with and without complete data at 12 months were examined in this study (See Hypothesis 1c).

Procedures. De-identified data collected between 1999 and 2005 were obtained from the Dr. Eric Wright, the principal investigator for the DPES (IRB Study Number: 0006-03B) following IRB approval. De-identified data excluded the following identifying information: name, social security number, address, date of birth, phone number, e-mail address, account numbers, or other characteristics that could distinguish an individual. The dataset was kept on a computer system that was secure according to university policies and was stored as a protected file. Access to identifiers was not available; and any associated paper documents generated were kept in locked file cabinets in a locked office. The dataset had only variables of interest to us including demographic information (race, gender, ethnicity, and caregiver type) as well as

baseline and 12-month data on adolescents' personal strengths, family functioning, and adaptation. No additional data were collected for this study.

Protection of human subjects. The proposed human subjects study falls under *Exemption 4* (Exemption 45 CFR 46.101 [b] [4]), which applies to a study that involves use of existing data recorded by the principal investigator in such a manner that subjects cannot be identified directly or through identifiers linked to the subjects. Accordingly, this study involved use of the DPES dataset gathered by the principal investigator. The Institutional Review Board at Indiana University-Purdue University, Indianapolis, approved all procedures for the Dawn Project evaluation study. Further, an application that included the applicant and her mentors as co-investigators for this study was submitted and approved by the IUPUI/Clarian IRB in October, 2008. Data provided to the applicant and her mentors, Dr. Gerkensmeyer and Dr. Austin, were recorded in such a manner that the subjects could not be identified directly or through identifiers linked to the subjects. No additional informed consent was required for this study.

***Potential risks*.** For this study, there was a minimal risk of loss of confidentiality; however, this was highly unlikely because the dataset was de-identified before we had access to the information. We monitored the dataset closely for safety and ensured that it was securely kept on a password-protected computer system. All paper documents generated for this study were kept in locked file cabinets in a locked office.

Potential Benefits. There is much that could be learned from the extensive evaluation of the Dawn Project and SOC for adolescents and their families. This population of adolescents has traditionally had poor treatment outcomes, including higher rates of school performance problems, school dropout, unemployment, and arrests. The SOC treatment approach has changed how services are provided to youths with SED. It is important to identify factors that predict change in adolescent outcomes in order to enhance the quality and effectiveness of SOC programs for future youths and their families.

Inclusion of Women and Minorities. Women and minorities were both included in this study.

Variables Measured and Instruments

The variables measured in this study included adolescent behavioral and social functioning, adolescent personal strengths, family functioning, and demographics of age, gender, race, and caregiver type. The following sections provide the operational definition of each variable in the theoretical framework, how they were used, and data on their psychometric properties. Table 3 provides a snapshot of the conceptual and operational definitions for the key study variables and data collection time points.

Adaptation: Change in Adolescent Behavioral and Social Functioning

Behavioral problems refer to the clinical symptoms of a disruptive disorder, and functional impairments refer to the difficulties in meeting appropriate developmental tasks in the home, school, and community. Behavioral problems were assessed using the Child Behavioral Checklist (CBCL; Achenbach, 1991a) and the Youth Self-Report Form (YSR; Achenbach, 1991b). Functional impairment was assessed using the Child Adolescent and Functional Assessment Scale (CAFAS; Hodges, 1994). A copy of each instrument is provided (see Appendices A and B).

Child Behavioral Checklist (CBCL) was designed to provide a standardized measure of symptoms, behavioral, and emotional problems in children ages 4 through 18 years. This measure has been widely used in children's mental health services research and for clinical purposes. The CBCL provided different information than diagnoses, alone, would be able to provide (Achenbach, 1991a).

The CBCL has three main sections: (a) a descriptive section to capture demographic information such as child's name, sex, age, ethnic group, date of birth, and grade in school; (b) a social competence section (17 items) that collects information related to involvement in organizations, sports, peer relations, and school performance; and (c) a behavioral and emotional

problem section (113 items). The 113-item behavioral and emotional problem section was used for this study.

The CBCL was administered at baseline and follow-up data collection points (TI and T2). It was administered to caregivers, and it took about 20 minutes to complete. Caregivers reported on the adolescents' internalizing and externalizing symptoms. The CBCL yielded a total problem score, two broadband syndrome scales (internalizing problems and externalizing problems), and eight narrow-band syndrome scores (withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behavior, and aggressive behavior). Only the Internalizing, Externalizing, and Total CBCL scores were used in this study. The internalizing scale had 30 questions including, "Now or within the past six months, how often does your child seem depressed?" The externalizing scale consisted of 32 questions, including "Now or within the past six months, how often does your child use alcohol or drugs?" The response scale ranged from 0 for *not true,* 1 for *somewhat or sometimes true, and* 2 for *very true or often true*. Scores on all scales ranged from 23 to 93. Higher scores indicate greater child behavioral problems. Total problems scores with a T score of 60 to 63 were considered borderline clinical, and scores above 63 were considered to be in the clinical range, whereas similar T scores on the Internalizing and Externalizing scales indicated clinically significant challenges in that area.

Psychometric properties of the CBCL have been demonstrated in both community samples of youths and those with SED, including those in a SOC program. Coefficient alphas ranged from .90 to .92 (Carter, Grigorenko, & Pauls, 1995; Greenbaum, Dedrick, Prange, & Friedman, 1994). Construct validity of the CBCL has also been demonstrated (Dedrick, Greenbaum, Friedman, Wethrington, & Knoff, 1997).

Youth Self-Report Form (YSR) was also used to measure adolescent behavioral and social functioning (Achenbach, 1991b). The YSR is the adolescent version of the CBCL and has been widely used in children's mental health services research as well for clinical purposes. The

YSR assesses an adolescent's perceptions of his or her own behavioral and emotional problems. Similar to the CBCL, the YSR included three sections: descriptive section to capture youth's name, sex, age, ethnic group, date of birth, grade in school, and type of work for those youths who may be employed; the social competence section (14 items); and the behavioral and emotional problem section (112 items). The 112-item behavioral and emotional problem section was used for this study.

The YSR was administered to youths 11 years and older in the Dawn Project at baseline and follow-up data collection time points. The YSR took approximately 20 minutes to administer. Adolescents reported their levels of internalizing and externalizing symptoms. Sample items on the on the YSR include, "I cry a lot," and "I get in many fights." Adolescents responded to each item on the same 3-point scale as the CBCL. This study used internalizing, externalizing, and total scores in data analyses. Like the CBCL, Total problems scores with a T score of 60 to 63 were considered borderline clinical, and those above 63 were considered to be in the clinical range, whereas similar T scores on the Internalizing and Externalizing scales indicate clinically significant challenges in that area.

There has been extensive use of the YSR in clinical and community samples of youths. The YSR has acceptable reliabilities with Cronbach's alpha greater than .62 as demonstrated in a sample of adolescents who received inpatient psychiatric treatment (Song, Singh, & Singer, 1994). The YSR has been widely used in youths with mental health problems, including both outpatient and inpatient referrals (Achenbach, 1991).

The Child and Adolescent Functional Assessment Scale (CAFAS) has been widely used in youth ages 7 - 17 years to measure the degree of impairment in day-to-day functioning in several psychosocial domains (Hodges, 1994). The CAFAS has eight subscales that measure impairment in school/work, home, community, behavior towards others, moods/emotions, self-harm behavior, substance abuse, and thinking (See Appendix D1). Two additional scales,

Material Needs and Family/Social Support, were not collected by the Dawn Project, and therefore are not included in the analyses.

There are two documents associated with the CAFAS: The CAFAS Parent Report and the CAFAS Rating Form. The CAFAS Parent Report is a structured caregiver interview designed to obtain specific information needed to determine the youth's level of impairment in each life domain. The Parent Report is organized around the CAFAS subscales and makes scoring the CAFAS more straight forward.

The CAFAS Rating Form contains eight subscales. The School/Work Role Subscale measures how effectively the youth fulfils societal roles in school or at work. The Home Role Subscale measures how effectively the youth fulfils societal roles at home. The Community Role measures how effectively the youth fulfils societal roles in the community. The Behaviors Towards Others Subscale assesses the appropriateness of youths' daily behavior. The Mood/Emotions Subscale measures modulation of youth's emotion. The Self-Harm Behavior Subscale measures the extent to which the youth demonstrates self-harmful behavior. The Substance Use Subscale measures the youth's substance abuse and the extent to which it is appropriate and disruptive. The Thinking Subscale assesses the ability of the youth to use rational thought processes.

Raters designated a score for each subscale to indicate the level of impairment in that life domain. The four levels of impairment were as follows: (a) *30 for severe disruption or incapacitation*; (b) *20 for moderate persistent disruption); (c) 10 for mild disruption; and (d) 0 for no disruption of functioning).* Each subscale contains a menu of problem descriptions that raters may chose to represent a youth's situation. To score each subscale of the CAFAS, the rater read through the behaviors described at each level, starting at the "*severe impairment*" level, until he or she finds a description that matches the youth's behavior. Scores were based on the most severe behavior demonstrated in the last 6 months (Rosenblatt & Rosenblatt, 2002). Total scores range from 0 to 240 with higher scores indicating greater functional impairment. An overall score

from 0 to 10 indicates minimal to no impairment, 20 to 40 indicates mild impairment, 50 to 90 indicates moderate impairment, 100 to 130 indicates marked impairment, and 140 and higher indicates severe impairment.

The CAFAS Rating Form was completed at baseline and at 12 months (i.e., TI and T2) and these data were used for this study. The Parent Report was administered to the caregivers and takes approximately 25 minutes. Once all the necessary information was collected, the CAFAS Rating form took approximately 15 minutes to complete.

The CAFAS has evidence of satisfactory reliability and validity. Interrater and test-retest reliability has been demonstrated (Bates, 2001; Hodges & Wong, 1996). Interrater reliability using intraclass correlation for the total CAFAS scores was .84 to .87 amongst lay raters, graduate students, and frontline professionals who work with children with SED (Bates, 2001; Hodges & Wong, 1996). It has been reported that the training program required prior to use of the instrument strengthens its reliability. Only the Total Score of the CAFAS was used in this study. Each of the research assistants (i.e., raters) that completed the CAFAS in the Dawn Project study received the training program before using the assessment. Cronbach alpha values of the CAFAS ranged from .63 to .78 in past studies of youth with SED (Boydell, Barwick, Ferguson, & Haines, 2005; Hodges & Wong, 1996; Rosenblatt & Rosenblatt, 2002). There is evidence of concurrent validity between the CAFAS and other global measures of functioning such as the CBCL, and criterion-related validity using the CBCL and YSR. Predictive validity has also been demonstrated. For example, CAFAS Scores at intake have been found to predict subsequent levels of care and length of services (Bates, 2001; Hodges & Kim, 2000; Hodges & Wong, 1996).

Individual Resources: Change in Adolescent Personal Strengths

Adolescent personal strengths refer to the positive emotions, behaviors, and characteristics that create a sense of accomplishment, build satisfying relationships, and promote achievement of age-appropriate tasks in schoolwork, home, and the community. Caregiver ratings of adolescent personal strengths were measured with the Behavioral and Emotional Rating Scale

(BERS). In addition to caregiver ratings of adolescent personal strengths, the Dawn Project investigators also collected BERS data directly from adolescents 11 years and older who participated in DPES.

The BERS is a 52-item instrument that identifies behavioral and emotional strengths of adolescents on five dimensions: Interpersonal Strengths, Family Involvement, Intrapersonal Strength, School Functioning, and Affective Strength. Each subscale has a number of items that measures a specific dimension of the youth's strength. For example, the Interpersonal Strengths subscale measured the adolescent's ability to manage emotions or behaviors in social situations and includes 14 items (e.g., reacts to disappointments in a calm manner). The Family involvement subscale measured the adolescent's participation and relationship with family members and has 10 items (e.g., communicates with family about behavior at home, or participates in family activities). The Intrapersonal Strength subscale assessed the adolescent's outlook on competence and accomplishments and has 11 items (e.g., talks about positive aspects of their life). The School functioning subscale assessed the adolescent's school competence and performance using 9 items (e.g., attends school regularly or completes school tasks on time). The Affective Functioning subscale measured the adolescent's ability to give and receive affection and is rated on seven items (e.g., expresses affection for others or acknowledges painful feelings).

The BERS was completed via interview of the caregivers and adolescents. Respondents rated each item on a point scale 0 = *not at all like*, 1 = *not much like*, 2 = *like*, and 3 = *very much like*. Subscale scores were summed and each converted into scaled scores. Sums of the scaled scores were converted into the strength index. Higher scores indicate greater personal strength. The behavioral and emotional strengths of an adolescent can range from *Poor* = 70 to 79; *Below Average* = 80 to 89; *Average* 90 to 110; *Above Average* = 111 to 120, *Superior* = 121 to 130; and *Very Superio*r is greater than 130. The BERS took approximately 10 minutes to administer. Total and subscale scores from caregiver and youth reports of the BERS were used in this study. The BERS also has eight open-ended questions to allow the respondent to document a child's strength

in other areas such as academic, social, athletic, family, and community strengths. These questions were not collected for the Dawn Project study (see Appendix C).

Satisfactory levels of reliability and convergent validity have been found with the BERS, (Epstein, Mooney, Ryser, & Pierce, 2004; Epstein & Sharma, 1998). Further, the BERS has been widely used to measure strengths in youths with SED, including disruptive disorders and community samples of adolescents (Friedman, et al., 2003b). Coefficient alpha for each subscale and total strength scores ranged from .79 to .99 (Epstein, Ryser, & Pearson, 2002), and was consistent with the internal consistency reliability for individual subscales that ranged from .82 to .93 for caregivers and .86 to .93 for the adolescents with disruptive behavioral problems reported by Friedman et al, 2003.

Adolescent rating of the BERS. This instrument was not required for the national evaluation study. However, data were collected for the DPES but were not evaluated and provided an opportunity to examine its reliability for this population of adolescents with disruptive disorders, who participated in the Dawn Project in the current study. Because adolescent BERS was gathered using the caregiver version for the adolescents in this study, internal consistency reliability for this sample was conducted. The youth version of the BERS was under development at the time of the DPES. The wording of the caregiver version was the same as the youth version. The only difference was that for caregiver, items began with "*My child attends school regularly or completes school tasks on time."* The adolescent version stated "*I attend school regularly or complete school tasks on time."*

The DPES dataset has individual items for the BERS collected from 105 adolescents at baseline and 20 adolescents at 12 months. The internal consistency reliability of the BERS Strength Quotient and five subscales for this sample of adolescents with disruptive disorders were examined. The internal consistency reliability of a scale measures how well each item in scale measures the variable or construct of interest. Cronbach's alpha coefficient is the main statistic used to show internal consistency, and it is sample specific (DeVon et al., 2007). In other words,

it is a measure of the internal consistency for test responses for the current sample. Therefore, Cronbach's alpha was calculated for the sample of adolescents in the study. The dataset included all 52-items for the youth-reported BERS. Only subscale scores and BERS Strength Quotients for caregivers and not individual items were available, so Cronbach's alpha was not calculated for the caregivers.

Family Resources: Change in Family Functioning

Family functioning refers to how well families communicate, work together, and problem solve together. Caregiver ratings of family functioning were assessed with the *G*eneral Functioning subscale (FAD-GF) of the McMaster Family Assessment Device (FAD; Epstein, et al., 1983). The FAD is widely used to measure the overall rating of the interaction patterns in families that are healthy and unhealthy in SED and community samples of adolescents.

The FAD-GF subscale consists of 12 items found to be highly correlated with all six scales of the FAD (Epstein, et al., 1983a). The selected items include one from the Problem Solving Subscale, four from the Communication Subscale, two from the Roles Subscale, one from the Affective Responses Subscale, three from the Affective Involvement Subscale, and one from the Behavior Control Subscale. Examples of items that indicate healthy family interactions were: individuals are accepted for who they are; we are able to solve problems; and we can express feelings to each other. Some items that indicate unhealthy interactions were: planning family activities is difficult because we misunderstand each other; we avoid discussing our fears and concerns; and we don't get along well together (see Appendix E). As mentioned earlier, in chapter one, FAD-GF will be referred to as FAD in the rest of this document (i.e. data analysis, results, and discussion sections).

Caregivers and adolescents, ages 11 and older, responded and rated each item on a 4-point scale from *strongly agree, agree, disagree, and strongly disagree.* The scores were totaled, and the average was taken. Average FAD general scale scores can range from 1 to 4. In the original scoring format, lower scores are associated with more positive functioning, while higher

scores are associated with poorer functioning (Epstein, Baldwin & Bishop, 1983). However, for ease of interpretation, the scored data provided by DPES dataset (through the national evaluators, MACRO International) was recoded so that lower scores indicated poorer family functioning and higher scores indicated better family functioning fewer problems and better functioning. The following negatively worded items were recorded: 1, 11, 21, 31, 41, and 51. In the recoding, 4 = 1, 3 = 2, 2 = 3, 1 = 4. To aid meaningful interpretation of findings, the literature suggested a cutoff point for the FAD of 2.0 (Tamplin & Goodyer, 2001). Therefore, family functioning would be considered healthy if this cutoff is exceeded (Miller, Epstein, Bishop, & Keitner,1985). The FAD took approximately 10 minutes to administer.

The FAD has evidence of adequate reliability and validity. The test-retest reliability, convergent and discriminant validity of the FAD have been supported in adolescents with SED as well as non-clinical samples of adolescents (Byles, Byrne, Boyle, & Offord, 1988; Derisley, et al., 2005; Shek, 2001b). Cronbach alpha reliability for the general functioning scale of the FAD has been reported as 0.92 (Epstein, et al., 1983). Furthermore, these psychometric properties have been shown to be quite stable cross-culturally (Shek, 2001a).

Demographics

Demographics refer to adolescent factors such as age, race, gender, and the family factor of caregiver type. Both adolescent and family demographics were assessed with the Descriptive Information Questionnaire (DIQ). The DIQ is a 39-item caregiver-report questionnaire. It was completed at baseline and updated at follow-up as needed. The DIQ described child and family characteristics such as age, gender, race, and caregiver type. For age, date of birth and child age in years were collected. The caregiver was asked to categorize the youth's racial/ethnic group from the following options: American Indian or Alaska Native, Asian, Black or African American, White or other. Because of the small number of other ethnic minorities besides AA, race was coded into as Caucasian or non Caucasian (i.e., African American and all other ethnic

minority groups). Gender was recorded as male or female. Caregiver was coded as biological parent, adoptive parent, foster parent, grandparent, aunt, uncle, sibling, or others.

Data Analysis

The following section describes the steps used to test the study hypotheses. This section includes three major parts: Part I is the preliminary data analysis including sample size and composition, and sample size justification. Part II covers data screening and testing of relevant statistical assumptions. Part III includes proposed steps for testing Specific Aims 1, 2, and 3 and associated hypotheses.

Data analyses of the existing Dawn Project dataset was performed with the Statistical Package for Social Sciences (SPSS) version 18. The DPES coded and entered all data. Age at baseline was entered as a continuous variable and indicated the age of the adolescent at the time he or she enrolled in the Dawn Project. Gender was coded as female (1) or male (0), and race was coded as African American (1) or Caucasian (0). Adolescent personal strengths, family functioning, and behavioral and social functioning were treated as continuous variables in the dataset. Significance was assessed at the .05 level unless otherwise stated.

Table 3

Constructs, Operational Definitions, Data Sources, and Data Collection Time Points

Theoretical Construct	**Operational definition**	**Source**	**Time Points** Baseline (TI) 12month (T2)
Demographics (Age, Race, Gender, Caregiver type)	**Demographic Information Questionnaire**	*Caregiver*	*n = 179* *n = 114*
Adaptation (Change in Adolescent Behavioral and Social Functioning between Baseline and 12 months)	**Child and Adolescent Functional Assessment Scale (CAFAS)** (Total CAFAS score) **Child Behavioral Checklist/4-18 (CBCL)** (Externalizing T-score, Internalizing T-score, and Total Problem T-score) **Youth Self Report (YSR)** (Externalizing T-score, Internalizing T-score, and Total Problem T-score)	*Caregiver* *Caregiver* *Adolescent*	*n = 179* *n = 114* *n = 179* *n = 114* *n = 179* *n = 114*
Individual Resources (Adolescent Personal Strengths)	**Behavioral and Emotional Rating Scale (BERS)** (Interpersonal Strengths, Family Involvement, Intrapersonal Strengths, School Functioning, and Affective Involvement)	*Caregiver* *Adolescent*	*n = 179* *n = 114* *n = 105* *n = 21*
Family Resources (Family Functioning)	**Family Assessment Device (FAD)** (General Functioning subscale score or FAD)	*Caregiver* *Adolescent*	*n = 179* *n = 114* *n = 179* *n = 114*

Sample

The sample was 179 adolescents with disruptive disorders, ages 12-17 years, and their caregivers who were enrolled in the DPES. There are 127 males and 52 females, of which 48% are Caucasian (n = 85) and 52% minority (n = 94). Of the minority participants, 99% were African American (see Tables 1 and 2). Of the 179 caregivers, 60% were biological parents, 16% grandparents, 12% adoptive/step-parents, 6% foster parents, 4% aunts/uncles, 1% siblings, <1% cousins, and < 1% other relatives.

Part I: Preliminary Analyses

Descriptive statistics were used to determine available sample size and to conduct the power analysis.

Sample size and composition. The sample drawn from the existing dataset for this study included 179 adolescents with disruptive disorders (M age = 14.06 years, SD = 1.42) and their caregivers. Because of the potential impact on interpretation of findings, H1b was included to examine caregiver type. Additionally, analyses for Aim 2 were included to examine the influence of change in caregiver type from baseline to 12 months. Because of the smaller number of caregiver types other than biological parents; caregiver type was collapsed into two groups: primary family member (i.e., biological, adoptive, or step-parents) and other (foster, grandparents, uncles, aunts, and cousins).

Sample size justification. Data from 179 caregivers were available for the analyses in Aim 1. Of these 179, 114 caregivers participated and provided complete data for the 12-month interview and were included in hypothesis testing for Aim 2. All caregivers who had corresponding data from their adolescent at baseline and 12 months were included for analysis in Exploratory Aim 3.

For correlations with age in Aim 1, a 0.050 two-sided Fisher's z-test of the null hypothesis that the Pearson correlation coefficient is 0.0 would have 80% power to detect a correlation of 0.21 with the sample size of 179. For the dichotomous variables, the biggest

imbalance in sample size was with caregiver type. Using an unequal size two-sample t-test, there was an 80% power to detect an effect size of .46 between primary family member (n = 129) versus other (n = 50) using a .05 level of significance.

For Aim 2, although multivariate models were fitted, for simplicity, calculations were based on univariate methods. For H2a and H2b, using an alpha level for each model of .0125 and setting the power to 80%, an increase in R^2 for change in adolescent personal strengths or family functioning of 7% or higher could be detected, even if the R^2 attributed to the covariates adjusted for (age, gender, race, caregiver type) is as low as 25%. For testing the interaction with race in H2c, an effect size for the interaction effect of 0.21 standard deviations could be detected at alpha = .05 (two-sided) with a power of 80% using a partial t-test. The analyses for Aim 3 were all considered exploratory.

Part II: Data Screening and Tests of Statistical Assumptions

This section describes (1) routine pre-analysis data screening procedures; and (2) and tests of the assumptions for all statistical tests. Before running analysis on the dataset, it was important to screen the data. When conducting analyses, it is necessary to test that appropriate statistical assumptions were met. Without performing both of these steps, inferences or interpretations drawn from findings might have been flawed or misleading.

Routine pre-analysis screening of data. First, a pre-analysis screening of data was conducted. There were three main purposes of data screening in this multivariate analysis: (a) to check the accuracy of data collected, (b) to screen for missing data and address this, and (c) to assess for outliers and their effects. These purposes are discussed in detail in the next section.

Checking the accuracy of the data collected. was conducted by running SPSS frequency distributions and descriptive statistics for each study variable and covariates. For quantitative variables, the range of values was examined to check that no cases were outside the possible ranges. Assessment of means and standard deviations were also included. For example, u*sing SPSS FREQUENCIES, descriptive statistics* were conducted to: 1) describe demographic

characteristics of the adolescents and their caregivers; and 2) and examine distribution of scores generated from the various measures used in the study. Frequencies, means, and standard deviations were used to describe adolescent's demographics, scores on the CAFAS, CBCL, YSR, BERS, and FAD; caregiver types and number in each category (see Appendix F for syntax).

Screening for missing data. When there were missing items in a scale, DPES used mean substitution to address this type of missing data. Investigators extrapolated by adding up all available responses for each individual for a given measure, then dividing it by the number of items that had available responses for that measure to yield a mean score. The mean score was used to replace missing values prior to analysis.

Preliminary data analyses for this study showed that some adolescents did not participate in every data collection point, and so there were missing data. Statistical analysis was conducted to determine the pattern of missing data (see Appendix F). The pattern of missing data is considered more important than the quantity (Tabachnick & Fidell, 2007). For example, missing data scattered randomly throughout the data matrix poses less serious problems. However, when data are missing not at random, no matter how few they are, this poses a serious problem because it affects the generalizability of study findings (Tabachnick & Fidell, 2007).

According to Tabachnick and Fiddell (2007), missing data are described as (a) missing completely at random (MCAR), (b) missing at random, called ignorable response (MAR), or (c) missing not at random (MNAR). The distribution of missing data is unpredictable in MCAR, the most preferred form of missing data. The pattern of missing data is predictable from other variables in the data set when data are MAR. However, in MNAR, the missingness is related to the dependent or outcome variable (i.e. behavioral and social functioning in this case), and therefore, cannot be ignored (Tabachnick & Fidell, 2007).

To determine the type of missing data, SPSS MVA (Missing Value Analysis) was used to highlight patterns of missing values (see Appendix F1 and F2). According to Tabachnick and Fidell (2007), the SPSS MVA uses a t-test to examine if missingness is related to any of the other

variables with alpha = .05. Tests are completed only for variables with at least five percent of data missing. The expectation maximization (EM) syntax requests a table of correlations and a test of whether data are missing completely at random (MCAR).The output yielded Little's MCAR test. A statistically non-significant result was desired. MAR was inferred if the MCAR test was statistically significant but missingness was predictable from other variables (other than the dependent variable) as indicated by the Separate Variance t-tests. MNAR was inferred if the t-test showed that missingness was related to the dependent variable (Tabachnick & Fidell, 2007).

***Assessing for outliers and their effects*.** Outliers are cases with extreme values on one variable or a combination of variables. Outliers distort the resultant statistics and can exist in both univariate and multivariate situations, among dichotomous or continuous variables, and among independent and dependent variables (Tabachnick & Fidell, 2007). Univariate outliers are cases with extreme values on one variable, and multivariate outliers are cases with unusual combinations of scores on two or more variables.

Univariate outliers were assessed by using standardized or z-scores of the raw scores and through graphical representation such as Box-plots. Box plots enclose cases that are located near the median value and locate extreme value away from the box (Tabachnick & Fidell, 2007).

Multivariate outliers were detected using Mahalanobis distance. Mahalanobis distance is defined as the distance of a case from the centroid of the remaining cases. The centroid is the point created by the means of all the variables (Mertler & Vannatta, 2010). Mahalanobis distance was evaluated as a chi-square statistic. Degrees of freedom for chi-square are equal to the number of variables in the analysis (Mertler & Vannatta, 2005; Tabachnick & Fiddell, 2007). Cut point for the Mahalanobis distance is a value of Mahalanobis distance that is significant beyond $p < .001$. This was determined by comparing the observed Mahalanobis distance to the Chi-square critical value. When found, outliers were not dropped from analyses; rather, the reporting of two analyses was considered: one with the outlier and another without the outlier (Mertler & Vannatta, 2005; Tabachnick & Fiddell, 2007).

Assumptions for statistical tests. Once the above routine pre-analysis data screening of all independent and dependent variable was complete, additional diagnostic tests were conducted for each statistical test used. The tests for these assumptions are described below.

Tests of the assumptions for standard statistical tests. Standard statistical tests included tests for Pearson two-sample t-tests and chi-square tests. To do tests with Pearson correlations, the two variables need to have a bivariate normal distribution. This is discussed in detail below. For two sample t-tests, normality and homoscedasticity (equal variance between the two groups being compared) were needed. Testing normality is discussed in detail below. Homoscedasticity was assessed in SPSS using Levine's test. If assumptions were not met, appropriate transformations or alternate tests were performed (e.g. unequal variance t-tests or non-parametric tests). For chi-square tests, the expected values in each cell of the table must be greater than or equal to 5. SPSS automatically checks this assumption when a chi-square test is requested. If it is not met, Fisher's Exact test could be used as indicated.

Tests of the assumptions for multivariate regression and linear mixed models. Proposed tests for the assumptions of multivariate multiple regression (MVMR) are normality of the dependent variables, linearity between dependent and numerical independent variables, homoscedasticity, and check of multicollinearity (Tabachnick & Fidell, 2007). Similar diagnostics were conducted for linear mixed models. Testing assumptions involved several methods, including examining the residuals from the model.

Normality refers to the assumption that the dependent variable or combinations of the dependent variables have a normal sample distribution (Tabachnick & Fidell, 2007). Univariate normality refers to the extent to which all observations in the sample for a given dependent variable are distributed normally. Univariate normality was assessed by using both graphical and statistical methods. The graphical methods were conducted by examining histograms and normal probability plots (or normal Q-Q plot) for each variable. If normality is met, the plot should resemble a straight line. Univariate normality was also assessed using two different statistics.

First, the skewness and kurtosis values were examined. Second, the Kolmogorov-Smirnov Z test was also assessed. The latter test is easier to use and also tests significance (Field, 2005). Skewness refers to the symmetry of the distribution and kurtosis refers to the peakedness of a distribution (Tabachnick & Fidell, 2007). According to Tabachnick and Fidell (2007), when a distribution is normal, the values of skewness and kurtosis would be zero. Positive values of skewness indicate a pile up to the left of the distribution and negative value of skewness indicate a pile-up of scores to the right of the distribution. Positive values of kurtosis indicate a pointy distribution, while negative values indicate a flat distribution (Tabachnick & Fidell, 2007).

The skewness and kurtosis scores were converted to z-scores, which are standardized scores to allow for more meaningful comparison and interpretation. Cut-point for z-score is < than 3.29 for large sample size such as n > 200 (Field, 2005). To run skewness, the value of skewness was divided by the standard error of skewness (Tabachnick & Fiddell, 2007). Next, the observed value was compared with the critical z-value for alpha = .01 or .001 for study sample size of 179 (Mertler & Vannatta, 2005). Normality is indicated if the observed value is less than the critical value (i.e., there is no significant finding). The assessment of kurtosis follows the same step as described above.

When the assumption of univariate normality was violated, the affected variable was transformed using appropriate transformation options. According to Tabachnick and Fidell (2007), multivariate normality is not readily tested because it is impractical to test finite number of linear combinations of the dependent variables. However, it is more likely that the assumption of multivariate normality is met if all the variables are normally distributed (Tabachnick & Fidell, 2007).

Linearity. The assumption of linearity is that there is a straight line relationship between two variables (Tabachnick & Fidell, 2007). These two variables can be individual raw data or combinations of several raw data variables (i.e., composite or subscales scores). Because, data analysis for this study include statistical analysis such as Pearson's r (i.e., in Specific Aim 1) and

MVMR (Specific Aim 2), linearity was assessed by means of bivariate scatter plots and examination of residual plots. Bivariate scatter plots were accessed through SPSS GRAPH. Bivariate scatter plots were plotted for all possible pairs of continuous, dependent variables in the study. If both variables were normally distributed and linearly related, the scatter plot is oval shaped (Tabachnick & Fidell, 2007). Linearity may be violated if the overall shape of the scatter plot is curved instead of rectangular. When the assumption of linearity is violated, this weakens the regression (Tabachnick & Fidell, 2007)

Homoscedasticity.. This is assumption of homogeneity of variance in the residuals across values of the predictor variables (Tabachnick & Fidell, 2007).This is discussed in the Residual Analysis section below.

Residual Analysis. The assumptions of normality, linearity, and homoscedasticity were also double-checked through examination of residuals in analyses involving prediction such as MVMR (Tabachnick & Fidell, 2007). Residuals are defined as portions of the scores that are not accounted for by the multivariate analysis. Residuals are also referred to as prediction errors because they measure the differences between obtained and predicated values on a given variable (Field, 2005). If a model fits the sample data well, then all residuals will be small and vice versa. If any cases stand out as having a large residual, then they could be outliers. The residuals or prediction errors are converted to standardized residuals to distinguish them from raw data (Field, 2005). Further, standardized residuals are more sensitive to outlier or influential cases.

Therefore, standardized residual scatter plots were examined for assumptions of normality, linearity, and homoscedasticity. According to Tabachnick and Fidell (2007), if all assumptions were met, the residuals will be nearly rectangular in distribution with a concentration of the scores along the center. This indicated that errors of prediction were normally distributed around each and every predicted dependent variable score. SPSS regression yields histograms and normal P-P plots of regression standardized residual for each dependent variable (Tabachnick & Fidell, 2007).

Muticollinearity. This occurs when independent variables (IVs) are highly correlated with one another, or the interaction terms among IVs have been included in the model. According to Tabachnick and Fidell (2007), regression is most appropriate when the independent variables are strongly correlated with the dependent variable, but are uncorrelated with the other independent Variables. Further, the calculation of regression coefficients requires inversion of the matrix of correlations among the IVs. This process of inversion is unstable if the independent variables are multicollinear (Tabachnick & Fidell, 2007). Therefore, the predictor variables were screened for multicollinearity.

SPSS Regression yields collinearity diagnostics output table (see Appendix G). According to Tabachnick and Fiddell (2007), multicollinearity can be detected by (a) Condition Index > 30, and (b) two or more variance proportions of .50 or greater. Using SPSS, multicollinearity may be violated when these two conditions are present. For example, there is no violation if there is only one variance proportion of .50 or greater (Tabachnick & Fidell, 2007). While substantial multicollinearity is not expected, if it was found, the predictor variable that is most correlated with the dependent variable and has the most appropriate theoretical justification may be used in analyses (see Appendix G for collinearity of FAD and BERS Strength Quotient and Appendices K and K1 for collinearity Diagnostics for the BERS subscales). Correlations among the outcome variables were also examined (see Appendix J) to support use of MVMR.

Part III: Hypothesis testing

The following section describes the hypothesis testing for each of the specific aims.

Specific Aim 1. Describe baseline differences in caregiver-rated adolescent personal strengths, family functioning, and adolescent behavioral and social functioning by adolescent demographics, caregiver type, and participation at 12 months.

H1a. There will be no differences in caregiver-rated adolescent personal strengths, family functioning, or adolescent behavioral and social functioning by adolescent demographics (age, race, and gender).

Statistical analysis. The associations of caregiver-rated adolescent personal strengths, family functioning, or adolescent behavioral and social functioning with age, were examined using Pearson correlations. Associations with gender and race were performed using t-tests because gender, race, and caregiver type scores are dichotomous (Gravetter and Walnau, 2006). If Hypothesis 1a is supported, (a) there will be no statistically significant association between age and caregiver-rated adolescent personal strengths, family functioning, and adolescent behavioral and social functioning; (b) there will be no statistically significant differences by race or gender as indicated by t statistic. This would imply the adolescents' baseline scores on personal strengths, family functioning, and behavioral and social functioning were similar irrespective of the age, race, gender, or caregiver type.

H1b. There will be no differences in caregiver-rated adolescent personal strengths, family functioning, or adolescent behavioral and social functioning by caregiver type (primary family member versus other).

***Statistical analysis*.** The association of each of these variables with caregiver type (primary family member versus other) was examined using two-sample t-tests (Gravetter and Walnau, 2006). If Hypothesis 1b is supported, this would imply that the adolescents' baseline scores on personal strengths, family functioning, and behavioral and social functioning do not differ based on whether the caregiver is a primary family member (i.e., biological, adoptive, or step-parents) or other (foster, grandparents, uncles, aunts, and cousins).

H1c. There will be no differences between those who provided 12-month data and those who did not on adolescent demographics, caregiver type, or caregiver-rated adolescent personal strengths, family functioning, or adolescent behavioral and social functioning.

***Statistical analysis*.** Demographics, caregiver type, adolescent personal strengths, family functioning, and adolescent behavioral and social functioning were compared between subjects who participated at 12 months using two-sample t-tests, chi-square tests, or their non-parametric equivalents. For example, two-sample t-tests were used to compare the group means for age,

caregiver-rated adolescent personal strengths, family functioning, and adolescent behavioral and social functioning. Chi-square test was used to compare the group means for gender, ethnicity, and caregiver type because the latter are nominal level data. Results were confirmed using SPSS MVA.

If Hypothesis 1c is supported, there will be no significant differences between adolescents who participated at 12 months and those who did not. For example, their scores based on caregiver-rated adolescent personal strengths, family functioning, and adolescent behavioral and social functioning will not differ statistically.

Specific Aim 2. Examine changes from baseline to 12 months in caregiver-rated adolescent personal strengths and family functioning as predictors of change in caregiver-rated adolescent behavioral and social functioning after controlling for relevant adolescent demographics and caregiver type.

SPSS select function was used to limit our dataset to only cases that had 12 months values for Internalizing, externalizing, and Total CBCL and total CAFAS. This resulted in sample size of 126 cases down from 179 cases that were used in Aim 1. For consistency and simplicity, the 126 sample size was further limited to only adolescents who had caregiver-rated adolescent family functioning, leaving 114 adolescents with complete data on all outcome and independent variables at 12 months. A subset of 99 adolescents from the sample of 114 adolescents had the same caregiver type at baseline and 12-months time points. Next, SPSS transform and compute variable functions were used to create change variable (i.e. change in CAFAS = 12-month scores minus baseline scores). This step was repeated for the other study variables including caregiver-rated BERS subscales scores because there were multivariate models fit with each of the five dimensions of the BERS separately, and then with total BERS Strength Quotient scores.

As mentioned earlier, preliminary data analyses show that at 12 months, 15 of 114 adolescents had a change in caregiver type from baseline to 12 months. Therefore, MVMR was

conducted with the group of 114 adolescents and then repeated for the group of 99 adolescents for whom there was no change in caregiver from baseline to 12 months.

H2a. Changes in adolescent personal strengths between baseline and 12 months will be negatively associated with changes in adolescent behavioral and social functioning at 12 months.

Statistical analysis. Multivariate multiple regression models, which are appropriate for examining predictors of multiple outcome variables simultaneously, were fit. Changes in (a) Internalizing, (b) Externalizing, (c) Total CBCL scores, and the (d) total CAFAS scores from baseline to 12 months were the outcomes. Change in adolescent personal strengths (BERS) from baseline to 12 months was the key independent variable, and relevant demographic variables (age, gender, and race), and caregiver type as covariates. First, the model was fit with total BERS scores (i.e., BERS Strength Quotient) and then each of the five dimensions of the BERS separately. A third multivariate model was fit with all of the BERS subscales to assess their relative predictive ability. In all, there were three sets of regressions. If the effects of adolescent personal strengths were significant in the multivariate models, separate regression models were then fit for each of the four outcomes.

Rationale for fitting multivariate model first. Fitting the multivariable model first allowed for the test of the overall effect across all outcomes. If there is an overall effect, then the univariate models can be used to determine which outcomes were affected. It is important to fit the multivariable model first because it provides the most power to detect an overall effect. It is possible that the individual effects on each outcome exist but are not statistically significant. The multivariate analysis is then the best way to look at the combined effect on all the outcomes.

If H2a is supported, there will be a significant main effect of change in BERS Strength Quotient in the multivariate model, and one or more of the outcome variables will be affected. In addition, the regression weight of change in BERS will be significantly different from zero. This would mean that an increase in caregiver-rated adolescent personal strengths is associated with

fewer behavioral problems and less functional impairment (i.e., improvement in behavioral and social functioning).

Regression Model for H2a and H2b. The process of testing the significance of a regression equation is called analysis of regression (Tabachnick & Fiddell, 2007). The regression analysis uses an F-ratio to determine whether the amount of variance accounted for by the regression equation is significantly greater than would be expected by chance. Each predictor or independent variable (i.e., change in adolescent personal strengths and change in family functioning) was evaluated for each outcome separately. In addition, all relevant demographic variables were included in all models. All independent variables are entered into the models in one step. To address multiplicity issues, significance levels were adjusted: If the overall test was significant at .05 then tests of each individual model at .0125 were conducted. So the critical value was .05 for multivariate test, and .0125 for univariate tests using a Bonferroni adjustment to adjust for multiple tests (Tabachnick & Fidell, 2007).

For the overall model or multivariate mode

Δ OUTCOME = $\beta o + \beta 1 * \Delta$ BERS + $\beta 2$*Age + $\beta 3$*Gender + $\beta 4$*Race + error

For the individual models or univariate models

Δ Internalizing score = $\beta o + \beta 1 * \Delta$ BERS + $\beta 2$*Age + $\beta 3$*Gender + $\beta 4$*Race + error

Δ Externalizing score = $\beta o + \beta 1 * \Delta$ BERS + $\beta 2$*Age + $\beta 3$*Gender + $\beta 4$*Race + error

Δ Total CBCL score = $\beta o + \beta 1 * \Delta$ BERS + $\beta 2$*Age + $\beta 3$*Gender + $\beta 4$*Race + error

Δ Total CAFAS score = $\beta o + \beta 1 * \Delta$ BERS + $\beta 2$*Age + $\beta 3$*Gender + $\beta 4$*Race + error

Where OUTCOME variables include these components = Δ in Total CAFAS score, Internalizing, externalizing, and Total CBCL scores between baseline and 12 months

βo = intercept

$\beta 1 \ldots \beta n$, = slope or regression coefficients

Δ = change defined as 12 month score minus Baseline scores

H2b. Changes in family functioning between baseline and 12 months will be negatively associated with changes in adolescent behavioral and social functioning at 12 months.

Statistical analysis. This analysis was similar to 2a. A multivariate multiple regression model was fit. Changes in (a) Internalizing, (b) Externalizing, (c) Total CBCL scores, and (d) total CAFAS scores from baseline to 12 months were outcomes. Change in family functioning from baseline to 12 months was the key independent variable, with relevant demographic variables (age, gender, race), and caregiver type, as covariates. If the effects of family functioning were significant in the multivariate model, separate regression models were then fit for each of the four outcomes.

$$\Delta \text{ in OUTCOME} = \beta o + \beta 1 * \Delta \text{ FAD} + \beta 2 * \text{Age} + \beta 3 * \text{Gender} + \beta 4 * \text{Race} + \text{error}$$

If H2b is supported, the main effect of change in family functioning will be significant in the multivariate model (i.e., $p < .05$); some or all of the univariate models may be statistically significant ($p < .0125$). Change in family functioning will have a regression weight that is significantly different from zero (i.e., $p < .0125$). These findings would mean that an improvement in caregiver-rated family functioning is associated with fewer behavioral problems and less functional impairment (i.e., improvement in behavioral and social functioning).

H2c. The strength and direction of predictors will not vary by race (African American versus Caucasian).

Statistical analysis. Similar multivariate multiple regression models and separate regression models to those described above (for H2a and H2b) were fit with an additional interaction term between either change in adolescent personal strengths or change in family functioning and race included in each model. Using SPSS Transform and Compute Variable function, the interaction terms of caregiver-ratings of change in adolescent personal strength x race (Δ BERS x Race) and change in family functioning x race (Δ FAD x Race) interaction were created. First, the interaction term, Δ BERS x Race, was added as an additional independent variable in the model for H2a. Next, interaction term, Δ FAD x Race, was added as an additional

independent variable in the models for H2b, and regression were run. If Hypothesis 2c is supported, neither the strength nor the direction of predictors will vary by race. That is, there will be no significant effect of the interaction terms.

Running MVMR for H2a, H2b, and H2c. The regression procedures were similar for H2a, H2B, and H2c .The procedure and outputs are described as follows: The multivariate assumptions of normality, linearity, and homoscedasticity were conducted mainly by examining standardized residual scatter plots. If there were no violations of these assumptions, no outliers exist, there were sufficient number of cases, and there was no evidence of collinearity; then a regression analysis was conducted using SPSS.

Mertler and Vannatta (2010) provided the following descriptions of these three major SPSS regression outputs. First part, the model summary provides three multiple correlation indices, namely, multiple correlation (R), squared multiple correlation (R^2), and adjusted squared correlation (R^2adj). All of these Rs provide a measure of how well each independent variable (i.e., Δ BERS, Δ FAD) predicts the outcome variable (i.e., change in behavioral and social functioning). R is a Pearson Correlation coefficient between the predicted and actual scores of the outcome variable. R^2 represents the degree of variance accounted for by the independent variable or their combinations. Because R and R^2 overestimate their values on the population, R^2adj is calculated to account for this bias. A corresponding value, Change in R^2adj or Δ R^2adj, is used to determine which independent or predictor variables significantly contribute to the regression model specified. Only the squared multiple correlation (R^2) was reported from the regressions.

The second output is the ANOVA table. This table provides the F test and corresponding level of significance for each model generated. The F test examines the degree to which the relationship between the independent and outcome variable is linear. A significant test will be indicated by alpha < .0125. For example, if H2a is supported, then alpha will be < .0125. Similarly, if H2b is supported, then alpha is also expected to be < .0125 (Mertler & Vannatta, 2010; Tabachnick & Fidell, 2007).

The third and last output from the regression analysis is the coefficients table. This table yields unstandardized regression coefficient (B), standardized regression coefficient (beta or β), t and alpha or p values. According to Mertler & Vannatta (2010), the unstandardized regression coefficient (B) represents the slope weight of each variable in the model and is used to create the regression equation. The B weights indicate how much the value of the outcome variable changes when the relevant independent variable increases by one and all the other independent variables remain the same. If B is positive, this means that when B increases, there is a corresponding increase in the outcome variable. If B is negative, this means there is a negative change in the outcome variable when B increases (Mertler & Vannatta, 2010; Tabachnick & Fidell, 2007). The standardized regression coefficients, β, are standardized weights of the slopes of each independent variable (i.e., B). β assesses the relative importance of the independent variables. The t and p values indicate the significance of the B weights. For example, If H2a is supported, change in adolescent personal strengths between baseline and 12 months will be negatively associated with change in adolescent behavioral and social functioning between baseline and 12 months, and the p value will be significant (i.e., alpha <.0125). Similarly, if H2b is supported, change in family functioning between baseline and 12 months will be negatively associated with change in adolescent behavioral and social functioning at 12 months, and p value will also be significant (alpha < 0.125).

For H2c, regression ANOVA output will show a p value for the interaction of predictors (i.e., change in adolescent personal strength or family functioning) by race. If there is an overall effect of race in the multivariate model, then all models for H2a and H2b will have to be reexamined including the race interaction (Tabachnick & Fidell, 2007).

Exploratory Aim 3. Explore differences between adolescent ratings and caregiver ratings of adolescent personal strengths, family functioning, and adolescent behavioral and social functioning at baseline and 12 months.

Statistical analysis. As part of aim 3 analyses, the internal consistency reliability for adolescent-rated BERS Strength Quotient and subscales were examined for baseline and 12-months time points. Then, these research questions for Aim 3 were explored: 1) are there mean differences between caregiver and adolescent ratings of adolescent personal strengths, family functioning, and adolescent behavior and social functioning, and are these differences smaller at 12 months than at baseline; and 2) are there differences between caregiver and adolescent ratings in the strength of the association of change in adolescent personal strengths and change in family functioning with change in adolescent behavioral and social functioning?

For research question 1, at each time point mean differences between adolescents and caregivers were assessed using paired t-test. Linear mixed effects models that combine the adolescent and caregiver data were fit to explore differences over time. Linear mixed effects models are also known as random regression models or hierarchical linear models. In these models, the predictors were informant type (adolescent or caregiver), time (baseline or 12 months), and their interaction. Adolescent/caregiver pair was included as a random effect. For each caregiver or adolescent participant, there are multiple measures (two times) and they are correlated. Therefore, SPSS syntax included two random statements to account for the above observations. For example, the random statement with adolescent identification number (*childid)* allows for the correlation between caregiver and adolescents within the family. The random statement with subject identification number (*subjid)* sets up the correlations across time within a subject. If the interaction is significant, this would indicate the differences between adolescent and caregiver are not the same at the two time points. Separate models were fit for each BERS, FAD, and CBCL and YSR.

Rationale for using Linear Mixed effects model. Linear mixed models were analyzed because it offers some advantage over repeated measures. Unlike repeated measures, linear mixed models are able to account for the fact that caregiver-adolescent dyad is related and that the dataset is longitudinal (Gueorguieva & Krystal, 2004).

For research question 2, using linear mixed models, the correlations between adolescent personal strengths and family functioning with adolescent behavioral and social functioning were calculated for adolescents and caregivers at each time point and then compared (see Appendix S). All available adolescent reported data (YSR, BERS, and FAD) were included in this analysis. Informant type was clearly designated (i.e., caregiver ratings = 1 and adolescent ratings = 2). Lastly, bivariate correlations between caregiver and adolescent ratings of the BERS, FAD, CBCL and YSR were explored

CHAPTER FOUR. RESULTS

This chapter provides details about the results of data analyses. Descriptions of data screening procedures, including examination of missing data and outliers, and tests of statistical assumptions, are provided, followed by a description of the sample, instruments, and the results specific to each aim and hypothesis. When indicated, additional model-based diagnostics reports are placed closer to the Specific Aim, as in Specific Aims 2 and 3.

Data Screening

The de-identified dataset from the Dawn Project Evaluation Study (DPES) was obtained in an SPSS format from the Principal Investigator, Dr. Eric Wright. Data were initially checked for accuracy by the DPES research team. Prior to data analyses for this study, all study variables were examined through various SPSS programs for accuracy of data entry, missing values, and fit between their distributions and the assumptions of all statistical tests.

Screening for missing data. Missing data were examined using IBM SPSS Missing Values Analysis Module (MVA). The amount and pattern of missing data were assessed with Little's MCAR (Missing Completely at Random) test. This SPSS module computes the MCAR test for only the variables with at least 5 % of data missing. With the exception of the Family Assessment Device (FAD) and caregiver type, all variables had less than 5% missing data (see Appendix F, Table F1). FAD and caregiver type were missing for 14 (7.8%) and 6 (5.1 %) of the adolescents at baseline and 12 months respectively. According to DPES, the reason there was missing data on the FAD at baseline and at 12 months was because of the interview protocol. Caregivers who were staff members at residential treatment centers, group homes, or other institutional-type settings were not asked to complete the FAD because the youths were not living in a family setting. This accounted for the majority of the missing data. Though SPSS MVA yields mean substitutions, it was not necessary to substitute for missing data in this study because the sample size (n = 179 for Aim 1 and n = 114 for Aim 2) was large enough to power the statistical analyses at .80, as indicated in sample size justification under the data analysis plan in

chapter three. Missing data for FAD were excluded in the statistical analyses for Aims 2 and 3. Therefore, findings can only be generalized to adolescents who were in a home-setting during data collection and not in residential facilities or group homes.

Based on the results of MVA (refer to Appendix F, Table F2 for details), it was assumed that data were missing completely at random (MCAR), which tends not to pose any analytical difficulties (Tabachnick & Fidell, 2007). The MCAR test considers all of the variables specified, and all of the missing data patterns in those variables (Tabachnick & Fidell, 2007). Table F2 shows a list of each of the 12-month variables, a list of other variables fed into the MVA syntax with that 12-month variable, and the Little's MCAR test observed (i.e. Chi-Square value or χ^2-tests, df, and p). A statistically non-significant p-value is desired for Little's MCAR (Tabachnick & Fidell, 2007). First, separate MVA analyses for each 12-month dependent variable with all the baseline dependent variables were analyzed. For example, 12-month Total CAFAS with baseline total CAFAS, Internalizing, Externalizing, and Total CBCL were examined. Little's MCAR was not significant (χ^2 (8, N = 126) = 9.906, p = .272). Second, a separate MVA for each 12-month dependent variable and the baseline independent variables were analyzed. For example, 12-month total CAFAS with baseline BERS and FAD were examined. Little's MCAR was not significant (χ^2 (8, N = 126) = 1.918, p = .983). These findings indicate that, there were no significant differences in baseline Internalizing CBCL, Externalizing CBCL, Total CBCL, total CAFAS, FAD, and BERS scores among adolescents who provided 12 months CAFAS and those who did not. Similar results were found for 12 months Internalizing CBCL, Externalizing CBCL, and Total CBCL scores. Third, 12-month BERS with total CAFAS, Internalizing, Externalizing, and Total CBCL scores were examined. Little's MCAR was not significant (χ^2 (8, N = 124) = 10.323, p = .243). That is, there were no significant differences in baseline total CAFAS, internalizing, externalizing, and Total CBCL, FAD, and BERS between adolescents who provided 12-month BERS and those who did not. Similarly, there were no significant differences in baseline Internalizing, Externalizing, and Total CBCL scores between adolescents who provided 12-month

FAD and those who did not. Additionally, there were no significant differences in age at enrollment between adolescents who provided 12-month outcome data, BERS, and FAD.

Assessing for outliers and their effects. Univariate outliers were assessed using calculation of standardized or z-scores and through graphical representation such as Box-plots. Obtained z-scores were all less than the critical values and support that there were no univariate outliers. Similar results were confirmed by examination of the box plots. Multivariate outliers were assessed using Mahalanobis distance. Using a significance level of $p < .001$ criterion for Mahalanobis distance, no multivariate outliers among the quantitative variables were found. Univariate normality was assessed by examining histograms and normal Q-Q plots, and conducting Kolmogorov-Sminorv tests. Results of these distributional tests led to transformation of baseline caregiver-rated Externalizing Child Behavioral Checklist (CBCL) scores to reduce negative skewness. Following recommendations from Tabachnick and Fidell (2007), the baseline Externalizing CBCL was first reflected to a positive skew and then transformed using square root transformation. The transformed externalizing variable was used in subsequent baseline only analyses for Aim 1 but was not needed when examining change in Aim 1, or in Aims 2 or 3, as the negative skewness did not impact the normality of the standardized residuals in the models fit (Aim 3).

Testing assumptions of multivariate multiple regression (MVMR). There were 126 adolescents whose caregivers participated in the 12 months interview. Of this number, 114 adolescents had complete data on Internalizing CBCL, Externalizing CBCL, Total CBCL, Child and Adolescent Functional Assessment Scale (CAFAS), Behavioral and Emotional Rating Scales (BERS), and Family Assessment Device (FAD). These 114 cases were included in MVMR hypothesis testing for Aim 2. Prior to analyzing the regression results, the scatterplots of standardized residuals versus predicted values were examined to test the multivariate assumptions of normality, linearity, and homoscedasticity. The plots were elliptical in shape with concentration of the scores along the center of the plot, indicating that assumptions of normality,

linearity, and homoscedasticity were met (Tabachnick & Fidell, 2007). No multivariate outliers were identified. The independent variables, including caregiver-rated BERS and FAD were screened for multicollinearity during modeling. The largest condition index was 15.22 and indicated that multicollinearity was not an issue (Tabachnick & Fidell, 2007). Multicollinearity among the five BERS subscales was also examined. Results are presented in Appendix I and indicated that there should not have been a problem with multicollinearity. Further, correlations among the outcome variables at baseline and then at 12 - month time points were examined separately (see Appendix M) to support that all variables were contributing to the same underlying domain of behavior and functioning in a similar manner. In both cases, there were positive and moderate to high correlations among the outcome variables. These correlations ranged from .63 to .89 for baseline scores, and from .60 to .88 for 12-month scores.

Sample Characteristics

Demographic characteristics of the adolescents and their caregivers at baseline are presented in Table 4. Approximately half of the adolescents were African American (n = 94; 52%) and most were male (n = 127; 71%). The mean age of adolescents was 14.05 years (SD = 1.42). Of this sample, 52.5% of the adolescents were referred to the Dawn Project from the juvenile justice system, 29% from child welfare, 10% from schools or the educational system, and 7.8% from the mental health system.

The caregivers were 86% female and 14% male. They ranged in age from 22 to 73 years (mean = 42.51 years, SD = 11.07). Of these caregivers, 31% had a high school diploma or GED. More than half of the sample came from families with incomes below $20,000. Caregivers were 60% biological parents, 16% grandparents, 12% adoptive/step-parents, 6% foster parents, 4% aunts/uncles, 1% siblings, <1% cousins, and < 1% other relatives.

Key Study Variables

Caregiver ratings of the adolescents' clinical and functional variables are presented in Table 5, and include caregiver ratings of adolescent personal strengths, family functioning, and

adolescent behavioral and social functioning at baseline and 12 months, based on the measures used in this study.

Baseline. Adolescents in the sample entered treatment with clinically serious behavioral problems and marked functional impairment, below average personal strength scores, and healthy family functioning. Thresholds for these measures have been provided here and based on the existing literature about their development and use (see the section on measures in chapter three). On the Child and Adolescent Functional Assessment Scale (CAFAS), scores of 50 to 90 indicate moderate impairment, 100 to 130 indicate marked impairment, and 140 and above indicate severe impairment. Total problems scores on the Child Behavioral Checklist (CBCL) of 60 to 63 are considered borderline clinical, and scores above 63 are considered to be in the clinical range, whereas similar T-scores on the Internalizing and Externalizing scales indicate clinically significant challenges in that area. The Behavioral and Emotional Rating Scales (BERS) scores below 90 indicate below average strength, and 90 to 110 indicate average strength. FAD scores above 2 are considered healthy.

Clinical Characteristics of the adolescents at baseline and 12 months are presented in Table 5. Using the above reference points for the instruments, adolescents had higher levels of externalizing behavioral problems (M = 69.92, SD = 11.97) than internalizing behavioral problems (M = 61.14, SD = 12.03) as indicated by their baseline mean scores on the CBCL. These adolescents also presented with marked functional impairment on the CAFAS (M = 126.42, SD = 50.89); below average personal strengths on the BERS (M = 88.46, SD = 18.88); and above average scores on the FAD (M = 2.90; SD = .49).

12 months. On the CBCL, the adolescent mean internalizing score was lower than at baseline and was in the borderline clinical range. There was also a lower mean for the externalizing and total behavior problems scores, but they remained in the clinical range.

Table 4

Demographic Characteristics of Adolescents and their Caregivers at Baseline

	N	Frequency (%)	Mean (SD)	Median	Range
Demographics					
Adolescents					
Age	179		14.05(1.43)	13.92	12 – 17
Race	179				
Caucasian	85	48%			
African American	94	52%			
Gender	179				
Male	127	71%			
Female	52	29%			
Referral source					
Juvenile detention center	94	52%			
Child welfare	52	29%			
Education	18	10%			
Mental health	14	9%			
Caregivers	179				
Age			42.51(11.07)		22 – 73
Gender					
Male	25	14%			
Female	154	86%			
Highest grade achieved					
High school diploma	55	31%			
Some college, no degree	28	15.6%			
Gross household income					
$19,999 or less	94	57%			

Table 5

Clinical Characteristics of the Adolescents at Baseline and 12 months as reported by the Caregiver

Measures	Baseline			12 months		
	n	M (SD)	Min-Max	n	M (SD)	Min-Max
Internalizing T-score, CBCL	179	61.14 (12.03)	(32- 87)	126	59.08 (10.96)	(31-86)
Externalizing T-score, CBCL	179	69.92 (11.97)	(32-93)	126	66.44 (11.01)	(37-88)
Total Problem T-score, CBCL	176	69.30 (11.92)	(23-91)	126	65.72 (11.02)	(36-88)
Total CAFAS	179	126.42 (50.89)	(00-240)	126	111.03 (51.08)	(0-222)
BERS Strength Quotient	176	88.46 (18.89)	(43-134)	124	89.94 (17.66)	(47-133)
FAD score	165	2.90 (.50)	(1.5-4.0)	118	3.01 (.50)	(1.9-4)

Note: CBCL thresholds: Scores 60 to 63 indicate borderline clinical impairment and scores above 63 indicate clinical impairment. CAFAS thresholds: scores 50 to 90 moderate impairment, 100 to 130 marked impairment and 140 and above indicate severe impairment; BERS thresholds: scores below 90 indicate below-average strengths and 90 to 110 indicate average strengths. FAD thresholds: scores above 2 are considered healthy

Table 6 shows the caregiver-rated change in adolescent scores on Internalizing, Externalizing, Total CBCL, total CAFAS, BERS, and FAD. Change is defined as 12-months minus baseline scores. Using paired sample t tests, results showed that there were statistically significant improvements in adolescent scores on Internalizing, Externalizing, and Total CBCL. There were also statistically significant improvements in adolescent scores on total CAFAS and FAD. There was an increase in BERS score from baseline to 12 months. However, the difference was not statistically significant. These findings suggest that the adolescents' participation in the strength-based SOC was associated with improvement in clinical symptoms and overall functioning.

Table 6

Change in Caregiver-Rated Adolescent Scores on the CBCL, CAFAS, BERS, and FAD over 12-month time point

	N	M Difference (SD)	t	p
Measures				
Internalizing T-score, CBCL	126	-3.25 (9.70)	-3.753	.000
Externalizing T-score, CBCL	126	-3.41 (10.41)	-3.681	.000
Total Problem T-score, CBCL	123	-3.48 (9.54)	-4.509	.000
Total CAFAS	126	-17.14 (57.83)	-3.328	.000
BERS Strength Quotient	123	1.40 (19.56)	.793	.492
Average FAD score	113	.12 (.46)	2.918	.004

Note. Change = 12-month scores – Baseline scores

Hypothesis Testing

Specific Aim 1. Describe baseline differences in caregiver-rated adolescent personal strengths, family functioning, and adolescent behavioral and social functioning by adolescent demographics, caregiver type, and participation at 12 months.

Hypotheses 1a, 1b, and 1c were partially supported. Data from 179 caregivers who participated in the interview at baseline were included in hypothesis testing for Aim 1. Differences in age, race, gender, and caregiver type were found on some variables; however, there were no differences in outcome variables at baseline between adolescents whose data were included and those not included in data analyses. Detailed reports of findings are provided below.

H1a. There will be no differences in caregiver-rated adolescent personal strengths, family functioning, or adolescent behavioral and social functioning by adolescent demographics (age, gender, and race).

Age. Findings for H1a are reported in Table 7. There was a significant association between caregiver-rated adolescent behavioral and social functioning (i.e., total CAFAS) and age ($p = .033$). Pearson r indicates that there was an inverse moderate relationship between total CAFAS and age. That is, younger adolescents may have greater functional impairment compared to their older counterparts at time of enrollment into treatment. On the contrary, there were no significant associations between caregiver-rated Internalizing ($p = .820$), Externalizing ($p = .058$), and Total CBCL scores ($p = .373$), respectively, and age. Similarly, there was no significant association between caregiver-rated adolescent personal strengths ($p = .125$) or family functioning and age ($p = .229$).

Table 7

Correlations of Age with Caregiver Ratings of Adolescents Scores on all Study Measures

Measures	Age		
	n	Pearson Correlation, r	p- value
Internalizing T-score, CBCL	179	.017	.820
Externalizing T-score, CBCL	179	.142	.058
Total problem T-score, CBCL	176	-.068	.373
Total CAFAS Score	179	-.160	.033
BERS Strength Quotient	176	.116	.125
FAD score caregiver	165	-.094	.229

Race. There was a significant difference in caregiver-rated adolescent behavioral and social functioning by race. Results are displayed in Table 8. For example, there were differences in caregiver ratings of adolescents on Internalizing CBCL ($p < .001$); Externalizing CBCL ($p = .001$); Total CBCL ($p < .001$), and total CAFAS ($p < .001$) by race. For example, CAFAS thresholds indicated that AA adolescents had marked functional impairment while Caucasian had severe functional impairment. There was also a significant difference in caregiver-rated adolescent personal strengths by race (Table 8). AA adolescents came in with average personal strength scores compared to Caucasian adolescents, who had below average personal strength scores at baseline ($p = .001$). However, there was no statistically significant difference in caregiver-rated family functioning or FAD between AA and Caucasian adolescents at baseline ($p = .348$). These findings suggest that AA adolescents presented at time of enrollment into the study with better behaviors and functioning profile compared to the Caucasian adolescents. AA adolescents had fewer behavior problems, less severe functional impairments, and greater personal strengths compared to their Caucasian counterparts.

Gender. Table 9 shows that adolescent girls had significantly higher scores on Internalizing CBCL ($p = .014$), Externalizing CBCL ($p = .006$), and Total CBCL scores ($p = .050$), and lower scores on the BERS compared to adolescent boys ($p < .001$). However, there was no significant difference in caregiver ratings of the total CAFAS score ($p = .959$) and FAD ($p = .163$) between boys and girls at baseline. In other words, adolescent girls had more severe behavior problems at the time of enrollment into the study compared to adolescent boys. However, both girls and boys were similar with regards to the overall social functioning.

H1b. There will be no differences in caregiver-rated adolescent personal strengths, family functioning, or adolescent behavioral and social functioning by caregiver type (primary family member or other).

As previously mentioned in chapter three, caregiver type was collapsed into two groups: primary family member (i.e., biological, adoptive, or step-parents) and other (foster, grandparents, uncles, aunts, and cousins). Non-family caregivers of adolescents who were in residential placements were not included in data analyses. There was a significant difference in caregiver-rated adolescent scores on total CAFAS by caregiver type ($p = .008$) with primary family members reporting worse scores, as illustrated in Table 10. The differences between the two groups of caregivers on the adolescent scores on Externalizing CBCL was also significant ($p = .050$). There were no significant differences in caregiver ratings of adolescents on Internalizing CBCL, Total CBCL, BERS, and FAD scores. In other words, primary family caregivers were more likely to report that their adolescents had more externalizing behavior problems and functional impairments compared to other family caregivers.

Table 8

Differences in Caregiver Ratings of Adolescent Scores on all Study Measures Based on Race

Measures	Race	n	M	SD	t	p
Internalizing T-score, CBCL	AA	94	59.03	11.56	-2.84	.000
	Caucasian	85	64.05	12.05		
†Externalizing T-Score , CBCL	AA	94	66.46	11.91	3.50	.001
	Caucasian	85	73.20	11.21		
Total problem T-score, CBCL	AA	92	65.98	11.65	-4.04	.000
	Caucasian	84	72.94	11.19		
Total CAFAS Score	AA	94	112.98	48.41	-3.86	.000
	Caucasian	85	141.29	49.68		
BERS Strength Quotient	AA	92	93.08	19.08	3.50	.001
	Caucasian	84	83.41	17.40		
Average FAD score	AA	94	2.94	.48	.94	.348
	Caucasian	85	2.87	.51		

Note. † The t-statistic and p-value are from a test of the transformed variable (see the section on "Assessing for outliers and their effects" for details of transformation).

CBCL thresholds: Scores 60 to 63 indicate borderline clinical impairment and scores above 63 indicate clinical impairment. CAFAS thresholds: scores 50 to 90 moderate indicate impairment, 100 to 130 indicates marked impairment, and 140 and above indicate severe impairment. BERS thresholds: scores below 90 indicate below-average strengths and 90 to 110 indicate average strengths. FAD thresholds: scores above 2 are considered unhealthy.

Table 9

Differences in Caregiver Ratings of Adolescent Scores on all Study Measures Based on Gender

Measures	Gender	n	M	SD	t	p
Internalizing T-score, CBCL	Female	52	64.85	11.48	2.48	.014
	Male	127	60.01	12.01		
† Externalizing T-Score, CBCL	Female	52	73.58	11.34	-2.80	.006
	Male	127	68.43	11.94		
Total problem T-score, CBCL	Female	52	72.02	11.67	1.96	.050
	Male	124	68.16	11.89		
Total CAFAS Score	Female	52	126.73	51.93	.05	.959
	Male	127	126.29	50.68		
BERS Strength Quotient	Female	52	80.52	19.33	-3.75	.000
	Male	124	91.79	17.73		
Average FAD score	Female	52	2.92	.42	.18	.163
	Male	127	2.89	.52		

Note. † t-statistic and p-value are from a test of the transformed variable (see the section on " Assessing for outliers and their effects" for details of transformation) .

Table 10

Differences in Caregiver Ratings of Adolescent Scores on all Study Measures Based on Caregiver type

Measures	Caregiver type	n	M	SD	t	p
Internalizing T-score, CBCL	Primary	118	61.78	11.67	.53	.596
	Other	47	60.66	13.56		
† Externalizing T-Score, CBCL	Primary	118	71.24	11.08	-1.98	.050
	Other	47	66.43	13.74		
Total problem T-score, CBCL	Primary	117	70.34	11.21	1.77	.078
	Other	45	66.62	13.78		
Total CAFAS Score	Primary	118	133.56	48.79	2.69	.008
	Other	47	110	55.18		
BERS Strength Quotient	Primary	118	87.14	19.08	-1.60	.111
	Other	45	92.56	19.74		
Average FAD score - caregiver	Primary	117	2.88	.52	-1.22	.224
	Other	47	2.98	.416		

Note. † t-statistic and p-value are from a test of the transformed variable.

H1c. There will be no difference between those who provided 12-month data and those who did not on adolescent demographics, caregiver type, or caregiver-rated adolescent personal strengths, family functioning, or adolescent behavioral and social functioning.

H1c was partially supported. No significant differences on any of the outcome variables were found between the adolescents who had caregiver ratings of 12-month data and those who did not (see Appendix F, Table F2). Based on two-sample t-tests, these two groups did not differ with respect to mean behavioral and social functioning, personal strengths, or family functioning. In addition, no significant difference in mean age was noted between those who provided data and those who did not at 12 months. Adolescents with 12-months data were compared to those without on categorical baseline demographics, such as race, gender, and caregiver type using Chi-

Square tests. There were no significant differences between the two groups by race, X^2 (1) = 453, p =.501. However, there were significant differences between the two groups based on gender, X^2 (1) = 31.43, p = .000 and caregiver type, X^2(1) = 30.55, p =.000. Specifically, adolescents who did not have data at 12 months were more likely to be female and to have other family caregiver type, such as grandparent, foster, uncle/aunt, or cousin. These findings suggest that the adolescents who provided data were very similar to those adolescents whose data were not included in the analyses and that the sample for this study is representative of all the adolescents who participated in the Dawn Project Evaluation Study.

Summary of findings. Younger adolescents came into the Dawn Project with greater functional impairment compared to their older counterparts. AA adolescents had fewer behavioral problems and functional impairments, and more personal strengths than Caucasian adolescents. Adolescent girls had more behavior problems and lower strength scores than boys. Primary family caregivers were more likely to report that their adolescents had more externalizing symptoms or disruptive behavioral problems and more functional impairment than other family caregivers. These two groups of caregivers did not differ in their ratings of family functioning or adolescent personal strengths. Adolescent girls and other family caregivers were less likely to participate at 12 months; however there were no differences in the outcome variables with respect to participation at 12 months.

Specific Aim 2. Examine changes from baseline to 12 months in caregiver-rated adolescent personal strengths and family functioning as predictors of caregiver-rated adolescent behavioral and social functioning after controlling for relevant adolescent demographics and caregiver type.

The following section provides the results from hypothesis testing for Aim 2 including H2a, H2b, and H2c. SPSS 18 General Linear Model multivariate module was used for the multivariate analyses. SPSS 18 Regression module was used for the univariate analyses. For H2a, H2b, and H2c, the GLM multivariate output are presented, followed by univariate output from SPSS Regression because the latter yields all of the relevant parameter estimates including the regression weights and part correlations needed to calculate squared partial correlation, r^2. The squared part correlation, r^2, is the percent of full variance in the outcome variable uniquely attributable to the given independent variable when other variables in the equation are held constant (Norusis, 2009).

H2a. Changes in adolescent personal strengths between baseline and 12 months will be negatively associated with changes in adolescent behavioral and social functioning at 12 months. Results indicated that H2a was supported. First, a multivariate model was fit with the BERS Strength Quotient (i.e., total strengths score) and then a second set of models was fit with each of the five dimensions of the BERS separately. A third multivariate model was fit with all of the BERS subscales to assess their relative predictive ability. Results of the regression analyses are presented in the same order below. Because of the large number of tables associated with analyses of the second set of multivariate models and the similarities in the results of these models, the univariate outputs are presented in the Appendix H to avoid repetitive text. Prior to analyzing the regression results, scatterplots of standardized residuals versus predicted values for each the outcome variables were examined for multivariate assumptions of normality, linearity, and homoscedasticity. The assumptions appeared to be met. Multicollinearity may have been an issue for the multivariate fit for all of BERS subscales together even though standard collinearity

indices indicated it was not. This is discussed in more detail below after reporting the initial results, including all five BERS subscales.

Model fit with the caregiver-rated BERS Strength Quotient and the outcome variables. A multivariate multiple regression model was fit. Changes in Internalizing, Externalizing, and Total scores of the CBCL, and total CAFAS scores were outcomes. Change in adolescent personal strengths (i.e., BERS Strength Quotient) was the key independent variable. Age, race, gender, and caregiver type were included in the model as covariates. Results show that there was a significant effect of the change in BERS Strength Quotient across outcomes in the multivariate model as presented in Table 11. Using a significance level of .0125 to account for multiple testing (i.e., a Bonferroni adjustment), results from the univariate models showed that each outcome variable was significantly affected (see Tables 12, 13, 14, and 15). These models explained 17.7% of the variance of the change in Internalizing CBCL, 40.6% of the change in Externalizing CBCL, 33.7% of the change in Total CBCL, and 34.8% of the change in total CAFAS. Only the regression weight for change in BERS Strength Quotient was significantly different from zero in each univariate model. Change in BERS Strength Quotient was inversely associated with change in Internalizing, Externalizing, and Total CBCL, as well as change in total CAFAS. Age, race, gender, and caregiver type were not significant predictors in any of the univariate models. These findings suggest that improvement in adolescent personal strengths is associated with improvement in behavior problems and functional impairments irrespective of age, gender, race of the adolescents or who their caregiver may be.

Table 11

Multivariate Regression Test of the Combined Outcome Variables with Change in BERS Strength Quotient as the Key Independent Variable, Controlling for Age, Race, Gender, and Caregiver Type

Independent variable	Wilks'	p
Δ BERS Strength Quotient	.591	.000
Age	.924	.097
Race	.962	.431
Gender	.968	.520
Caregiver type	.952	.297

Note. Δ = Change defined as 12-month scores minus baseline scores

Table 12

Multiple Linear Regression with Change in BERS Strength Quotient as the Key Independent Variable and Change in Internalizing CBCL as Outcome Variable

1	Model	B	Beta	t	Sig.	r^2
	(Constant)	16.76		1.91	.058	
	Δ BERS Strength Quotient	-.19	-.40	-4.31	.000	.15
	age	-1.20	-.19	-2.05	.043	.03
	race	-1.54	-.08	-.89	.377	.01
	gender	-3.02	-.15	-1.65	.101	.02
	Caregiver type	-1.97	-.09	-1.01	.313	.01

R^2 = 17.7%; F(5, 105) = 4.50, p = .001

Table 13

Multiple Linear Regression with Change in BERS Strength Quotient as the Key Independent Variable and Change in Externalizing CBCL as Outcome Variable

2	Model	B	Beta	t	Sig.	r^2
	(Constant)	-12.86		-1.62	.109	
	Δ BERS Strength Quotient	-.31	-.59	-7.55	.000	.34
	age	.46	.02	.26	.794	.00
	race	1.24	.06	.79	.432	.00
	gender	.04	.00	.02	.982	.00
	Caregiver type	.62	.09	1.17	.243	.01

R^2 = 40.6%; F(5, 105) = 14.33, p = .000

Table 14

Multiple Linear Regression with Change in BERS Strength Quotient as the Key Independent Variable and Change in Total CBCL as Outcome Variable

3	Model	B	Beta	t	Sig.	r^2
	(Constant)	-3.61		-.47	.638	
	Δ BERS Strength Quotient	-.27	-.58	-6.79	.000	.30
	age	-.01	-.00	-.01	.991	.00
	race	.45	.03	.29	.766	.00
	gender	-1.06	-.06	-.67	.506	.00
	Caregiver type	.11	.01	.07	.947	.00

R^2 = 33.7%; F(5, 102) = 10.38, p = .000

Table 15

Multiple Linear Regression with Change in BERS Strength Quotient as the Key Independent Variable and Change in Total CAFAS as Outcome Variable

4	Model	B	Beta	t	Sig.	r^2
	(Constant)	-77.26		-1.58	.118	
	Δ BERS Strength Quotient	-1.74	-.57	-6.84	.000	.29
	age	3.98	.09	1.22	.227	.01
	race	-4.63	-.04	-.48	.634	.00
	gender	-5.68	-.05	-.56	.580	.00
	Caregiver type	15.23	.12	1.39	.165	.00

$R^2 = 34.8\%$; $F(5, 105) = 11.230$, $p = .000$

Summary of findings. The multivariate model fit for change in caregiver-rated BERS Strength Quotient was significant (Table 11). Each outcome variable was affected as indicated in the univariate output. Change in BERS Strength Quotient was a significant predictor of each outcome variable, namely, change in Internalizing CBCL, change in Externalizing CBCL, change in Total CBCL, and change in total CAFAS. This means that an increase in adolescent personal strengths was associated with fewer behavioral problems and less functional impairment in adolescents with disruptive disorders.

Model fit with each of the five dimensions of the BERS separately. The five BERS subscales include Interpersonal Strength, Family Strength, Intrapersonal Strength, School Functioning, and Affective Strength. Multivariate multiple regression models were fit with changes in Internalizing, Externalizing, and Total CBCL scores, and total CAFAS scores as outcomes. Change in each of the BERS subscales were modeled separately as the key independent variables. Age, race, gender, and caregiver type were included as covariates.

Summary of findings. Using Wilks' Lambda criterion and a significance level of .05, there was a significant effect of change in each of the BERS subscales. Results of the multivariate tests are summarized in Table 16. For each subscale, univariate models were examined to

determine which outcome variables were affected. Using a significance level of .0125 to account for multiple testing (i.e., a Bonferroni adjustment), there was a significant effect on each outcome variable. Results for each BERS subscale is presented in Appendix H (Tables H1 to H20) and indicated that there were significant negative associations between each of the BERS subscales and each outcome variable. That is, increases in Interpersonal Strength, Family Involvement, Intrapersonal Strength, School Functioning, and Affective Strength were associated with lower Internalizing, Externalizing, and Total Problems scores, as well as less functional impairment. However, increase in school functioning was not significantly associated with change in Internalizing CBCL. Age, race, gender, and caregiver type were not significant predictors in any of these univariate models (see Appendix H for tables of the univariate models).

Table 16

Results of Multivariate Regression Tests for Each of the BERS Subscales Modeled Separately as the Key Independent Variable, Controlling for Age, Race, Gender, and Caregiver Type

BERS Subscales	Wilks'	p
Δ Interpersonal Strength	.491	.000
Δ Family Involvement	.633	.000
Δ Intrapersonal Strength	.781	.000
Δ School Functioning	.806	.000
Δ Affective Strength	.781	.000

Note. Δ = Change defined as 12- month scores minus baseline scores

Model fit incorporating all BERS subscales together to assess their relative predictive ability. Prior to fitting a multivariate model with all five BERS subscales in one step, multicollinearity among the five subscales was assessed. The results of the collinearity diagnostics are presented in Appendix I. Despite the fact that the bivariate correlations among the BERS subscales were positive and ranged from moderate to highly correlated (i.e., .42 to .82), results from the collinearity indices indicated that there should not be a problem with multicollinearity among the BERS subscales. This discrepancy will be discussed in greater detail at the end of this section.

Next, a multivariate regression model was fit. Changes in Internalizing, Externalizing, Total CBCL scores, and total CAFAS scores were outcomes. Changes in each of BERS subscales were the key independent variables. Age, race, gender, and caregiver type were covariates. The key independent variables and covariates were all entered into the model in one step. Using Wilks' Lambda criterion and a significance level of .05, there was significant effect of change in Interpersonal Strength across all outcomes as indicated in Table 17. However, there was no significant effect of change in Family Involvement, Intrapersonal Strength, School functioning, or

Affective Strength on the combined outcome variables in the multivariate model. Univariate models were examined to determine which of the outcome variables were affected. The results are presented in Tables 18, 19, 20, and 21. These results suggest that there may be a relationship between the set of independent variables including change in Interpersonal Strength, age, race, gender, and caregiver type with the set of outcome variables. There may not be similar relationships between each of the other BERS subscale, (change in Family Involvement, Intrapersonal Strength, School functioning, or Affective Strength) and the combined outcome variables.

Again, using a significance level of .0125 to account for multiple testing using a Bonferroni adjustment, there was a significant overall effect on each outcome variable. The univariate model for Internalizing scores was overall statistically significant ($p = .010$) and explained 19.7% of the variance in change in Internalizing CBCL; however, no regression weights were significantly different from zero, so there was no significant predictor of change in Internalizing CBCL in this model. On the other hand, results for the Externalizing, Total CBCL, and total CAFAS showed that these univariate models explained 52.8%, 37.7%, and 38.2% of the variance, respectively, and that there was a significant negative association between change in Interpersonal Strength and change in Externalizing CBCL, Total CBCL scores, and change in total CAFAS scores. Neither changes in Family Involvement, Intrapersonal Strength, School Functioning, Affective Strength or the covariates were significant predictors in this model. The findings indicate that an increase in Interpersonal Strength may lead to improvement in behavior problems and functional impairment. However, similar increases in Family Involvement, Intrapersonal Strength, School Functioning, and Affective Strength may not be associated with fewer behavior problems and less functional impairments.

That change in Interpersonal Strength was the only significant predictor of changes in Internalizing, Externalizing, Total CBCL scores and total CAFAS scores (i.e., change in adolescent behavioral and social functioning) was surprising. The collinearity diagnostics did not

suggest a problem with multicollinearity. However, further investigations revealed subtle indications that there might have been a problem with multicollinearity. First, the correlation matrix showed a number of Pearson correlations as high as .71 to .82 (see Appendix I and Table I1). Second, there were changes in direction of the regression weights for two of the BERS subscales from negative to positive. The BERS subscales affected were change in Intrapersonal Strength and Affective Functioning (see Tables 18 and 19). Third, there were large discrepancies between sum of all r^2 and R^2 in the univariate models. For example, the sum of the r^2 added up to .10 or 10% of variance accounted for the outcome compared to R^2 of 19.7% in Table 18.

Guided by the literature and recommendations from Tabachnick and Fiddell (2007), attempts were made to address potential multicollinearity concerns. High correlations between two variables (i.e., change in Interpersonal Strength and Family Involvement as displayed in Appendix I) indicate that they provide very similar information (Tabachnick& Fiddell, 2007). Therefore, model reductions were attempted based on this theoretical assumption. First, change in Interpersonal Strength was removed from the model and the multivariate regressions repeated. There was only a significant main effect of change in Family Involvement subscale scores in the multivariate model. Of all the four BERS subscale scores, change in Family Involvement was a significant predictor of outcomes. Next, both change in Interpersonal Strength and Family Involvement were removed from the univariate models. None of the three remaining BERS subscales, including change in Intrapersonal Strength, change in School Functioning, or change in Affective Strength, were significant predictors of any of the outcomes. A third attempt was made to assess the effect of change in School Functioning and change in Affective Strength. There was a significant main effect for each subscale in the multivariate model. Univariate analyses indicated that the overall model was significant for change in Externalizing, Total CBCL, and Total CAFAS scores, but not for change in Internalizing CBCL scores. Although it certainly appears that change in Interpersonal Strength is the key driver for the significant effects noted for change in the BERS, further investigation is warranted in the future.

Table 17

Multivariate Regression Test of the Combined Outcome Variables with Change in All BERS Subscales Modeled Together as the Key Independent Variables, Controlling for Age, Race, Gender, and Caregiver Type

BERS subscales	Wilks'	p
Δ Interpersonal Strength	.721	.000
Δ Family Involvement	.958	.419
Δ Intrapersonal Strength	.909	.073
Δ School Functioning	.976	.702
Δ Affective Functioning	.988	.902
Age	.908	.071
Race	.972	.636
Gender	.977	.711
Caregiver type	.957	.411

Note. Δ = Change defined as 12-month scores - baseline scores

Table 18

Multiple Linear Regression with Change in all Five BERS Subscales Scores As Key Independent Variables and Change in Internalizing CBCL as Outcome Variable

1	Model	B	Beta	t	Sig.	r^2
	(Constant)	18.69		2.03	.046	
	Δ Interpersonal Strength	-.11	-.04	-.19	.843	.00
	Δ Family Involvement	-.62	-.22	-1.40	.164	.02
	Δ Intrapersonal Strength	.24	.09	.60	.549	.00
	Δ School Functioning	-.73	-.26	-1.47	.145	.02
	Δ Affective Strength	-.04	-.01	-.11	.911	.00
	age	-1.44	-.22	-2.29	.024	.04
	race	-.49	-.03	-.27	.784	.00
	gender	-2.73	-.14	-1.40	.163	.02
	Caregiver type	-1.04	-.05	-.49	.628	.00

R^2 = 19.7%; F(9, 95) = 2.59, p = .010

Table 19

Multiple Linear Regression with Change in BERS Subscales Scores as the Key Independent Variables and Change in Externalizing CBCL as Outcome Variable

2	Model	B	Beta	t	Sig.	r^2
	(Constant)	-6.59		-.87	.386	
	Δ Interpersonal Strength	-2.48	-.77	-5.45	.000	.15
	Δ Family Involvement	-.13	-.04	-.31	.755	.00
	Δ Intrapersonal Strength	.45	.15	1.23	.222	.01
	Δ School Functioning	-.35	-.11	-1.17	.245	.01
	Δ Affective Strength	.27	.09	.83	.411	.00
	age	.34	.05	.65	.515	.00
	race	1.26	.07	.85	.397	.00
	gender	-.81	-.04	-.51	.612	.00
	Caregiver type	-1.69	-.08	-.97	.335	.00

R^2 = 52.8%; F (9, 95) = 11.80, p = .000

Table 20

Multiple Linear Regression with Change in BERS Subscales Scores as the Key Independent Variables and Change in Total CBCL as Outcome Variable

3	Model	B	Beta	t	Sig.	r^2
	(Constant)	.64		.08	.936	
	Δ Interpersonal Strength	-1.41	-.49	-2.97	.004	.06
	Δ Family Involvement	-.20	-.08	-.48	.633	.00
	Δ Intrapersonal Strength	-.17	-.06	-.45	.651	.00
	Δ School Functioning	-.32	-.11	-1.03	.305	.00
	Δ Affective Strength	.21	.08	.63	.531	.00
	age	-.27	-.04	-.50	.618	.00
	race	.71	.04	.46	.650	.00
	gender	-1.48	-.08	-.89	.378	.01
	Caregiver type	-.49	-.02	-.26	.794	.00

R^2 = 37.7%; F(9, 92) = 6.19, p = .000

Table 21

Multiple Linear Regression with Change in BERS Subscales Scores as the Key Independent Variables and Change in Total CAFAS as Outcome Variable

4	Model	B	Beta	t	Sig.	r^2
	(Constant)	-75.63		-1.47	.144	
	Δ Interpersonal Strength	-9.34	-.49	-3.03	.003	.06
	Δ Family Involvement	-.00	.00	-.00	.999	.00
	Δ Intrapersonal Strength	-1.91	-.11	-.78	.438	.00
	Δ School Functioning	-.82	-.04	-.41	.683	.00
	Δ Affective Strength	.08	.01	.04	.971	.00
	age	4.33	.11	1.24	.218	.01
	race	-4.33	-.04	-.43	.668	.00
	gender	-10.19	-.08	-.94	.349	.01
	Caregiver type	10.39	.08	.88	.384	.01

R^2 = 38.2%; F(9, 95) = 6.52, p = .000

Summary of findings. Multivariate multiple regression was fit with all of the BERS subscales scores together to assess their relative contribution in predicting change in the outcome variables. There was a significant effect of change in Interpersonal Strength in the multivariate model; however, there were no significant effects of change in Family Involvement, Intrapersonal Strength, School Functioning, or Affective Strength subscales in the multivariate model. The overall models were significant for each of the outcomes. However, only change in Interpersonal Strength was significant in these models, having a significant negative association with change in Externalizing CBCL, change in Total CBCL, and change in total CAFAS.

H2b. Changes in family functioning between baseline and 12 months will be negatively associated with changes in adolescent behavioral and social functioning at 12 months.

H2b was not supported. A multivariate multiple regression model was fit. Changes in Internalizing, Externalizing, Total CBCL scores, and the total CAFAS scores were the outcomes. Change in family functioning was the key independent variable. Age, race, gender, and caregiver type were included as covariates. The independent variable and covariates were entered into the model in one step. Using Wilks' Lambda criterion and a significance level of .05, there was no significant effect of change in family functioning on the combined outcome in the multivariate model (see Table 22). Though not a primary focus, it was noted that there was a significant main effect of age in the multivariate model. Univariate analyses were explored to examine if age was a significant predictor of any of the individual outcome variables. Neither age nor change in family functioning was a significant predictor in the univariate models.

Table 22

Multivariate Regression Test of the Combined Outcome Variables with Change in Family Functioning as the Key Independent Variable, Controlling for Age, Race, Gender, and Caregiver Type

Independent variables	Wilks'	p
Δ Family Functioning	.939	.171
Age	.905	.038
Race	.930	.116
Gender	.973	.599
Caregiver type	.956	.326

Note. Δ = Change defined as 12-month scores - baseline scores

Summary of findings. Hypothesis 2b was not supported. There was no significant association between changes in caregiver ratings of family functioning and changes in adolescent behavioral and social functioning.

H2c. The strength and direction of predictors will not vary by race (African American versus Caucasian).

There was not sufficient evidence to reject H2c. First, the result of analysis of change in adolescent personal strengths by race interaction term is presented (Table 23). A multivariate multiple regression model was fit. Changes in Internalizing, Externalizing, Total CBCL scores, and total CAFAS scores were outcomes. Changes in adolescent personal strengths and its interaction with race (*ΔBERS x Race)* were the key independent variables. Age, race, and caregiver type were included as covariates.

Using Wilks's Lambda criterion and a significance of .05, there was no significant effect of the interaction term, *Δ* BERS x Race in the multivariate model. Thus, univariate models were not fit. The main effect of change in adolescent personal strengths remained significant as in H2a (see Table 11). The results indicated that race did not make a difference in the strength and direction of predictors.

Table 23

Multivariate Regression Test of the Combined Outcome Variables with Change in BERS Strength Quotient and *ΔBERS x Race* as the Key Independent Variables, Controlling for Age, Race, Gender, and Caregiver Type

Independent Variables	Wilks'	p
ΔBERS x Race	.969	.538
Δ BERS Strength Quotient	.714	.000
Age	.918	.076
Race	.961	.419
Gender	.956	.346
Caregiver type	.956	.326

Note. Δ = Change defined as 12-month scores - baseline scores

Second, the result of analysis of change in family functioning by race interaction term is presented in Table 24. A multivariate multiple regression model was fit. Changes in Internalizing, Externalizing, Total CBCL scores, and total CAFAS scores were outcomes. Change in family functioning by race (Δ FAD x Race) and change in FAD were the key independent variables. Age, race, gender, caregiver type were included as covariates. All independent variables and the covariates were entered into the model in one step.

There was no significant effect of the interaction term, Δ FAD x Race, across outcomes in the multivariate model. Additionally, there was no significant effect of change in family functioning similar to H2b (see Table 24). In other words, race did not make a difference in the strength and direction of predictors. Increases in adolescent personal strengths were associated with improvements in behavior problems and functional impairment, irrespective of whether the adolescent was African American or Caucasian. Similarly, change in family functioning was not associated with change in behavior and social functioning irrespective of the race of the adolescent. Results indicate that there was a significant main effect of age in this multivariate

model as in Table 22. That is, there may be a relationship between age and the outcome variables. Univariate models were explored to examine if age was a significant predictor of any of the individual outcome variables; it was not.

Summary of findings. There was not sufficient evidence to reject H2c. The strength and direction of predictors did not vary by race (African American versus Caucasian). Specifically, the interaction term was not significant. Change in adolescent personal strengths remained a predictor and was negatively associated with change in Internalizing CBCL, change in Externalizing CBCL, Total CBCL scores, and total CAFAS scores. Change in family functioning was not a significant predictor of any of the four outcomes as noted in Hypothesis 2b.

Table 24

Multivariate Regression Test of Change in Family Functioning Δ FAD x Race Interaction Term as the Key Independent Variables, Controlling for Age, Race, Gender, and Caregiver Type

Independent Variables	Wilks'	p
Δ FAD x race	.961	.393
Δ Family Functioning	.970	.547
Age	.905	.038
Race	.930	.116
Gender	.973	.599
Caregiver type	.956	.326

Note. Δ = Change defined as 12-month scores - baseline scores

MVMR with the group of 99 adolescents who had no change in caregiver type at baseline and 12 months. Similar MVMR analyses as in H2a H2b, and H2c were repeated for the group of 99 adolescents who had no change in caregiver type at baseline and 12 months. In general, there were no substantive differences between the group of 99 adolescents and the entire sample of 114 adolescents, 15 of whom had a change in caregiver type at baseline and 12 months, although the R^2 values (percent of variance in outcome explained by the overall univariate model)

were larger for most of the univariate models for this group of 99 adolescents. It is unclear what larger R^2 means. Differential findings specific to each hypotheses are provided below.

H2a. BERS subscales modeled separately. Compared to the 114 adolescents, the following differences were observed for the 99 adolescents. First, for the School Functioning subscale of the BERS, the univariate model for change in Internalizing CBCL was not significant $F(5, 87) = 2.69$, $p = .026$, which is greater than the Bonferroni adjusted p value of .0125, and indicated that this univariate model may not predict change in this outcome. Second, there was a significant effect of age in the multivariate fit for Intrapersonal Strength and Affective Functioning subscales for the large sample of 114 adolescents, but not for the smaller sample of 99 adolescents. Again, it is unclear what the finding regarding age means.

H2b. The regression weight (B) for change in family functioning was significantly different from zero for change in Total CBCL ($p = .006$) and total CAFAS scores ($p = .009$).

Aim 3

Two questions related to the comparison of caregiver and adolescent ratings were originally planned for Exploratory Aim 3 and are stated below. A third question was added.

1. Are there mean differences between caregiver and adolescent ratings of adolescent personal strengths, family functioning, and adolescent behavior and social functioning and are these differences smaller at 12 months than at baseline?

2. Are there differences between caregiver and adolescent ratings of the strength of the association of adolescent personal strengths and family functioning with adolescent behavioral and social functioning?

3. What are the bivariate correlations between caregiver and adolescent ratings of adolescent personal strengths, family functioning, and adolescent behavior problems?

Preliminary analyses: As mentioned in chapter three, all available adolescent-rated data, including the Youth Self-Report Questionnaire (YSR), Behavioral and Emotional Rating Scale (BERS), and Family Assessment Device (FAD) were included in this analysis. Prior to investigating the questions posed for Exploratory Aim 3, the adolescent-rated scores were screened for missing data, outliers, and assumptions of normality, linearity, and homoscedasticity. Additionally, adolescent-rated BERS scores were examined for internal consistency reliability. Results showed that more than 5% of data were missing for the adolescent-rated YSR, BERS, and FAD at baseline and 12 months. However, data appeared to be missing completely at random based on Little's MCAR tests ($p > .05$) and the fact that no significant differences in the outcome variables were found between adolescents who provided data at 12 months and those who did not. With the use of a $p < .001$ criterion for Mahalanobis distance, no univariate outliers, X^2 (2) = 9.80, or multivariate outliers, X^2 (6) = 17.64 were identified among the cases were identified. Normality was assessed for variables by inspection of histograms and Kolmogorov-Sminorv (K-S) test. Obtained K-S all had p values greater than .05 and indicated that lack of normality was

not an issue. Further, scatterplots of standardized residuals, versus predicted values, for each continuous variable were examined to test the multivariate assumptions of normality, linearity, and homoscedasticity. Assumptions appeared to be met. Multicollinearity did not appear to be an issue among BERS and FAD scores. Caregiver ratings of scores on the CBCL, BERS, and FAD were already assessed prior to analyses for Aims 1 and 2.

Using the dataset of all 179 adolescents, Table 25 shows the number of adolescents who had data for Aim 3, their mean scores on YSR, BERS Strength Quotient, and FAD at baseline and 12 months time points. The adolescent ratings of behavior problems were in the borderline clinical range at baseline with even fewer behavior problems at 12 months. They reported above average strength scores at baseline and superior strength scores at the 12–month time points. They reported relatively healthy family functioning but rated this slightly lower (M = 2.80, SD = .48) compared to their caregivers reports (M = 2.90, SD = .50; see Table 5). The mean difference is illustrated in Figure 3.

Table 25

Adolescent-Ratings of the YSR, BERS, and FAD at Baseline and 12 Months

	Mean	N	Std. Deviation
Baseline Internalizing T-score, YSR	50.18	154	12.35
12 months T-score, YSR	48.28	102	11.44
Baseline Externalizing T-score, YSR	60.69	154	12.13
12 months T-score, YSR	59.16	102	10.46
Baseline Total problem T-score, YSR	59.19	154	12.32
12 months Total problem T-score, YSR	57.14	102	11.17
Baseline BERS Strength Quotient	117.15	105	25.26
12 months BERS Strength Quotient	123.76	21	22.01
Baseline FAD	2.80	147	.48
12 months FAD	2.94	99	.51

Note. YSR: Youth Self Report

Changes in YSR, BERS, and FAD scores from baseline to 12 months, based on the adolescent ratings, were examined. Using a significance level of .05, the adolescents reported a significant improvement in internalizing ($p = .044$) and total behavior ($p = .008$) problems, as well as higher family functioning ($p = .034$) from baseline to 12 months; however, there were no significant change in externalizing behavior problems ($p = .128$), and personal strength ($p = .198$) from baseline to 12 months.

Internal consistency reliability for adolescent-rated BERS Strength Quotient. Given that adolescents in the Dawn Project Evaluation Study (DPES) completed the caregiver version of the BERS, the internal consistency reliability for the adolescent-rated BERS Strength Quotient and subscales scores at baseline and 12 months were examined. Cronbach's alpha using 105 adolescents who provided data at baseline are presented in Table 26. Evidence of reliability was supported by Cronbach's alpha of .97 for the overall subscale; .94 for the Interpersonal Strength subscale, .83 for the Family Involvement subscale, .88 for Intrapersonal Strength, .91 for School Functioning, and .79 for Affective Strength. Cronbach's alpha .70 is acceptable (DeVon, et al., 2007). Cronbach's alpha for a smaller sample of adolescents (n = 21) who provided 12 months BERS are presented in Table 27. The values for Cronbach's alpha were .97 for the overall subscale; .93 for the Interpersonal Strength subscale, .89 for the Family Involvement subscale, .89 for Intrapersonal Strengths, .86 for school functioning, and .83 for Affective strength.

Table 26

Cronbach's Alpha for Adolescent-rated BERS Subscales as Baseline

BERS subscales	**Mean (SD)**	**Cronbach's alpha**	**# items**
BERS Scale	106.87 (41.56)	.97	52
Interpersonal Strength	26.69 (13.52)	.94	15
Family Involvement	20.56 (8.76)	.83	10
Intrapersonal Strength	24.30 (9.32)	.88	11
School Functioning	17.98 (8.65)	.91	9
Affective Functioning	14.33 (5.35)	.79	7

Cases = 105; Excluded = 74; Total = 179

Table 27

Cronbach's Alpha for Adolescent-rated BERS Subscales at 12 Months

BERS subscales	Mean (SD)	Cronbach's alpha	# items
BERS Scale	109.00 (31.19)	.97	52
Interpersonal Strength	30.05 (9.03)	.93	15
Family Involvement	22.25 (10.31)	.89	10
Intrapersonal Strength	22.81 (6.54)	.89	11
School Functioning	18.29 (5.31)	.86	9
Affective Functioning	14.70 (4.20)	.83	7

Exploratory Aim 3, Question 1. Are there mean differences between caregiver and adolescent ratings of adolescent personal strength, family functioning, and adolescent behavioral and social functioning and are these differences smaller at 12 months than at baseline?

Mean differences were found between caregivers and adolescents and the differences were the same at baseline and 12 months. Prior to fitting the models, the data were restructured to allow for statistical analyses using linear mixed models. The adolescents' and caregivers' ratings of BERS Strength Quotient, FAD, CBCL and YSR scores were combined with one record per subject and time point. Mixed-effects model were then fit for each outcome variable with informant type (i.e., caregiver, 1 and adolescent, 2), time, and their interaction (Informant type x Time) as predictors. Results of parameter estimates for the model are displayed in Tables 28, 29, 30, 31, and 32 with the corresponding graphical illustrations in Figures 2, 3, 4, 5, and 6. Regression estimates indicate that there were significant mean differences between caregivers' and adolescents' ratings for the BERS and combined CBCL and YSR, but not for FAD scores.

Figures 2, 3, 4, 5, and 6 indicated that, on the average, caregivers rated the adolescents as worse on all measures except family functioning compared to the adolescents themselves. In other words, the adolescents were more likely than their caregivers to report that they had fewer behavior problems and greater personal strengths scores. In the figures, the y axis shows the

outcomes being examined, such as the BERS, Internalizing, Externalizing, and Total CBCL or YSR, and FAD scores. Time refers to data collection point, baseline or 12 months labeled. Informant type refers to whether the data were provided by caregivers' or adolescents' reports. Each measure was examined separately using linear mixed models. Using a significance level of .05, the interaction term was not significant for any of the variables modeled, namely, BERS, combined CBCL and YSR, and FAD scores. In summary, the findings indicated that there were mean differences between adolescent and caregiver ratings on BERS, CBCL, YSR, and FAD scores. Further, the differences between adolescents and caregivers were the same at baseline and 12 months.

Table 28

Mixed Model Analysis: Parameter Estimates of Fixed Effects Time, Informant Type, and Their Interaction as Predictors and BERS Scores as Outcome Variable

				95% Confidence Interval	
Parameter	Estimate	t	Sig.	Lower Bound	Upper Bound
Intercept	124.85	28.74	.000	116.30	133.39
Time	-7.73	-1.69	.093	-16.77	1.31
Informant type	-35.45	-7.55	.000	-44.69	-26.21
Time x Informant type	6.25	1.24	.218	-3.73	16.24

Table 29

Mixed Model Analysis: Parameter Estimates of Fixed Effects Time, Informant Type, and Their Interaction as Predictors and FAD Scores as Outcome Variable

				95% Confidence Interval	
Parameter	Estimate	t	Sig.	Lower Bound	Upper Bound
Intercept	2.94	57.99	.000	2.84	3.04
Time	-.13	-2.38	.018	-.24	-.02
Informant type	.07	1.05	.294	-.06	.19
Time x Informant type	.01	.08	.938	-.14	.15

Table 30

Mixed Model Analysis: Parameter Estimates of Fixed Effects Time, Informant Type, and Their Interaction as Predictors and Internalizing T-Scores as Outcome Variable

				95% Confidence Interval	
Parameter	Estimate	t	Sig.	Lower Bound	Upper Bound
Intercept	48.64	41.46	.000	46.32	50.94
Time	2.34	2.26	.025	.29	4.38
Informant type	10.58	8.36	.000	8.08	13.07
Time x Informant type	1.09	.79	.428	-1.62	3.81

Table 31

Mixed Model Analysis: Parameter Estimates of Fixed Effects Time, Informant Type, and Their Interaction as Predictors and Externalizing T-Scores as Outcome Variable

				95% Confidence Interval	
Parameter	Estimate	t	Sig.	Lower Bound	Upper Bound
Intercept	59.16	50.62	.000	56.86	61.46
Time	1.87	1.71	.089	-.29	4.02
Informant type	7.59	6.02	.000	5.12	10.08
Time x Informant type	1.53	1.05	.296	-1.35	4.40

Figure 2. Chart of Mean Differences between Caregiver and Adolescent Ratings of BERS Strength Quotient at Baseline and 12 Months

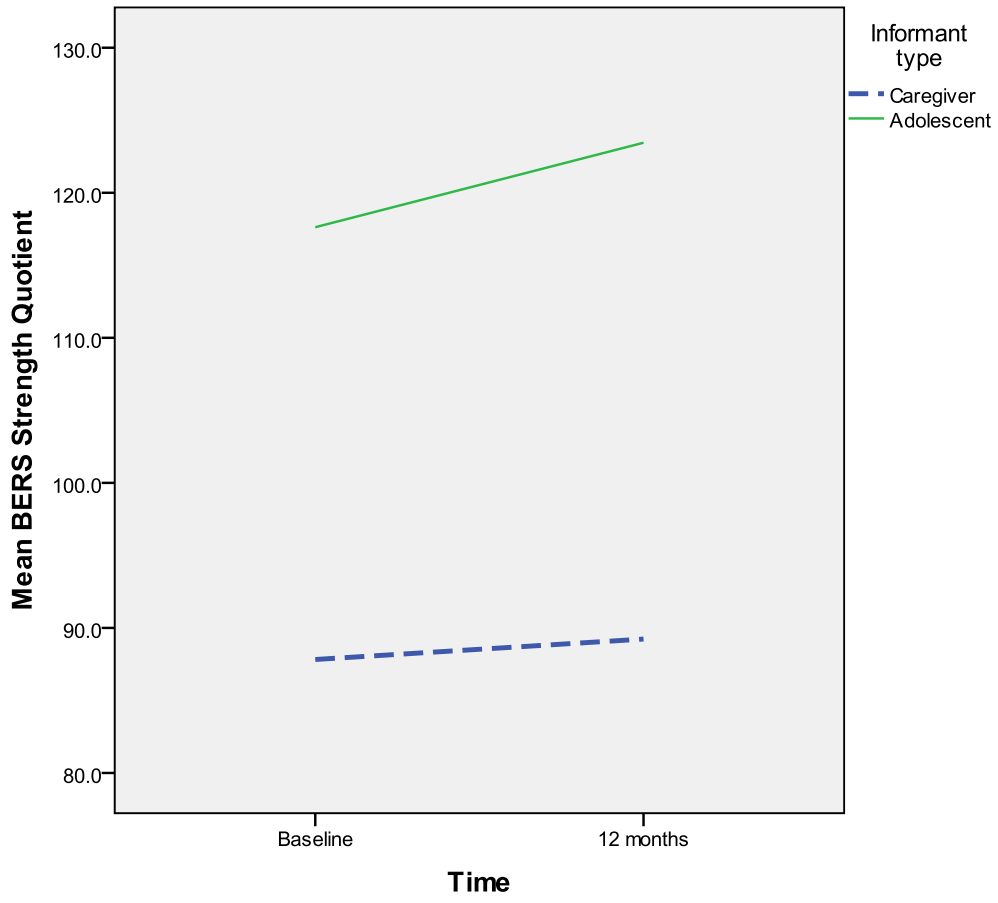


Figure 3. Chart of Mean Differences between Caregiver and Adolescent Ratings of FAD Scores at Baseline and 12 Months

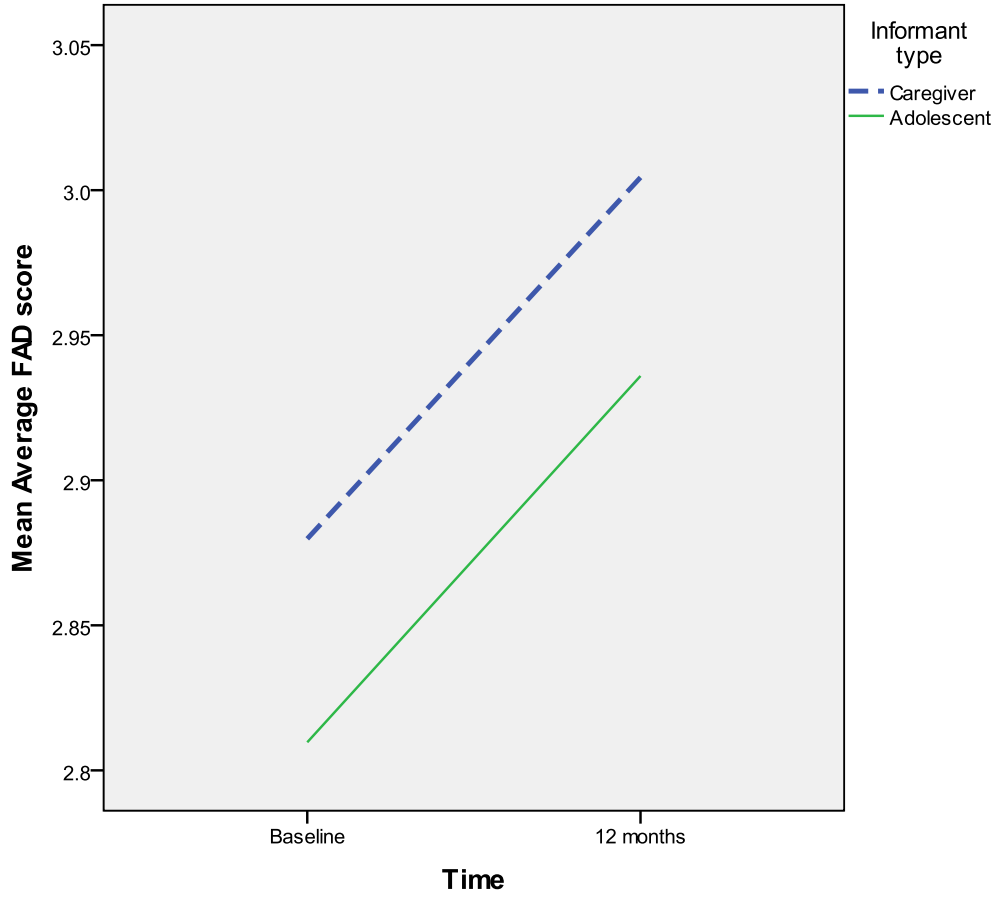


Figure 4. Chart of Mean Differences between Caregiver and Adolescent Ratings of Internalizing T-Score at Baseline and 12 Months

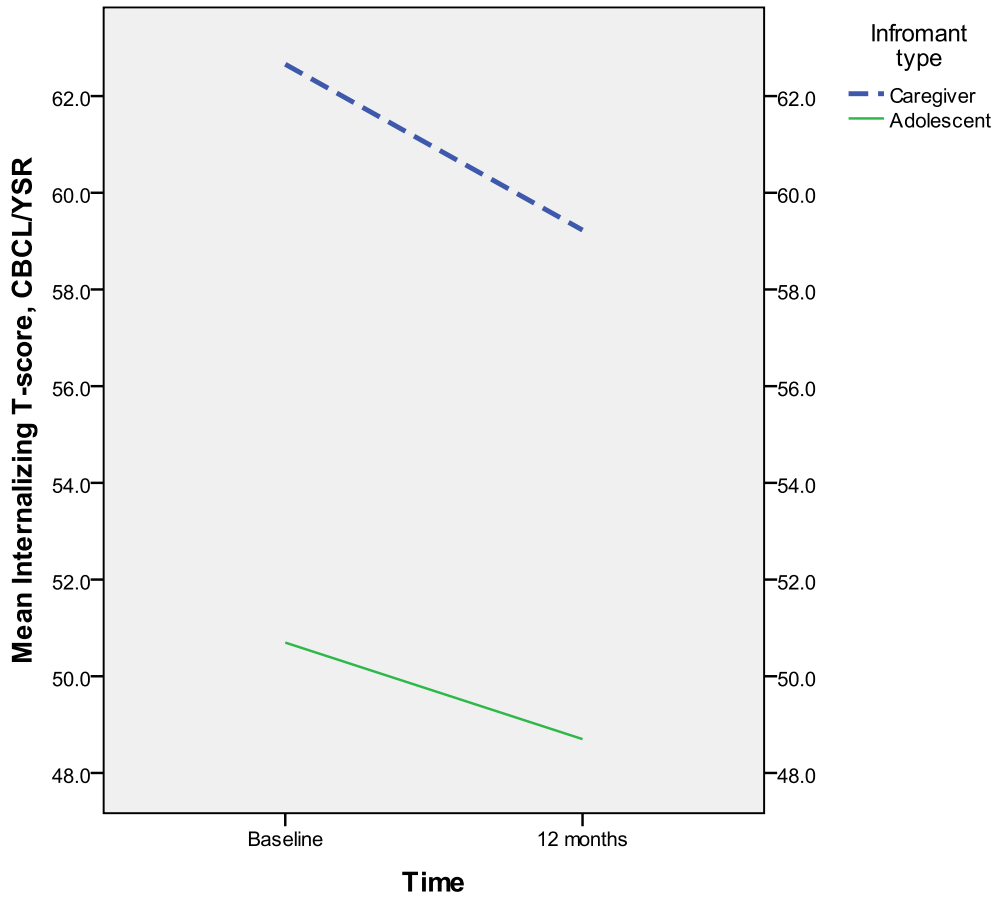


Figure 5. Chart of Mean Differences between Caregiver and Adolescent Ratings of Externalizing T-Score at Baseline and 12 Months

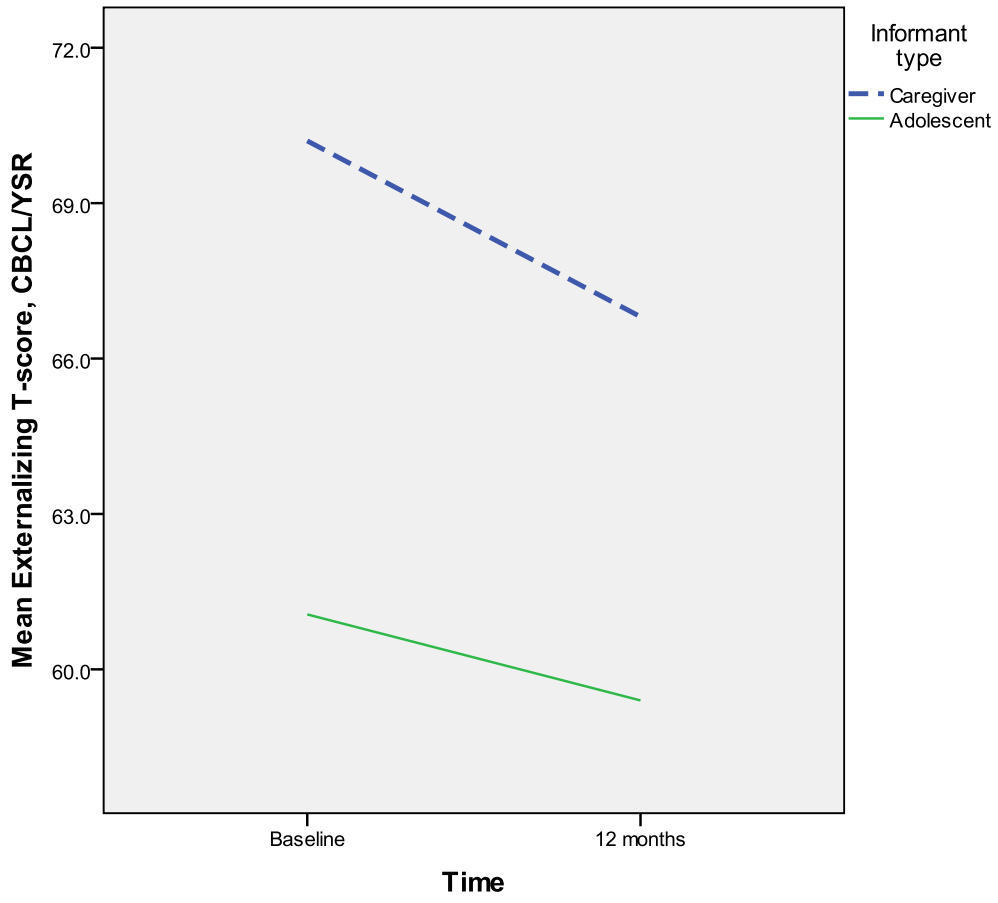


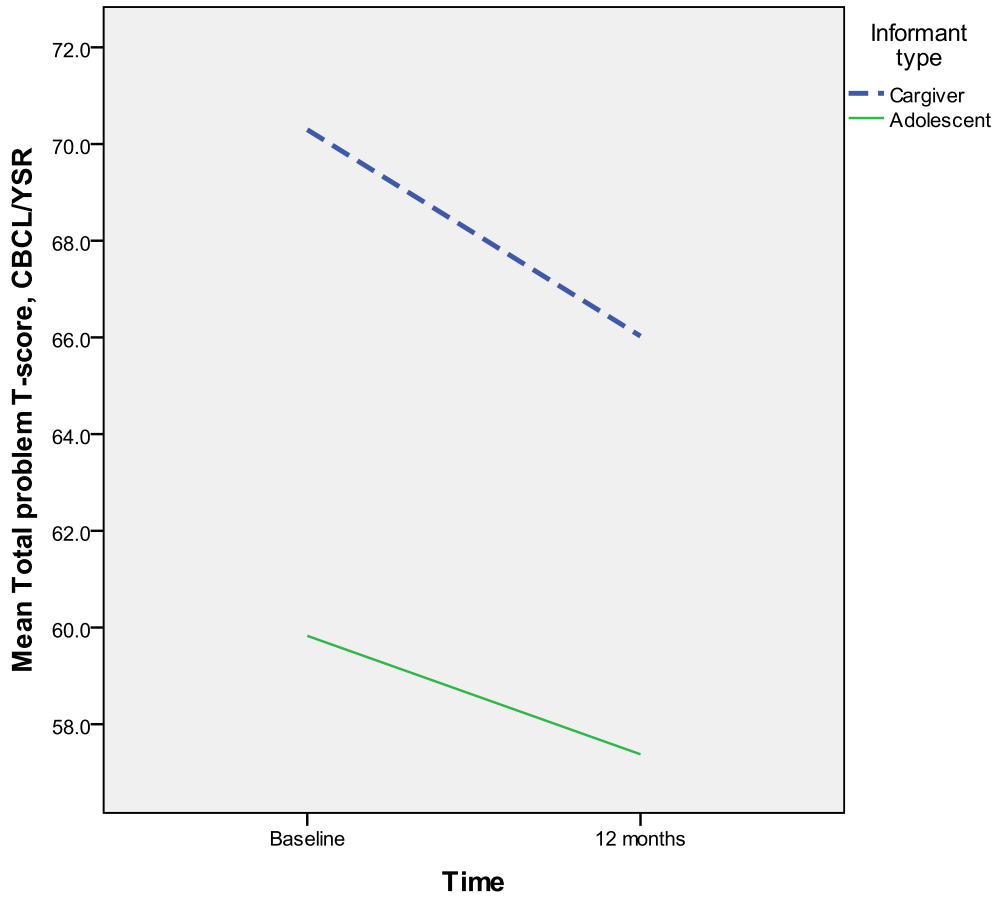
Table 32

Mixed Model Analysis: Parameter Estimates of Fixed Effects Time, Informant Type, and Their Interaction as Predictors and Total Problem T-Scores as Outcome Variable

				95% Confidence Interval	
Parameter	Estimate	t	Sig.	Lower Bound	Upper Bound
Intercept	57.00	48.65	.000	54.69	59.31
Time	2.99	2.93	.004	.98	5.01
Informant type	8.96	7.29	.000	6.54	11.38
Time x Informant type	1.07	.79	.433	-1.62	3.77

Figure 6.

Chart of Mean Differences between Caregiver and Adolescent Ratings of Total Problem T-Score at Baseline and 12 Months



Exploratory Aim 3, Question 2. Are there differences between caregiver and adolescent ratings in the strength of the association of adolescent personal strengths and family functioning with adolescent behavioral and social functioning?

To address Question 2, separate linear mixed models were fit for BERS Strength Quotient and FAD as the key independent variables with the outcomes, namely, (a) Internalizing, Externalizing, and Total CBCL scores for caregivers, and (b) Internalizing, Externalizing, and Total YSR for adolescent ratings. This resulted in a total of six models.

BERS Strength Quotient and Internalizing, Externalizing, and Total T- Scores. Because only 21 adolescents provided BERS Strength Quotient data at 12 months, these data were excluded from the following set of analyses. Only the adolescent and caregiver ratings of the BERS Strength Quotient at baseline were included in the analyses to examine if the correlations were different based on the informant type (i.e., caregiver- or adolescent-report). Prior to analyzing the results of the mixed models, the bivariate correlations among caregiver ratings of BERS Strength Quotients and Internalizing, Externalizing, and Total CBCL were examined. The same analysis was repeated using the adolescent ratings. Results of these bivariate correlations are presented in Table 33 and indicated that the bivariate correlations among BERS Strength Quotient and each outcome seemed to differ for caregivers and adolescents. For example, there were significant moderate and negative correlations among BERS Strength Quotient and Internalizing, Externalizing, and Total CBCL based on the caregiver ratings. That is, based on caregiver ratings, as adolescent personal strengths increased, both internalizing and externalizing behavior problems decreased as well. On the other hand, there were no significant correlations among BERS strength Quotient and Internalizing, Externalizing, and Total YSR based on the adolescent ratings. That is, perceived changes in adolescent personal strengths were not related to increase or decrease in behavior problems.

Although the comparisons in Table 33 demonstrate clear differences among adolescents and caregivers, analyses using linear mixed models were performed next to confirm that the

differences seen in the bivariate correlations described above were indeed statistically significant. Associations among the independent and outcome variable were examined to determine if they varied by the informant type and time. Linear mixed model were fit separately between caregiver and adolescent ratings of BERS Strength Quotient and Internalizing, Externalizing, and Total CBCL and YSR scores (i.e., T-scores). The term "T-scores" was used here to refer to combined CBCL and YSR scores. Results are presented in Tables 34, 35, and 36 respectively. The parameter estimates show the two-way interaction of BERS by Informant type was significant for all three outcomes ($p < .001$ in each case). Results indicated that the correlations among adolescent personal strengths and Internalizing T-scores, Externalizing T-scores, or Total T-scores were different for the caregiver and adolescent ratings.

Table 33

Bivariate Correlations of BERS Strength Quotients and Internalizing, Externalizing, and Total T-score for Caregiver and Adolescent Ratings at Baseline

	Correlations		
		Caregiver-rated BERS	Adolescent-rated BERS
Internalizing T-score	Pearson Correlation	-.46**	.03
	Sig. (2-tailed)	.000	.816
	N	113	64
Externalizing T-score	Pearson Correlation	-.68**	-.00
	Sig. (2-tailed)	.000	.982
	N	113	64
Total T-score	Pearson Correlation	-.61**	.03
	Sig. (2-tailed)	.000	.788
	N	111	64

**. Correlation is significant at the 0.01 level (2-tailed).

Table 34

Comparing Caregiver and Adolescent Ratings of Correlations between BERS and Internalizing T-Scores at Baseline

					95% Confidence Interval	
Parameter	Estimate	df	t	Sig.	Lower Bound	Upper Bound
Intercept	50.21	251.29	11.09	.000	41.29	59.12
BERS	.01	238.63	.19	.852	-.07	.08
Informant type	28.86	258.66	5.19	.000	17.90	39.82
BERS x Informant type	-.21	268.71	-4.02	.000	-.31	-.11

Table 35

Comparing Caregiver and Adolescent Ratings of Correlations between BERS and Externalizing T-Scores at Baseline

					95% Confidence Interval	
Parameter	Estimate	df	t	Sig.	Lower Bound	Upper Bound
Intercept	62.59	265.32	14.75	.000	54.23	70.94
BERS	-.02	256.32	-.69	.488	-.09	.04
Informant type	36.69	274.23	7.05	.000	26.45	46.95
BERS x Informant type	-.32	283.28	-6.60	.000	-.42	-.23

Table 36

Comparing Caregiver and Adolescent Ratings of Correlations between BERS and Total T- Scores at Baseline

					95% Confidence Interval	
Parameter	Estimate	df	t	Sig.	Lower Bound	Upper Bound
Intercept	59.69	255.11	13.67	.000	51.09	68.29
BERS	-.01	244.49	-.14	.886	-.08	.06
Informant type	34.13	262.49	6.35	.000	23.55	44.70
BERS x Informant type	-.28	271.44	-5.63	.000	-.38	-.18

FAD and Internalizing, Externalizing, and Total T-Scores. The following sections include reports of the parameter estimates for the three separate linear mixed models fit for FAD as the key independent variable and Internalizing, Externalizing, and Total T-scores as the outcomes. Baseline and 12-months data for FAD scores at both time points were used to examine if (a) the correlations were different at each time point (i.e., FAD x Informant type x Time was significant), or (b) whether the correlations were different between the caregiver and adolescent ratings but not by time (i.e., there is no three way interaction, but FAD x Informant type was significant).

Again, bivariate correlations using caregiver ratings of FAD with Internalizing, Externalizing, and Total CBCL scores and then adolescent ratings of FAD with Internalizing, Externalizing, and Total YSR scores were first examined. Results showed that the bivariate correlations appeared to differ for caregivers and adolescents. Results for caregiver rating are presented in Table 37 and showed that there were no significant correlations between caregiver-rated FAD and Internalizing, Externalizing, and Total CBCL scores at baseline. That is, based on caregiver reports, there may not be relationships among family functioning and behavior problems. At 12 months, there were significant negative correlations among FAD and Externalizing CBCL scores and Total T-CBCL scores, but not for Internalizing CBCL scores. That is, based on caregiver ratings at 12 months; healthier family functioning was related to fewer externalizing but not internalizing behaviors. Findings based on adolescent ratings are presented in Table 38. There were significant negative and moderate correlations between FAD and Internalizing, Externalizing and Total YSR scores at baseline, but not at 12 months. These findings suggest that adolescent ratings of healthier family functioning were related to fewer behavior problems at baseline but not at 12 months.

Table 37

Bivariate Correlations of FAD Strength Quotients and Internalizing, Externalizing, and Total T-scores (i.e., CBCL) Based on Caregivers Ratings

		Baseline	12 month
Internalizing T-score, CBCL	Pearson Correlation	-.08	-.18
	Sig.	.423	.059
	N	114	114
Externalizing T-Score, CBCL	Pearson Correlation	-.16	-.35
	Sig.	.09	.000
	N	114	114
Total T-score, CBCL	Pearson Correlation	-.05	-.25
	Sig.	.589	.007
	N	111	114

Table 38

Bivariate Correlations of FAD Strength Quotients and Internalizing, Externalizing, and Total T-Scores (i.e., YSR) Based on Adolescents Ratings.

		Baseline	12 month
Internalizing T-score YSR	Pearson Correlation	-.29	-.08
	Sig.	.004	.460
	N	93	89
Externalizing Internalizing T-score YSR	Pearson Correlation	-.30	-.09
	Sig.	.004	.360
	N	93	89
Total Internalizing T-score YSR	Pearson Correlation	-.37	-.05
	Sig.	.000	.673
	N	93	89

Next, using SPSS linear mixed models, the associations between FAD and Internalizing T-scores for caregiver and adolescent ratings were statistically compared. The results are displayed in Table 39. The 3-way interaction term of Time x Informant type x FAD ($p = .118$) was not significant. Consequently, it was removed from the model, and linear mixed model analysis repeated. None of the two-way interactions were significant ($p > .05$ for each term). Therefore, all the 2-way interactions were removed from the model. Results indicated that each main effect, FAD, time, and informant type, was significant, indicating that there was a correlation among FAD and Internalizing T-scores, but that this correlation did not differ by caregiver or time.

Table 39

Comparing Caregiver and Adolescent Ratings of the Correlations between FAD and Internalizing T- scores

					95% Confidence Interval	
Parameter	Estimate	df	t	Sig.	Lower Bound	Upper Bound
Intercept	51.46	342.72	9.52	.000	40.83	62.09
FAD	-1.06	329.17	-.59	.556	-4.59	2.48
Time	13.41	278.09	1.84	.067	-.92	27.75
Informant type	18.55	339.94	2.49	.013	3.87	33.23
Time x Informant type	-13.39	259.64	-1.43	.153	-31.77	4.99
Time x FAD	-3.98	280.54	-1.58	.115	-8.94	.98
Informant type x FAD	-2.54	338.39	-1.03	.306	-7.41	2.33
Time x Informant type x FAD	5.01	262.30	1.57	.118	-1.27	11.28

Another linear mixed model was fit to compare the correlations among FAD and Externalizing T-scores for caregiver and adolescent ratings. Results are displayed in Table 40 and showed that the Time x Informant type x FAD interaction term was significant ($p < .001$) and indicated that the correlations between the FAD and Externalizing T-scores were different at each time point for adolescent and caregiver ratings.

Table 40

Comparing Caregiver and Adolescent Ratings of the Correlations between FAD and Externalizing T-Scores at Baseline and 12 Months

					95% Confidence Interval	
					Lower	Upper
Parameter	Estimate	df	t	Sig.	Bound	Bound
Intercept	61.12	348.06	11.08	.000	50.27	71.98
FAD	-.69	336.32	-.37	.708	-4.31	2.93
Time	15.75	282.48	2.09	.037	.97	30.53
Informant type	26.20	344.62	3.44	.001	11.24	41.17
Time x Informant type	-23.69	261.93	-2.45	.015	-42.71	-4.68
Time x FAD	-5.09	285.18	-1.96	.051	-10.20	.02
Informant type x FAD	-6.16	343.54	-2.44	.015	-11.12	-1.19
Time x Informant type x FAD	8.73	264.88	2.65	.009	2.24	15.22

The last linear mixed model was fit to compare the correlations between FAD and Total T-scores for caregiver and adolescent ratings. Results are displayed in Table 41 and show that Time x Informant type x FAD interaction was significant ($p = .002$), and indicated that the correlations were different at each time point for adolescent and caregiver ratings.

Table 41

Comparing Caregiver and Adolescent Ratings of Correlations between FAD and Total T-Scores at Baseline and 12 Months

Parameter	Estimate	df	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Intercept	57.89	337.04	11.02	.000	47.55	68.22
FAD	-.36	322.23	-.22	.836	-3.79	3.07
Time	20.69	271.33	2.92	.004	6.75	34.63
Informant type	25.30	334.48	3.49	.001	11.03	39.57
Time x Informant type	-26.79	256.51	-2.93	.004	-44.81	-8.76
Time x FAD	-6.39	273.81	-2.61	.010	-11.22	-1.57
Informant type x FAD	-5.37	333.24	-2.23	.026	-10.10	-.64
Time x Informant type x FAD	9.69	259.35	3.09	.002	3.53	15.85

Exploratory Aim 3, Question 3. What are the bivariate correlations among caregivers' and adolescents' ratings of BERS, FAD, CBCL and YSR? It was interesting to explore this question. Results showed that there were significant positive correlations between the CBCL and YSR reports but not between the BERS and FAD at the two time points. At baseline, Pearson Correlations between caregivers' and adolescents' ratings were: BERS ($r = .119$, $p = .354$), FAD ($r = .157$, $p = .132$), Internalizing ($r = .471$, $p < .001$), Externalizing ($r = .515$, $p < .001$), and Total T-scores of CBCL and YSR (.558, $p < .001$). Further, the strengths of the bivariate correlations were different and slightly lower at 12 months: BERS ($r = .052$, $p = .826$), FAD ($r = .189$, $p = .077$), Internalizing ($r = .355$, $p = .001$), Externalizing ($r = .322$, $p = .002$), and Total T-scores of CBCL and YSR (.348, $p = .001$). These findings suggest that there was a relationship between adolescents' and caregivers' ratings of behavior problems. However, caregiver ratings of adolescent personal strengths and family functioning may be different from adolescents' ratings.

Summary of findings. First, mean differences between caregiver and adolescent ratings of the BERS Strength Quotient, FAD, CBCL and YSR scores were examined using linear mixed models. Results indicated that there were mean differences between caregivers' and adolescents'

ratings on the BERS Strength Quotient, FAD, and Internalizing, Externalizing, and Total CBCL and YSR scores. Further, these differences were the same at baseline and 12 months. Caregivers reported below average adolescent personal strengths and marked impairment in behavioral and social functioning compared to adolescents who reported they were doing much better. On the other hand, adolescent reported less healthy family functioning compared to the caregivers' reports.

Second, six different linear mixed models were fit to compare the correlations between (a) the BERS Strength Quotient and Internalizing, Externalizing, or Total T-scores, and (b) the FAD and Internalizing, Externalizing, or Total T-scores based on caregiver and adolescent ratings. Results indicated that (a) correlations among the BERS Strength Quotient and the Internalizing, Externalizing, or Total T-scores were different for the caregivers' and adolescents' ratings, and (b) the correlations among FAD and the Internalizing, Externalizing, and Total T-scores were different based on informant type and time for Externalizing and Total CBCL scores, but not for Internalizing T-scores. More specifically, the caregiver ratings suggest that as adolescent personal strengths increase, the internalizing and externalizing behavior problems decrease. On the other hand, adolescents' ratings seem to suggest that changes in adolescent personal strengths were not related to increase or decrease in behavior problems. There were differences in caregivers' and adolescents' perceptions of the correlations of family functioning and outcomes. Based on caregivers' ratings, there may not be relationships among family functioning and behavior problems at baseline. However, at 12 months, caregivers may have perceived that healthier family functioning was related to fewer externalizing, but not internalizing behavior problems. . Findings, based on adolescents' ratings, indicate that healthier family functioning was related to fewer behavior problems at baseline, but not at 12 months.

Third, there were significant moderate and positive correlations among caregiver's and adolescents' ratings of CBCL and YSR scores at baseline. The strength of the correlations was

less at 12 months. There were no significant bivariate correlations among the caregivers' and adolescents' ratings of the BERS and FAD at baseline and 12 months.

CHAPTER FIVE. DISCUSSION

Chapter five begins with a summary of the study, which is followed by a discussion of major findings and limitations. The chapter concludes with clinical implications of the findings and recommendations for future research.

Summary of the Study

The central purpose of this study was to examine whether caregiver-rated change in adolescent personal strengths and change in family functioning over 12 months predicted change in adolescent behavioral and social functioning. Serious emotional disturbance, including disruptive disorders, affects large numbers of adolescents with costly and tragic consequences. Disruptive disorders (i.e., attention deficit hyperactivity disorder, oppositional and conduct disorders) affect 19% of all 6 to 19 year-olds and inflict severe functional impairment that often persists into adulthood. Adolescents with disruptive disorders are relatively more likely to be arrested or to drop out of school, and most have poor treatment outcomes in traditional mental health programs.

More recent programs, such as the Center for Mental Health Services' System of Care (SOC) program, were developed to improve outcomes by using youth and family-centered, strengths-based treatment approaches. Within the SOC model, adolescent personal strengths and family functioning were considered to be important variables affecting improvement in adolescents' behavioral and social functioning. Yet, there have been few studies that have focused on examining the impact of adolescent personal strengths and family functioning on mental health outcomes in this population. Further, available research on strengths-based treatment approaches have primarily been case studies or descriptive in design.

Using McCubbin and Patterson's Double ABCX model as a guiding framework, it was hypothesized in this study that increases in adolescent personal strengths and family functioning would be associated with improvement in adolescent behavioral and social functioning at 12 months. Findings from this study were intended to help guide the development of interventions to

improve treatment outcomes of adolescents with SED. Further, it was expected that increased understanding of the underlying mechanisms of treatment improvement would help providers to tailor interventions to better meet the needs of these adolescents and their families.

Purpose. The main aims of this longitudinal study were to: (a) describe baseline differences in caregiver-rated adolescent personal strengths, family functioning, and adolescent behavioral and social functioning by adolescent demographics, caregiver type, and participation at 12 months; (b) examine changes from baseline to 12 months in caregiver-rated adolescent personal strengths and family functioning as predictors of change in caregiver-rated adolescent behavioral and social functioning after controlling for relevant adolescent demographics and caregiver type; and (c) explore differences between adolescent ratings and caregiver ratings of adolescent personal strengths, family functioning, and adolescent behavioral and social functioning at baseline and 12 months.

Methods. De-identified data were obtained from the Dawn Project, a federally-funded Center for Mental Health Services SOC site. Secondary analyses were conducted using data from 179 adolescents (ages 12 – 17 years) with disruptive disorders and their caregivers who participated in the Dawn Project Evaluation Study (DPES). Approximately half of the adolescents were African American (AA), and most were male. Over half were referred to the Dawn Project from the juvenile justice system. Caregivers were mostly female with an average age of 42.51 years. About one third of the caregivers had a high school diploma or GED, and over half came from families with incomes below $20,000.

The DPES research team collected the data used in this secondary analysis via in-depth interviews with caregivers and adolescents who were 11 years and older. Behavioral problems were measured using the Child Behavioral Checklist (CBCL). Functional impairment was measured using the Child and Adolescent Functional Assessment Scale (CAFAS). The Behavioral and Emotional Rating Scale (BERS) was used to measure adolescents' personal strengths. The Family Assessment Device (FAD) was used to measure family functioning.

Caregiver type included primary family caregivers (biological or adoptive) and other family caregivers (i.e., step, foster, grandparents, aunts, and uncles). All measures had evidence of adequate reliability and validity. Pearson correlations, t-tests, chi-square tests, multivariate multiple regressions ((MVMR), and linear mixed models were used for data analyses.

Major findings. In general, the adolescents in this study entered treatment with severe behavioral problems and marked functional impairments. Younger adolescents came into the Dawn Project with greater functional impairment than older adolescents. Compared to Caucasian adolescents, AA adolescents, which made up 52% of the sample, had fewer behavioral problems, less functional impairments, and more personal strengths at baseline. Adolescent girls had more behavior problems and less personal strengths than boys. However, the two groups entered treatment with similar levels of functional impairment. Primary family caregivers were more likely to report more severe externalizing behavior problems and functional impairments in the adolescents than did other family caregivers. However, these two groups of caregivers did not differ in their reports of family functioning or adolescent personal strengths.

Based upon caregiver ratings, change in adolescent personal strengths was significantly and inversely related with change in adolescent behavioral and social functioning. This means that improvement in adolescent personal strengths were associated with decreases in behavior problems and functional impairments in this sample of adolescents with disruptive disorders. Race did not modify this relationship, indicating that this observation was the same for both AA and Caucasian adolescents. However, change in family functioning was not a significant predictor of adolescent behavioral and social functioning, irrespective of race.

Significant differences were found between caregiver and adolescent ratings of adolescent personal strengths, family functioning, and behavior problems. Specifically, caregivers rated adolescents as having below average personal strengths and severe behavior problems; adolescents rated themselves as doing much better in each of these areas. In contrast, the adolescents rated family functioning less favorably than did their caregivers. There were no

adolescent-reports of social functioning because the instrument is designed for caregiver reports only.

Study contributions. This study contributed to the literature in a number of ways. Using five well known measures of adolescent and family functioning and reports from both the caregivers and the adolescents, this longitudinal study highlighted the significant impact of strengths-based treatment approaches on improving treatment response and outcomes in adolescents with disruptive disorders. Further, this study reinforced and extended the literature because it prospectively examined the association of adolescent personal strengths and family functioning on behavioral problems and functional impairments of adolescents with disruptive disorders, along with the effect of race. Previous studies were limited by having a cross-sectional design (Barksdale, Azur, & Daniels, 2010; Walrath et al., 2004).

Consistent with findings from other studies (Anderson et al., 2008; Manteuffel et al., 2002; Walrath, 2009), this study shed further light on the burden of adolescents having SED. Additionally, it examined whether improvement in adolescent personal strengths and family functioning was associated with improvement in adolescent behavioral and social functioning. Adolescents with disruptive disorders enter treatment with clinically significant behavioral problems and marked functional impairment that can affect every aspect of their lives at home, at school, and in the community. The finding that changes in adolescent personal strengths was a significant predictor of change in adolescent behavioral and social functioning, supports the importance of using strengths-based treatment approaches for the adolescents and their families.

Although expected, a significant association between improvement in family functioning and improvement in adolescent behavioral and social functioning was not found. This finding highlights the need for further research to better understand how SED, including disruptive disorders, affects the pattern of family functioning and the family context, as well as the impact on treatment response and outcomes for these adolescents (Wright et al., 2007). It may be that the

family did not receive interventions that focused, as much, on family resources and needs compared to the adolescents' strengths and needs.

Discussion of Major Findings

In this section the major findings are discussed. The associations between predictor variables (adolescent demographics and caregiver type; change in adolescent personal strengths, change in family functioning) and outcome variables (change in adolescent behavioral and social functioning) were examined. Further, discussions of reasons why results varied from what was anticipated have been presented.

Adolescent demographic variables and caregiver type. Consistent with other studies, findings from this study suggested that, in general, the adolescents in the study entered treatment with clinically significant behavior problems and marked functional impairment that improved across time (Anderson et al., 2006; 2008; Manteuffel, et al., 2002; Stambaugh, et al., 2007; Walrath, et al., 2009). Demographic variables found to be associated with adolescent behavioral and social functioning outcomes were age, race, gender, and caregiver type.

The finding that adolescents who were younger had more functional impairments than older adolescents was consistent with findings from a previous study of the Dawn Project (Anderson et al., 2008). However, this finding was in contrast with that of other investigators who found that age was directly related with the level of functional impairment (Manteuffel et al., 2002; Nguyen, Huang, Arganza & Liao, 2007). In other words, older youths came in with greater functional impairments. The sample in this study was 12 - 17 years old. Both Anderson et al. (2008) and Manteuffel et al. (2002) studied youths who were 5 - 17 years old. The reason for the variations in findings is unclear but a couple of explanations come to mind. First, findings from this study may reflect epidemiological data which suggest that the prevalence of SED increased and doubled between ages 12 and 13 years with increased likelihood of functional impairment, progressed through adolescence, and began tapering before transition to adulthood (Costello, et al., 1996). Second, it could be that AA adolescents in this study were over represented in the

group of older adolescents, thus lowering the overall level of functional impairment because AA adolescents had less functional impairment than the Caucasian adolescents. Despite these variations, this study finding might support that the Dawn Project was successful in reaching the intended population of youths, those with the most severe behavior problems and functional impairments (i.e., SED) and early in their illness trajectory.

In this study, AA adolescents entered treatment with fewer behavioral problems and lower levels of functional impairment compared to Caucasian adolescents. Findings reinforce those of other investigators (Anderson, et al., 2008; Walrath et al., 2006; 2009). Further, the finding that AA adolescents had more personal strengths compared to Caucasian adolescents in this study was supported by results of another analysis using data from 354 youth (5 - 16 years) who participated in the Dawn Project. Similar results were obtained by Walrath et al. (2004). In contrast, Barksdale, Azur, and Daniels (2010) found that AA adolescents had lower strength scores compared to Caucasian adolescents. Increasingly, researchers have been raising concerns about potential cultural influences that may be affecting assessment and referral to treatment by mental health providers (Anderson et al., 2008; Barksdale, et al., 2010; Nguyen et al., 2007; Walrath et al., 2004; 2006; 2009). These authors were concerned that despite the greater levels of strengths and lower levels of functional impairment, AA adolescents were still being referred for treatment, particularly in a costly program such as SOC.

Both the literature and anecdotal accounts suggest that child-serving professionals are still influenced by racial stereotypes and assumptions. For example, the professionals might be more likely to assume that AA adolescents' behavior problems are intentional and criminal compared to Caucasian adolescents whose behavior problems might be interpreted as psychiatric in nature and requiring mental health treatment. In other words, referring professionals might have different standards for making a referral to a SOC for AA and Caucasian adolescents.

In this study, adolescent girls had more internalizing and externalizing behavior problems than boys. This is consistent with findings from other studies (Walrath, et al., 2004; 2009).

Although girls in this study had similar levels of functional impairment as boys, other investigators found that that girls had higher levels of functional impairment (Walrath et al., 2009; Walrath, Petras et al., 2004). The literature suggests that girls tend to enter treatment much later in their illness trajectory compared to boys (Walrath et al., 2004). However, there are studies that did not find a significant association between gender and behavioral and social outcomes (Walrath et al., 2001; 2006). The reasons for the variations in findings across studies are unclear and indicate that there is a need for future studies on the effect of gender on similar outcomes.

This study has extended the literature by examining the influence of caregiver type on reports of adolescent personal strengths, family functioning, and adolescent behavioral and social functioning. Based on clinical experience, it could be argued that grandparents would be included in primary family caregiver type versus other family caregiver type because grandparents, in some cultural groups, particularly in AA, often raise these adolescents. This would be right as well. This decision was made simply on the basis of primary versus non-primary family caregiver or family unit, and to have a fair balance between the two groups in terms of numbers. Given the dearth of literature in the area of caregiver type and its association with outcomes in this population, there is a need to repeat this study with a different grouping of the caregiver types to see if there are any differences in findings.

The finding that there was a significant effect of age in at least two of our multivariate analyses is interesting. The results suggested that there may be relationships between age and behavioral and social functioning. However, age was not a predictor of change in internalizing and externalizing behavior problems, or functional impairment. Likewise, race, gender, and caregiver type were not predictors. .These study findings are consistent with studies that found that all youth might improve, irrespective of age, race, or gender (Anderson et al., 2008; Walrath et al., 2009). But, questions remain because a couple of studies have found that older youths (Anderson et al., 2006) and AA adolescents improved at slower rate and had less favorable outcomes compared to the Caucasian counterparts even though AA adolescents had better

personal strengths, behavioral, and functional profiles (Walrath, et al., 2006; Pakagos et al., 2009). It is still unclear if the rate of change is related to where each person began and not a function of age, race, or other relevant demographics. For example, it may be the developmental stage of adolescents has some influence on responses to measures used in this study. These findings highlight the need to continue to pay attention to the effect of demographic variables on adolescent behavioral and social functioning.

Change in adolescent personal strengths. The major finding was that an increase in caregiver ratings of adolescent personal strengths during the first 12 months was significantly associated with an improvement in caregiver ratings of adolescent behavioral and social functioning. This finding was consistent with other studies that have sought to demonstrate that youths with higher levels of strength scores were more likely to have lower levels of functional impairment (Barksdale et al, 2010; Lyons et al., 2000; Oswald et al., 2001; Walrath et al., 2004). In a cross-sectional study, Barksdale et al. (2010) found that youths with average to above average strengths were less likely to have higher levels of functional impairment compared to youths with below average strength scores. Similarly, Walrath et al. (2004) examined the association between functional impairment and personal strengths in another cross-sectional study of 5 to 17.5 years old youths (N = 1,838) from the national evaluation study, and found a moderate, negative association between overall functional impairment and strengths scores.

Race did not make a difference in the strength or direction of the association between change in adolescent personal strengths and change in adolescent behavioral and social functioning. Findings supported the work of Walrath et al. (2004) who also found that the relationship between functional impairment and strengths did not vary by race using a cross sectional study design. In contrast, Barksdale et al. (2010) found that race modified the relationships. They studied a national sample of 8,129 youths, 5 to 18 years old, from 45 System of Care (SOC) sites. They found that the AA youth with above average personal strengths were

more likely to have severe functional impairment than Caucasian youth with similar personal strengths.

In general, adolescents in this study did not show significant increases in personal strengths between baseline and 12 months. This was in contrast with the results of another analysis that used longitudinal data of 5 – 17 year-old youths who participated in the Dawn Project. In that analysis, youths showed improvement in their personal strengths from below average to average in approximately a 12-month period of time (Anderson et al., 2008). The difference in findings might be related to the narrower age range and older age of the adolescents in this study, as well as the inclusion of adolescents with a predominant diagnosis of disruptive disorders. For example, it could be that 12 months duration of treatment was not long enough to demonstrate change in adolescent personal strengths scores, given that the average age of the adolescents in this study was 14.02 years at baseline, and 52.5% of them were referred to the Dawn Project from the juvenile justice system.

With the majority of these adolescents being referred from the juvenile justice system, it may be that their mental health issues were very serious. Moreover, involvement in the juvenile justice system indicated that these adolescents might have been in the traditional mental health system for a significant amount of time and had poor responses to treatment. Previous studies suggested that exposure to a deficit-based treatment approach requires a commensurate amount of time to undo the psychological damage (or hardening) in order to allow the adolescents and their families to trust the strength-based system and to have hope that the system was really designed to help them succeed (Anderson et al., 2006).

The finding regarding the relative contribution of each domain of adolescent personal strengths is interesting. There were subtle indicators that multicollinearity might be a problem, even though the condition indices showed otherwise. Findings indicated that only improvement in Interpersonal Strength was associated with improvement in behavior problems and functional impairment. The importance of Interpersonal Strength must be interpreted cautiously because of

potential multicollinearity concern. The attempts made to address concerns about multicollinearity in this study were unsuccessful. Future studies could address the multicollinearity concern. One other approach might be to model the effect of Interpersonal Strength and Affective Functioning separately. In many ways, these are theoretically related, so it might make sense that they overlap in their explanatory power.

Change in family functioning. In this study, adolescents came in with reports of relatively healthy family functioning. This finding might reinforce the strength-based belief of both SOC and the Double ABCX Model, that families have existing strengths and patterns of functioning that help them survive and carry-on in the face of the stress of having adolescents with disruptive disorders (Epstein et al., 1985). But, this might also indicate a problem with social desirability. For example, the caregivers may have over-reported how well their families communicated, worked, and solved problems together to fit societal expectations or avoid embarrassment. It could also be that the families who agreed to participate in the DPES were those who had healthier family functioning. This might explain why change in family functioning was not a significant predictor of adolescent behavioral and social functioning in this study.

In contrast, a number of studies have reported that family functioning is associated with outcomes in youths with mental health problems or psychiatric illness (Lee, 2009; Stanton, Thompson et al., 2007; Graves, 2007). Previous analysis using data from the Dawn Project with a more heterogeneous sample of youths, 5 - 17 years old with a range of diagnoses, found that improvement in family functioning was associated with youth behavioral outcomes as measured with the CAFAS and CBCL (Wright, 2008). However, the authors also found that caregiver strain or burden appeared to counter the positive effects of improvements in family functioning. These authors suggested the use of a multidimensional approach in assessing family variables, such as family functioning. Further, it was assumed that interventions were not only provided to the adolescent, but also to the family. It may be that interventions were primarily provided to the

adolescent, as the identified patient. In that case, it could be that there was limited focus on providing interventions focused on facilitating family functioning.

There are a number of possible explanations for the lack of a significant association between change in family functioning and outcomes. The literature indicates that there may be a lagged or delayed effect (Wright et al., 2007). For instance, positive effects of improved family functioning on adolescent behavioral and social functioning may not be significantly detected until caregiver burden decreases. Based on the literature, caregivers of children with mental health problems suffer significant psychological and physical challenges due to the burden of care giving (Raina, et al., 2005). In addition, caregiver reports of healthier family functioning were found to be associated with better psychological health (Raina, et al., 2005). Another study found that caregiver burden was more likely to increase with the severity of the adolescents' behavior problems and associated functional impairment (Oeseburg, Jansen, Groothoff, Reijneveld, 2010). This may be even worse where there are predominately externalizing behavior problems, such as, aggression or physical fights which are socially undesirable and more likely to be associated with stigma (Higgins, Bailey, & Pearce, 2005). The question arises, if family functioning, as operationally defined here, measures what the current study intended (i.e., measurement of family strengths or resources much like the BERS)? It may be necessary to work with parents in the future to identify or develop caregiver or family measure similar to the adolescent Behavioral and Emotional Rating Scale, BERS.

Differences in caregiver and adolescent ratings. There were differences between caregivers' and adolescents' ratings of adolescent personal strengths, family functioning, and adolescent behavioral problems at both baseline and at 12 months. Caregivers rated the adolescents as worse on behavior problems and personal strengths compared to adolescent ratings. The caregivers' perceptions of the severity of both internalizing and externalizing behavior problems were worse than adolescents' perceptions. Findings are consistent with previous studies that compared caregiver and adolescent ratings of adolescent behavior problems

(Manteuffel et al., 2002; Huberty et al., 2000). For example, Huberty et al. (2000) studied the degree of agreement among parents and youth self-reports of behavior problems (i.e., CBCL and YSR) in a sample of 120 adolescents with epilepsy (mean age = 14.41 years, SD = 1.71) and found that mothers' ratings tended to be higher than the youths' ratings. Similarly, a number of other studies have found that there were consistent differences between mean scores of caregiver and adolescent ratings on behavior problems, with caregivers reporting more problems (Friedman et al, 2003; Rosenblatt & Rosenblatt, 2002; Salbach-Andrae, Klinkowsku, & Lehmkuhl, 2009).

Contrary to this study finding, there are studies that have found that caregivers underreported the severity of their adolescents' internalizing behavior problems compared to the adolescents' perceptions of them selves (Zukauskiene, Pilkauskaite-Valickiene, Malinauskiene, & Krataviciene, 2004). Differences in findings regarding caregivers and adolescent ratings of adolescent internalizing behavior problems have been attributed to the specific clinical population of adolescents. For example, Huberty et al. (2000) suggested that adolescents with chronic illness, such as epilepsy and associated behavior problems (a) may lack insight into their behaviors, (b) do not have a frame reference about how their feelings compare to their peers, or (c) rate themselves such that they are not perceived to be any different compared to their peers (social desirability). Similarly, adolescents with disruptive disorders may also lack insight regarding severity of both their externalizing and internalizing behavior problems and, consequently, rate their symptoms as less severe compared to their caregivers.

The discordance between caregivers' and adolescents' perceptions of the adolescent personal strengths is similar to other study findings (Friedman, et al., 2003a; Taylor, 2003). However, the results must be interpreted cautiously given that the parent version of the BERS was used in this study.

Adolescents in this study reported worse family functioning compared to their caregivers. This finding is consistent with that of Tamplin and Goodyer (2001) who also found differences between caregiver and adolescent ratings of family functioning in adolescents with depression

when compared to a control group The discordance between caregivers' and adolescents' perceptions of their family functioning was not surprising because adolescents, in general and as a function of their developmental stage, are more likely to report worse family functioning compared to their parents or caregivers.

Limitations

Many of the limitations are tied to the design of the original study. Like the DPES, subjects were non-randomly selected, which could potentially lead to sampling bias. The sample included caregivers and adolescents who agreed to participate, and only adolescents who had complete data on all measures were included in the data base for this secondary analysis. Therefore, findings were limited to adolescents with disruptive disorders who participated in the DPES and who were not in residential or group home settings. The longitudinal design of the Dawn Project evaluation study presented a number of threats to internal validity, including history, maturation, and attrition (Shadish, Cook, & Campbell, 2002). For example, the evaluation activities lasted five years, which means that the sample increased in age over time. There was no control group to assess the impact of maturation on outcome.

Because there were multiple data collection points, testing was another potential limitation. To minimize these threats, the DPES built in long intervals between data points, used multiple measures and multiple informants, and allowed a 12-week window to enhance feasibility of data collection and thus minimize attrition. Nevertheless, using a longitudinal design was an important strength because it is better able to provide support for causal inferences than cross-sectional designs.

A strength of the study was the large sample with over 50% being AA adolescents. This enhanced the external validity or generalizability of the study. Another strength of this study was that the study investigated outcomes from both caregivers' and adolescents' perspectives. Moreover, two well known outcome measures, the Child Behavioral Checklist (CBCL; Achenbach, 1991a) and the Child and Adolescent Functional Assessment Scale (CAFAS;

Hodges, 1994) were used. This study is one of only a couple of studies that focused in depth on the association of adolescent personal strengths and family functioning, and adolescent behavioral and social functioning; and if this association varied by race using a longitudinal design. Additionally, this study examined the effect of caregiver type on adolescent behavioral and social functioning.

Implications for the Double ABCX Model

Based on the assumptions of the Double ABCX Model, participation, over a 12-month period, in the strengths-based SOC program led to improvements in both adolescent personal strengths and family functioning. As proposed, improvement in adolescent personal strengths was associated with improvement in adolescent behavioral and social functioning. There was not enough evidence to support that there was an association between improvement in family functioning and improvement in adolescent behavioral and social functioning. One explanation may be that the treatment plan did not include all of the necessary ingredients needed at the caregiver or family level to achieve desired outcomes.

Conclusions and Recommendations

Clinical implications. Results of the study findings suggest that it is beneficial to focus on adolescent personal strengths when addressing challenges associated with having a disruptive disorder. One important take away message is that, the use of reports from multiple informants is important in assessment and treatment of these adolescents. There is a need to obtain both caregiver and adolescent reports because these may be different but equally valid from the informants' perspectives. Findings from a more inclusive, accurate assessment will guide the development of comprehensive treatment along with ongoing evaluation of treatment response and outcomes (Zukauskiene, et al., 2004).

Previous studies have found that it is not enough to conduct strengths-based assessments (Cox, 2006). Data gathered need to be actively used to develop and implement the treatment plan with the adolescents and their families in order to effect change and improve outcomes (Alfred,

2009; Bruns, et al., 2006; Cox, 2006; Graves & Shelton, 2007). Ideally, it would be best to use strengths-based approaches across all child-serving agencies, such as, mental health, child welfare, school, or juvenile justice that may be providing services to the adolescents and their caregivers.

Traditional mental health models are still entrenched in using deficit- or problem-based approaches. Clinicians tend to begin the clinical encounter with questions like "what is the problem." Further, adolescents with disruptive disorders and their families have become used to this problem-based approach. Therefore, mental health providers, families, and adolescents with disruptive disorders will need to be educated about how to focus on strengths, as this has been demonstrated to be a more effective way of engaging consumers in care to achieve better outcomes (Kelly & Gates, 2010). It may well be that, even though SOC supports a family-based approach, the majority of care was focused on fixing the adolescent and less on supporting positive change within the family. This may explain why there was no association between change in family functioning and adolescent behavioral and social functioning (Alfred, 2009).

Recommendations for future research. From caregivers' report, change in adolescent personal strengths was a significant predictor of change in adolescent behavior and social functioning. Therefore, it would be valuable to replicate this study and include the youth version of the BERS (Epstein et al., 2004). This would provide information from both the caregivers and adolescents. Because this study focused only on adolescents with disruptive disorders, future studies need to include adolescents with other psychiatric disorders such as depression and anxiety. Additionally, most adolescents with SED often have more than one psychiatric diagnosis. The impact of having multiple diagnoses on outcomes needs to be examined in future research.

Evaluative studies of SOC have focused largely on youth outcomes, even though family involvement is a core value in strength-based treatment approach (Alfred, 2009; Wright et al., 2007). There is need for more research to better understand how family variables are associated

youth outcomes (Wright et al., 2007). Future research can better define family strengths and build on existing tools. It remains to be seen if including all of the subscales of the Family Assessment Device, FAD, would elicit more meaningful information about the family than was found in this study. As stated earlier, it may well be that more attention is needed about supporting family strengths and functioning, versus primarily focusing therapeutic interventions on improving adolescents' problems. Additionally, measurement of caregiver burden and strain might provide meaningful information that is related to both how the caregiver is coping with the challenge of caring for an adolescent with mental health problems, and the association of caregiver burden and strain with outcomes (Wright et al., 2007; Oruche, Gerkensmeyer, Stephan, Wheeler, & Hanna, 2011). Further, although the use of multiple informants provided useful information, both researchers and clinicians need to be cognizant of additional burden for participants to fill out multiple instruments needed for data collection. There is very little in the literature to guide the impact of caregiver type or change in caregiver type on outcomes in adolescents with SED, including disruptive disorders. There is a need for additional research given that a large percentage of youths have different caregiver types which may change over the course of treatment.

The absence of comparison groups (e.g. treatment as usual) is a major gap in the design of studies that have focused on the evaluating the effectiveness of strengths-based treatment approaches. Future research needs to compare a strength-based treatment program with treatment as usual group to enhance the validity of findings. . Further, it will be interesting to determine what may be the essential ingredients of a strength-based treatment approach, such as that espoused by SOC. Findings would inform the mix of services and delivery mechanism employed to achieve desired outcomes for the adolescents and their families.

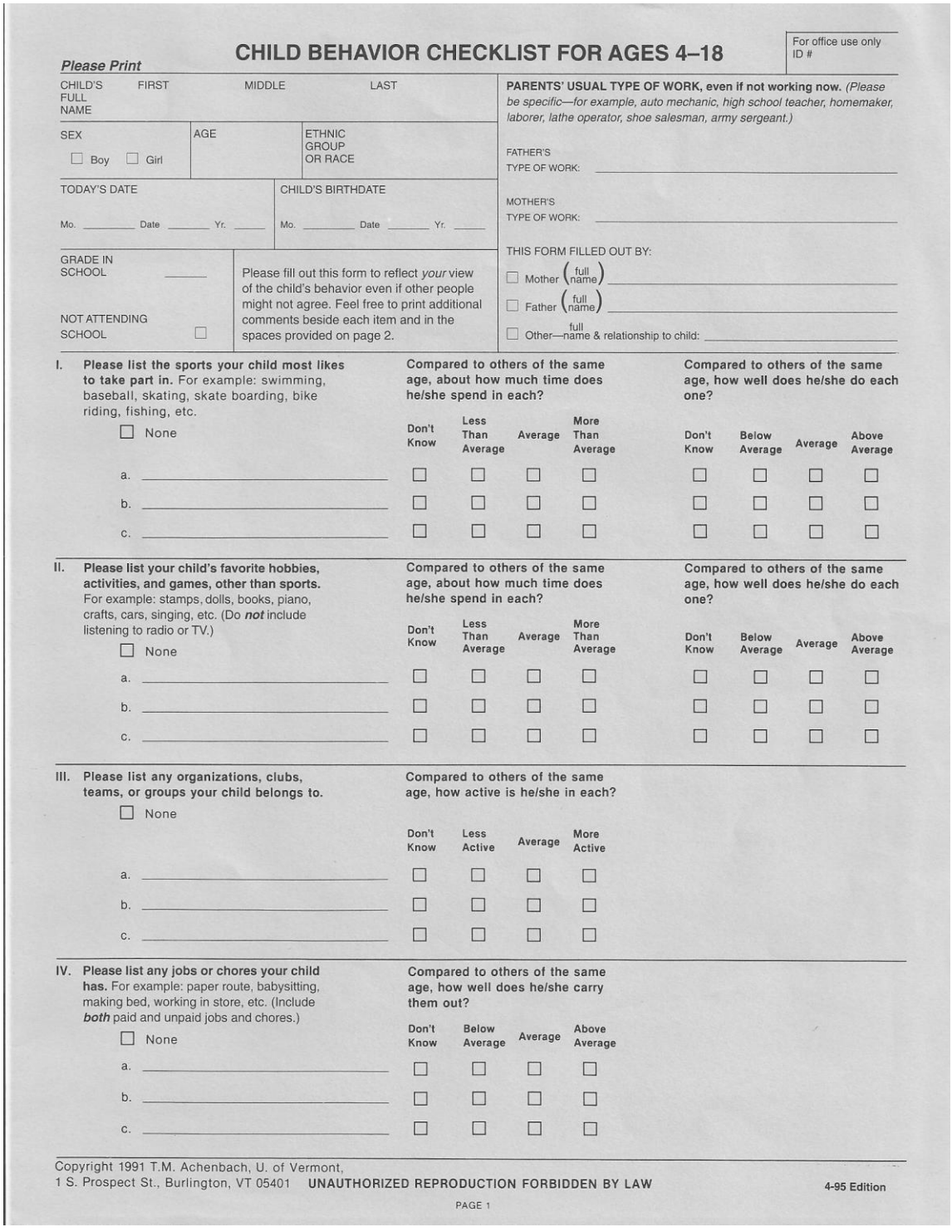
In conclusion, change in adolescent personal strengths emerged as significant predictor in this study. Strengths-based treatment approaches are quickly gaining wider recognition and acceptance among mental health professionals, both in research and practice. There is a need for

additional research to help clinicians understand how to more effectively help adolescents with disruptive disorders to achieve their fullest potential and to develop into productive adults. Existing research has predominately been descriptive. This study was only one of three studies that have examined the association of adolescent personal strengths and behavioral and social functioning, along with the impact of race on this association.

This study also extended the work of others by using a more homogenous sample of 12 - 17 year old adolescents compared to a wider age range of 5 - 18 year old youth seen in most evaluative studies of SOC. Further, it examined additional predictors, such as adolescent strengths and family functioning. By definition, adolescents with serious emotional disturbance (SED) have both behavior problems and functional impairments. Therefore, it was beneficial to assess both of these outcomes in this study.

Appendix A

Child Behavior Checklist (CBCL)



CHILD BEHAVIOR CHECKLIST FOR AGES 4–18

Please Print

For office use only
ID #

CHILD'S FULL NAME: FIRST MIDDLE LAST

SEX: ☐ Boy ☐ Girl

AGE

ETHNIC GROUP OR RACE

TODAY'S DATE: Mo. _____ Date _____ Yr. _____

CHILD'S BIRTHDATE: Mo. _____ Date _____ Yr. _____

GRADE IN SCHOOL _____

NOT ATTENDING SCHOOL ☐

Please fill out this form to reflect *your* view of the child's behavior even if other people might not agree. Feel free to print additional comments beside each item and in the spaces provided on page 2.

PARENTS' USUAL TYPE OF WORK, even if not working now. *(Please be specific—for example, auto mechanic, high school teacher, homemaker, laborer, lathe operator, shoe salesman, army sergeant.)*

FATHER'S TYPE OF WORK: _____

MOTHER'S TYPE OF WORK: _____

THIS FORM FILLED OUT BY:

☐ Mother (full name) _____

☐ Father (full name) _____

☐ Other—full name & relationship to child: _____

I. Please list the sports your child most likes to take part in. For example: swimming, baseball, skating, skate boarding, bike riding, fishing, etc.

☐ None

	Compared to others of the same age, about how much time does he/she spend in each?				Compared to others of the same age, how well does he/she do each one?			
	Don't Know	Less Than Average	Average	More Than Average	Don't Know	Below Average	Average	Above Average
a. _____	☐	☐	☐	☐	☐	☐	☐	☐
b. _____	☐	☐	☐	☐	☐	☐	☐	☐
c. _____	☐	☐	☐	☐	☐	☐	☐	☐

II. Please list your child's favorite hobbies, activities, and games, other than sports. For example: stamps, dolls, books, piano, crafts, cars, singing, etc. (Do ***not*** include listening to radio or TV.)

☐ None

	Compared to others of the same age, about how much time does he/she spend in each?				Compared to others of the same age, how well does he/she do each one?			
	Don't Know	Less Than Average	Average	More Than Average	Don't Know	Below Average	Average	Above Average
a. _____	☐	☐	☐	☐	☐	☐	☐	☐
b. _____	☐	☐	☐	☐	☐	☐	☐	☐
c. _____	☐	☐	☐	☐	☐	☐	☐	☐

III. Please list any organizations, clubs, teams, or groups your child belongs to.

☐ None

	Compared to others of the same age, how active is he/she in each?			
	Don't Know	Less Active	Average	More Active
a. _____	☐	☐	☐	☐
b. _____	☐	☐	☐	☐
c. _____	☐	☐	☐	☐

IV. Please list any jobs or chores your child has. For example: paper route, babysitting, making bed, working in store, etc. (Include ***both*** paid and unpaid jobs and chores.)

☐ None

	Compared to others of the same age, how well does he/she carry them out?			
	Don't Know	Below Average	Average	Above Average
a. _____	☐	☐	☐	☐
b. _____	☐	☐	☐	☐
c. _____	☐	☐	☐	☐

4-95 Edition

PAGE 1

Please Print

V. 1. About how many close friends does your child have? (Do *not* include brothers & sisters) ☐ None ☐ 1 ☐ 2 or 3 ☐ 4 or more

2. About how many times a week does your child do things with any friends outside of regular school hours? (Do *not* include brothers & sisters) ☐ Less than 1 ☐ 1 or 2 ☐ 3 or more

VI. Compared to others of his/her age, how well does your child:

	Worse	About Average	Better	
a. Get along with his/her brothers & sisters?	☐	☐	☐	☐ Has no brothers or sisters
b. Get along with other kids?	☐	☐	☐	
c. Behave with his/her parents?	☐	☐	☐	
d. Play and work alone?	☐	☐	☐	

VII. 1. For ages 6 and older—performance in academic subjects. ☐ Does not attend school because _____

Check a box for each subject that child takes	Failing	Below Average	Average	Above Average
a. Reading, English, or Language Arts	☐	☐	☐	☐
b. History or Social Studies	☐	☐	☐	☐
c. Arithmetic or Math	☐	☐	☐	☐
d. Science	☐	☐	☐	☐
Other academic subjects—for example: computer courses, foreign language, business. Do ***not*** include gym, shop, driver's ed., etc. e. _____	☐	☐	☐	☐
f. _____	☐	☐	☐	☐
g. _____	☐	☐	☐	☐

2. Does your child receive special remedial services or attend a special class or special school? ☐ No ☐ Yes—kind of services, class, or school:

3. Has your child repeated any grades? ☐ No ☐ Yes—grades and reasons:

4. Has your child had any academic or other problems in school? ☐ No ☐ Yes—please describe:

When did these problems start?

Have these problems ended? ☐ No ☐ Yes—when?

Does your child have any illness or disability (either physical or mental)? ☐ No ☐ Yes—please describe:

What concerns you most about your child?

Please describe the best things about your child:

Below is a list of items that describe children and youth. For each item that describes your child ***now or within the past 6 months***, please circle the ***2*** if the item is ***very true or often true*** of your child. Circle the ***1*** if the item is ***somewhat or sometimes true*** of your child. If the item is ***not true*** of your child, circle the ***0***. Please answer all items as well as you can, even if some do not seem to apply to your child.

Please Print

0 = Not True (as far as you know) 1 = Somewhat or Sometimes True 2 = Very True or Often True

0 1 2 1. Acts too young for his/her age
0 1 2 2. Allergy (describe): _____
_____
0 1 2 3. Argues a lot
0 1 2 4. Asthma
0 1 2 5. Behaves like opposite sex
0 1 2 6. Bowel movements outside toilet
0 1 2 7. Bragging, boasting
0 1 2 8. Can't concentrate, can't pay attention for long
0 1 2 9. Can't get his/her mind off certain thoughts; obsessions (describe): _____
_____
0 1 2 10. Can't sit still, restless, or hyperactive
0 1 2 11. Clings to adults or too dependent
0 1 2 12. Complains of loneliness
0 1 2 13. Confused or seems to be in a fog
0 1 2 14. Cries a lot
0 1 2 15. Cruel to animals
0 1 2 16. Cruelty, bullying, or meanness to others
0 1 2 17. Day-dreams or gets lost in his/her thoughts
0 1 2 18. Deliberately harms self or attempts suicide
0 1 2 19. Demands a lot of attention
0 1 2 20. Destroys his/her own things
0 1 2 21. Destroys things belonging to his/her family or others
0 1 2 22. Disobedient at home
0 1 2 23. Disobedient at school
0 1 2 24. Doesn't eat well
0 1 2 25. Doesn't get along with other kids
0 1 2 26. Doesn't seem to feel guilty after misbehaving
0 1 2 27. Easily jealous
0 1 2 28. Eats or drinks things that are not food—***don't*** include sweets (describe): _____
_____
0 1 2 29. Fears certain animals, situations, or places, other than school (describe): _____
_____
0 1 2 30. Fears going to school
0 1 2 31. Fears he/she might think or do something bad
0 1 2 32. Feels he/she has to be perfect
0 1 2 33. Feels or complains that no one loves him/her
0 1 2 34. Feels others are out to get him/her
0 1 2 35. Feels worthless or inferior
0 1 2 36. Gets hurt a lot, accident-prone
0 1 2 37. Gets in many fights
0 1 2 38. Gets teased a lot
0 1 2 39. Hangs around with others who get in trouble
0 1 2 40. Hears sounds or voices that aren't there (describe): _____
_____
0 1 2 41. Impulsive or acts without thinking
0 1 2 42. Would rather be alone than with others
0 1 2 43. Lying or cheating
0 1 2 44. Bites fingernails
0 1 2 45. Nervous, highstrung, or tense
0 1 2 46. Nervous movements or twitching (describe): _____
_____
0 1 2 47. Nightmares
0 1 2 48. Not liked by other kids
0 1 2 49. Constipated, doesn't move bowels
0 1 2 50. Too fearful or anxious
0 1 2 51. Feels dizzy
0 1 2 52. Feels too guilty
0 1 2 53. Overeating
0 1 2 54. Overtired
0 1 2 55. Overweight

56. Physical problems ***without known medical cause:***

0 1 2 a. Aches or pains (***not*** stomach or headaches)
0 1 2 b. Headaches
0 1 2 c. Nausea, feels sick
0 1 2 d. Problems with eyes (***not*** if corrected by glasses) (describe): _____
0 1 2 e. Rashes or other skin problems
0 1 2 f. Stomachaches or cramps
0 1 2 g. Vomiting, throwing up
0 1 2 h. Other (describe): _____
_____

Please see other side

Please Print

0 = Not True (as far as you know) 1 = Somewhat or Sometimes True 2 = Very True or Often True

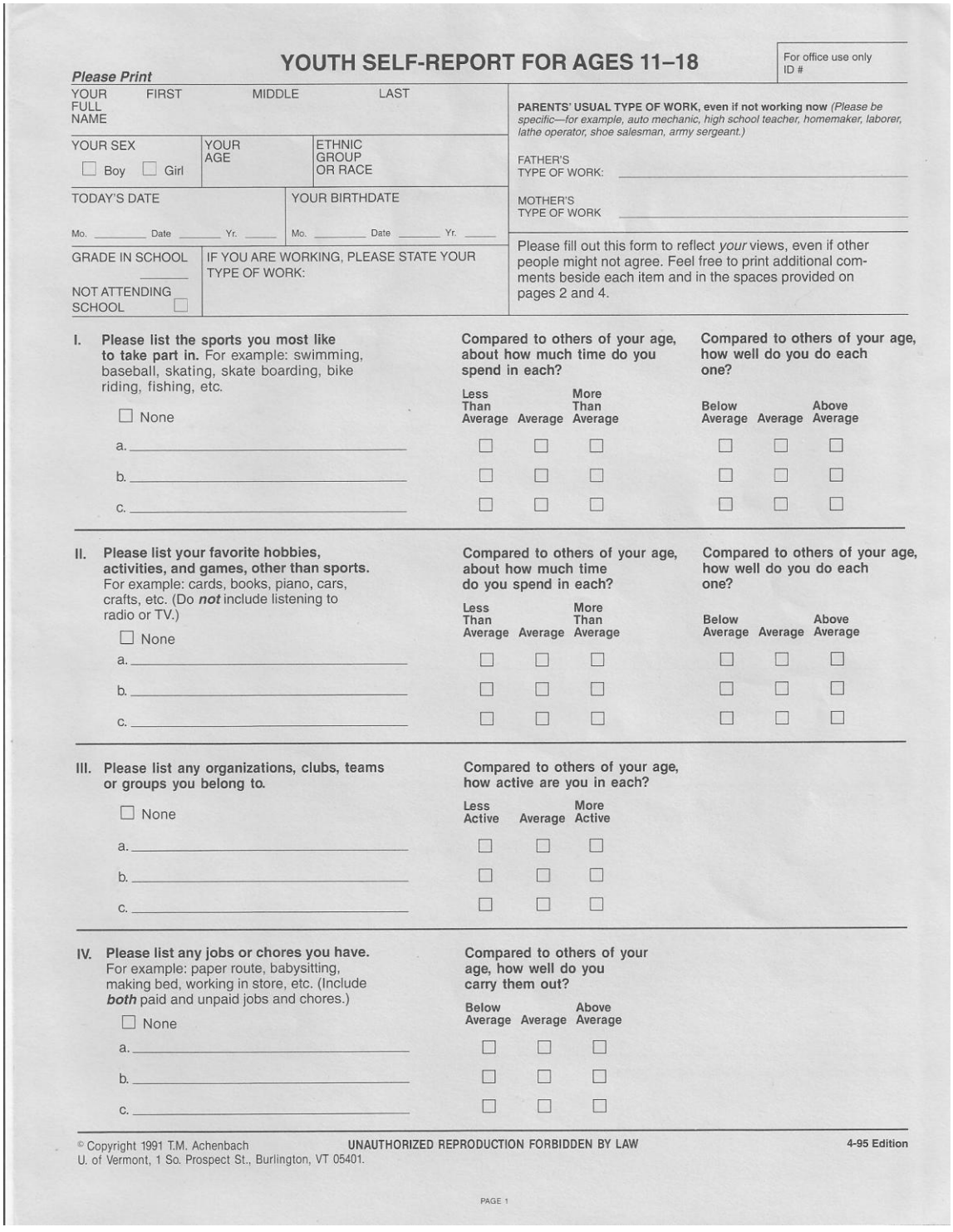
0 1 2 57. Physically attacks people
0 1 2 58. Picks nose, skin, or other parts of body (describe): _____
_____
0 1 2 59. Plays with own sex parts in public
0 1 2 60. Plays with own sex parts too much
0 1 2 61. Poor school work
0 1 2 62. Poorly coordinated or clumsy
0 1 2 63. Prefers being with older kids
0 1 2 64. Prefers being with younger kids
0 1 2 65. Refuses to talk
0 1 2 66. Repeats certain acts over and over; compulsions (describe): _____
_____
0 1 2 67. Runs away from home
0 1 2 68. Screams a lot
0 1 2 69. Secretive, keeps things to self
0 1 2 70. Sees things that aren't there (describe):
_____
_____
0 1 2 71. Self-conscious or easily embarrassed
0 1 2 72. Sets fires
0 1 2 73. Sexual problems (describe): _____
_____
_____
0 1 2 74. Showing off or clowning
0 1 2 75. Shy or timid
0 1 2 76. Sleeps less than most kids
0 1 2 77. Sleeps more than most kids during day and/or night (describe): _____
_____
0 1 2 78. Smears or plays with bowel movements
0 1 2 79. Speech problem (describe): _____
_____
0 1 2 80. Stares blankly
0 1 2 81. Steals at home
0 1 2 82. Steals outside the home
0 1 2 83. Stores up things he/she doesn't need (describe): _____
_____
0 1 2 84. Strange behavior (describe): _____
_____
0 1 2 85. Strange ideas (describe): _____
_____
0 1 2 86. Stubborn, sullen, or irritable
0 1 2 87. Sudden changes in mood or feelings
0 1 2 88. Sulks a lot
0 1 2 89. Suspicious
0 1 2 90. Swearing or obscene language
0 1 2 91. Talks about killing self
0 1 2 92. Talks or walks in sleep (describe): _____
_____
0 1 2 93. Talks too much
0 1 2 94. Teases a lot
0 1 2 95. Temper tantrums or hot temper
0 1 2 96. Thinks about sex too much
0 1 2 97. Threatens people
0 1 2 98. Thumb-sucking
0 1 2 99. Too concerned with neatness or cleanliness
0 1 2 100. Trouble sleeping (describe): _____
_____
0 1 2 101. Truancy, skips school
0 1 2 102. Underactive, slow moving, or lacks energy
0 1 2 103. Unhappy, sad, or depressed
0 1 2 104. Unusually loud
0 1 2 105. Uses alcohol or drugs for nonmedical purposes (describe): _____
_____
0 1 2 106. Vandalism
0 1 2 107. Wets self during the day
0 1 2 108. Wets the bed
0 1 2 109. Whining
0 1 2 110. Wishes to be of opposite sex
0 1 2 111. Withdrawn, doesn't get involved with others
0 1 2 112. Worries
113. Please write in any problems your child has that were not listed above:
0 1 2 _____
0 1 2 _____
0 1 2 _____

PLEASE BE SURE YOU HAVE ANSWERED ALL ITEMS.

UNDERLINE ANY YOU ARE CONCERNED ABOUT.

Appendix B

Youth Self Report Form (YSR)



YOUTH SELF-REPORT FOR AGES 11–18

Please Print

For office use only
ID #

YOUR FULL NAME: FIRST MIDDLE LAST

YOUR SEX ☐ Boy ☐ Girl

YOUR AGE

ETHNIC GROUP OR RACE

TODAY'S DATE Mo. _____ Date _____ Yr. _____

YOUR BIRTHDATE Mo. _____ Date _____ Yr. _____

GRADE IN SCHOOL _____

NOT ATTENDING SCHOOL ☐

IF YOU ARE WORKING, PLEASE STATE YOUR TYPE OF WORK:

PARENTS' USUAL TYPE OF WORK, even if not working now *(Please be specific—for example, auto mechanic, high school teacher, homemaker, laborer, lathe operator, shoe salesman, army sergeant.)*

FATHER'S TYPE OF WORK: _____

MOTHER'S TYPE OF WORK _____

Please fill out this form to reflect *your* views, even if other people might not agree. Feel free to print additional comments beside each item and in the spaces provided on pages 2 and 4.

I. Please list the sports you most like to take part in. For example: swimming, baseball, skating, skate boarding, bike riding, fishing, etc.

☐ None

a. _____

b. _____

c. _____

Compared to others of your age, about how much time do you spend in each?

	Less Than Average	Average	More Than Average
a.	☐	☐	☐
b.	☐	☐	☐
c.	☐	☐	☐

Compared to others of your age, how well do you do each one?

	Below Average	Average	Above Average
a.	☐	☐	☐
b.	☐	☐	☐
c.	☐	☐	☐

II. Please list your favorite hobbies, activities, and games, other than sports. For example: cards, books, piano, cars, crafts, etc. (Do ***not*** include listening to radio or TV.)

☐ None

a. _____

b. _____

c. _____

Compared to others of your age, about how much time do you spend in each?

	Less Than Average	Average	More Than Average
a.	☐	☐	☐
b.	☐	☐	☐
c.	☐	☐	☐

Compared to others of your age, how well do you do each one?

	Below Average	Average	Above Average
a.	☐	☐	☐
b.	☐	☐	☐
c.	☐	☐	☐

III. Please list any organizations, clubs, teams or groups you belong to.

☐ None

a. _____

b. _____

c. _____

Compared to others of your age, how active are you in each?

	Less Active	Average	More Active
a.	☐	☐	☐
b.	☐	☐	☐
c.	☐	☐	☐

IV. Please list any jobs or chores you have. For example: paper route, babysitting, making bed, working in store, etc. (Include ***both*** paid and unpaid jobs and chores.)

☐ None

a. _____

b. _____

c. _____

Compared to others of your age, how well do you carry them out?

	Below Average	Average	Above Average
a.	☐	☐	☐
b.	☐	☐	☐
c.	☐	☐	☐

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PAGE 1

Please Print

V. 1. About how many close friends do you have? (Do *not* include brothers & sisters) ☐ None ☐ 1 ☐ 2 or 3 ☐ 4 or more

2. About how many times a week do you do things with any friends outside of regular school hours? (Do *not* include brothers & sisters) ☐ less than 1 ☐ 1 or 2 ☐ 3 or more

VI. Compared to others of your age, how well do you:

	Worse	About Average	Better	
a. Get along with your brothers & sisters?	☐	☐	☐	☐ I have no brothers or sisters
b. Get along with other kids?	☐	☐	☐	
c. Get along with your parents?	☐	☐	☐	
d. Do things by yourself?	☐	☐	☐	

VII. Performance in academic subjects. ☐ **I do not attend school because** _____

Check a box for each subject that you take	Failing	Below Average	Average	Above Average
a. English or Language Arts	☐	☐	☐	☐
b. History or Social Studies	☐	☐	☐	☐
c. Arithmetic or Math	☐	☐	☐	☐
d. Science	☐	☐	☐	☐
Other academic subjects – for example: computer courses, foreign language, business. Do ***not*** include gym, shop, driver's ed., etc. e. _____	☐	☐	☐	☐
f. _____	☐	☐	☐	☐
g. _____	☐	☐	☐	☐

Do you have any illness, disability, or handicap? ☐ **No** ☐ **Yes—please describe:**

Please describe any concerns or problems you have about school:

Please describe any other concerns you have:

Please describe the best things about yourself:

Below is a list of items that describe kids. For each item that describes you ***now or within the past 6 months***, please circle the ***2*** if the item is ***very true or often true*** of you. Circle the ***1*** if the item is ***somewhat or sometimes true*** of you. If the item is ***not true*** of you, circle the ***0***.

Please Print **0 = Not True 1 = Somewhat or Sometimes True 2 = Very True or Often True**

0 1 2 1. I act too young for my age
0 1 2 2. I have an allergy (describe): _____
_____
_____
0 1 2 3. I argue a lot
0 1 2 4. I have asthma
0 1 2 5. I act like the opposite sex
0 1 2 6. I like animals
0 1 2 7. I brag
0 1 2 8. I have trouble concentrating or paying attention
0 1 2 9. I can't get my mind off certain thoughts (describe): _____
_____
_____
0 1 2 10. I have trouble sitting still
0 1 2 11. I'm too dependent on adults
0 1 2 12. I feel lonely
0 1 2 13. I feel confused or in a fog
0 1 2 14. I cry a lot
0 1 2 15. I am pretty honest
0 1 2 16. I am mean to others
0 1 2 17. I daydream a lot
0 1 2 18. I deliberately try to hurt or kill myself
0 1 2 19. I try to get a lot of attention
0 1 2 20. I destroy my own things
0 1 2 21. I destroy things belonging to others
0 1 2 22. I disobey my parents
0 1 2 23. I disobey at school
0 1 2 24. I don't eat as well as I should
0 1 2 25. I don't get along with other kids
0 1 2 26. I don't feel guilty after doing something I shouldn't
0 1 2 27. I am jealous of others
0 1 2 28. I am willing to help others when they need help
0 1 2 29. I am afraid of certain animals, situations, or places, other than school (describe): _____
_____
_____
0 1 2 30. I am afraid of going to school
0 1 2 31. I am afraid I might think or do something bad
0 1 2 32. I feel that I have to be perfect
0 1 2 33. I feel that no one loves me
0 1 2 34. I feel that others are out to get me
0 1 2 35. I feel worthless or inferior
0 1 2 36. I accidentally get hurt a lot
0 1 2 37. I get in many fights
0 1 2 38. I get teased a lot
0 1 2 39. I hang around with kids who get in trouble
0 1 2 40. I hear sounds or voices that other people think aren't there (describe): _____
_____
_____
0 1 2 41. I act without stopping to think
0 1 2 42. I would rather be alone than with others
0 1 2 43. I lie or cheat
0 1 2 44. I bite my fingernails
0 1 2 45. I am nervous or tense
0 1 2 46. Parts of my body twitch or make nervous movements (describe):
_____
_____
0 1 2 47. I have nightmares
0 1 2 48. I am not liked by other kids
0 1 2 49. I can do certain things better than most kids
0 1 2 50. I am too fearful or anxious
0 1 2 51. I feel dizzy
0 1 2 52. I feel too guilty
0 1 2 53. I eat too much
0 1 2 54. I feel overtired
0 1 2 55. I am overweight
56. Physical problems ***without known medical cause:***
0 1 2 a. Aches or pains (***not*** stomach or headaches)
0 1 2 b. Headaches
0 1 2 c. Nausea, feel sick
0 1 2 d. Problems with eyes (***not*** if corrected by glasses) (describe):
_____
_____
0 1 2 e. Rashes or other skin problems
0 1 2 f. Stomachaches or cramps
0 1 2 g. Vomiting, throwing up
0 1 2 h. Other (describe): _____
_____
_____
0 1 2 57. I physically attack people
0 1 2 58. I pick my skin or other parts of my body (describe): _____
_____
_____
0 1 2 59. I can be pretty friendly
0 1 2 60. I like to try new things
0 1 2 61. My school work is poor
0 1 2 62. I am poorly coordinated or clumsy
0 1 2 63. I would rather be with older kids than with kids my own age

Please see other side

0 = Not True 1 = Somewhat or Sometimes True 2 = Very True or Often True

0 1 2 64. I would rather be with younger kids than with kids my own age
0 1 2 65. I refuse to talk
0 1 2 66. I repeat certain acts over and over (describe): _____
_____
_____
0 1 2 67. I run away from home
0 1 2 68. I scream a lot
0 1 2 69. I am secretive or keep things to myself
0 1 2 70. I see things that other people think aren't there (describe): _____
_____
_____
0 1 2 71. I am self-conscious or easily embarrassed
0 1 2 72. I set fires
0 1 2 73. I can work well with my hands
0 1 2 74. I show off or clown
0 1 2 75. I am shy
0 1 2 76. I sleep less than most kids
0 1 2 77. I sleep more than most kids during day and/or night (describe): _____
_____
_____
0 1 2 78. I have a good imagination
0 1 2 79. I have a speech problem (describe): _____
_____
_____
_____
0 1 2 80. I stand up for my rights
0 1 2 81. I steal at home
0 1 2 82. I steal from places other than home
0 1 2 83. I store up things I don't need (describe):
_____
_____
0 1 2 84. I do things other people think are strange (describe): _____
_____
_____

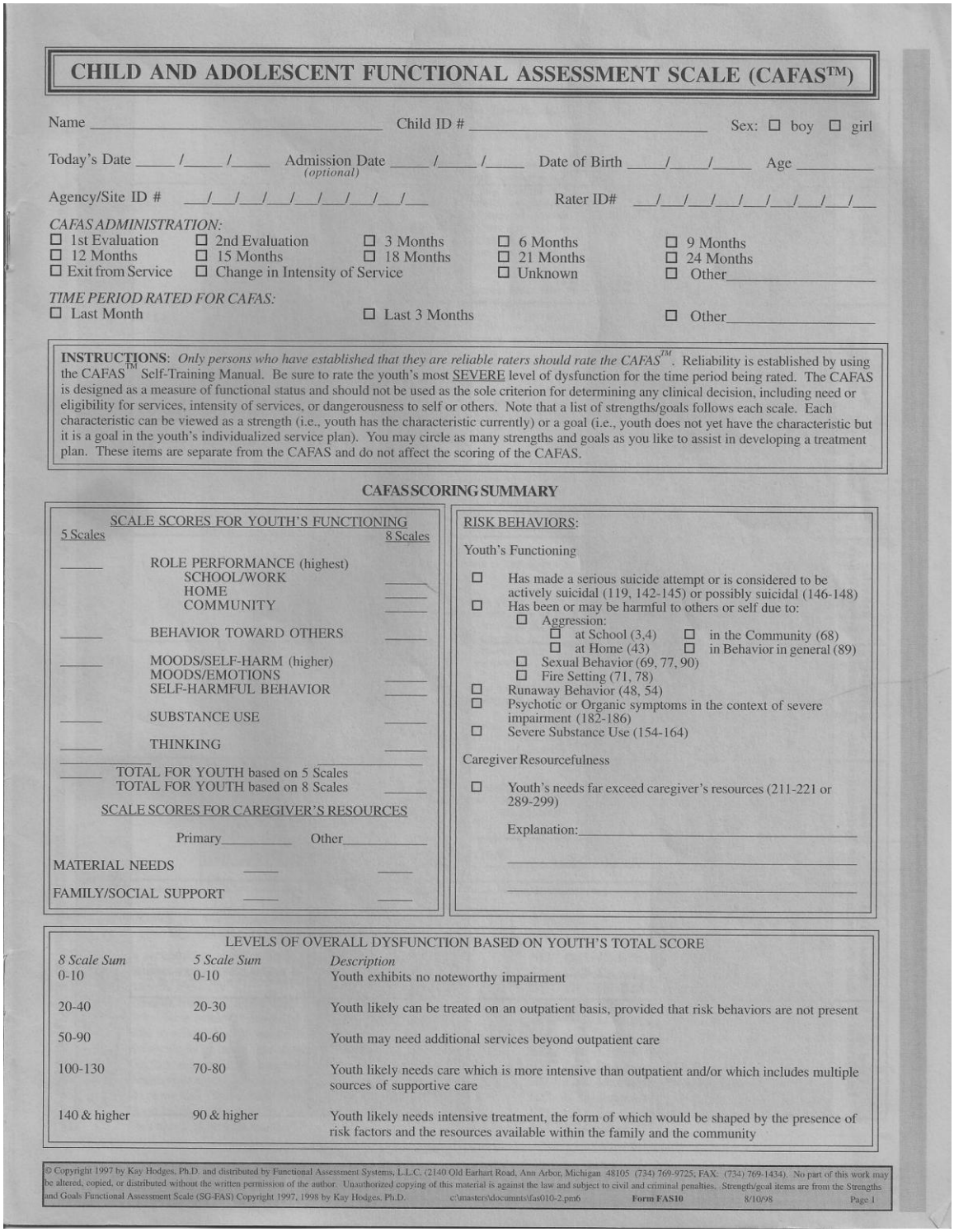
0 1 2 85. I have thoughts that other people would think are strange (describe): _____
_____
_____
_____
0 1 2 86. I am stubborn
0 1 2 87. My moods or feelings change suddenly
0 1 2 88. I enjoy being with other people
0 1 2 89. I am suspicious
0 1 2 90. I swear or use dirty language
0 1 2 91. I think about killing myself
0 1 2 92. I like to make others laugh
0 1 2 93. I talk too much
0 1 2 94. I tease others a lot
0 1 2 95. I have a hot temper
0 1 2 96. I think about sex too much
0 1 2 97. I threaten to hurt people
0 1 2 98. I like to help others
0 1 2 99. I am too concerned about being neat or clean
0 1 2 100. I have trouble sleeping (describe): _____
_____
_____
0 1 2 101. I cut classes or skip school
0 1 2 102. I don't have much energy
0 1 2 103. I am unhappy, sad, or depressed
0 1 2 104. I am louder than other kids
0 1 2 105. I use alcohol or drugs for nonmedical purposes (describe): _____
_____
_____
_____
0 1 2 106. I try to be fair to others
0 1 2 107. I enjoy a good joke
0 1 2 108. I like to take life easy
0 1 2 109. I try to help other people when I can
0 1 2 110. I wish I were of the opposite sex
0 1 2 111. I keep from getting involved with others
0 1 2 112. I worry a lot

Please write down anything else that describes your feelings, behavior, or interests

PLEASE BE SURE YOU HAVE ANSWERED ALL ITEMS

Appendix C

Child and Adolescent Functional Assessment Scale (CAFAS)



CHILD AND ADOLESCENT FUNCTIONAL ASSESSMENT SCALE (CAFAS™)

Name _____ Child ID # _____ Sex: ☐ boy ☐ girl

Today's Date _____/_____/_____ Admission Date _____/_____/_____ (optional) Date of Birth _____/_____/_____ Age _____

Agency/Site ID # ___/___/___/___/___/___/___/___/___/___ Rater ID# ___/___/___/___/___/___/___/___/___/___

CAFAS ADMINISTRATION:

☐ 1st Evaluation ☐ 2nd Evaluation ☐ 3 Months ☐ 6 Months ☐ 9 Months
☐ 12 Months ☐ 15 Months ☐ 18 Months ☐ 21 Months ☐ 24 Months
☐ Exit from Service ☐ Change in Intensity of Service ☐ Unknown ☐ Other_____

TIME PERIOD RATED FOR CAFAS:

☐ Last Month ☐ Last 3 Months ☐ Other_____

INSTRUCTIONS: *Only persons who have established that they are reliable raters should rate the CAFAS™.* Reliability is established by using the CAFAS™ Self-Training Manual. Be sure to rate the youth's most SEVERE level of dysfunction for the time period being rated. The CAFAS is designed as a measure of functional status and should not be used as the sole criterion for determining any clinical decision, including need or eligibility for services, intensity of services, or dangerousness to self or others. Note that a list of strengths/goals follows each scale. Each characteristic can be viewed as a strength (i.e., youth has the characteristic currently) or a goal (i.e., youth does not yet have the characteristic but it is a goal in the youth's individualized service plan). You may circle as many strengths and goals as you like to assist in developing a treatment plan. These items are separate from the CAFAS and do not affect the scoring of the CAFAS.

CAFAS SCORING SUMMARY

SCALE SCORES FOR YOUTH'S FUNCTIONING

5 Scales		8 Scales
_____	ROLE PERFORMANCE (highest)	
	SCHOOL/WORK	_____
	HOME	_____
	COMMUNITY	_____
_____	BEHAVIOR TOWARD OTHERS	_____
_____	MOODS/SELF-HARM (higher)	
	MOODS/EMOTIONS	_____
	SELF-HARMFUL BEHAVIOR	_____
_____	SUBSTANCE USE	_____
_____	THINKING	_____
_____	TOTAL FOR YOUTH based on 5 Scales	
_____	TOTAL FOR YOUTH based on 8 Scales	_____

SCALE SCORES FOR CAREGIVER'S RESOURCES

Primary_____ Other_____

MATERIAL NEEDS _____ _____

FAMILY/SOCIAL SUPPORT _____ _____

RISK BEHAVIORS:

Youth's Functioning

☐ Has made a serious suicide attempt or is considered to be actively suicidal (119, 142-145) or possibly suicidal (146-148)
☐ Has been or may be harmful to others or self due to:
  ☐ Aggression:
    ☐ at School (3,4) ☐ in the Community (68)
    ☐ at Home (43) ☐ in Behavior in general (89)
  ☐ Sexual Behavior (69, 77, 90)
  ☐ Fire Setting (71, 78)
☐ Runaway Behavior (48, 54)
☐ Psychotic or Organic symptoms in the context of severe impairment (182-186)
☐ Severe Substance Use (154-164)

Caregiver Resourcefulness

☐ Youth's needs far exceed caregiver's resources (211-221 or 289-299)

Explanation:_____

_____

_____

LEVELS OF OVERALL DYSFUNCTION BASED ON YOUTH'S TOTAL SCORE

8 Scale Sum	*5 Scale Sum*	*Description*
0-10	0-10	Youth exhibits no noteworthy impairment
20-40	20-30	Youth likely can be treated on an outpatient basis, provided that risk behaviors are not present
50-90	40-60	Youth may need additional services beyond outpatient care
100-130	70-80	Youth likely needs care which is more intensive than outpatient and/or which includes multiple sources of supportive care
140 & higher	90 & higher	Youth likely needs intensive treatment, the form of which would be shaped by the presence of risk factors and the resources available within the family and the community

CAFAS PROFILE: YOUTH'S FUNCTIONING

Level of Impairment	School/Work Role Peformance	Home Role Performance	Community Role Performance	Behavior Toward Others	Moods/ Emotions	Self-Harmful Behavior	Substance Use	Thinking
	○	○	○	○	○	○	○	○
	1	41	66	88	116	142	154	182
	2	42	67	89	117	143	155	183
	3	43	68	90	118	144	156	184
	4	44	69	91	119	145	157	185
SEVERE	5	45	70	92	120		158	186
	6	46	71				159	
30	7	47	72				160	
	8	48					161	
	9	49					162	
	10	50					163	
	11						164	
	○	○	○	○	○	○	○	○
	12	51	73	93	121	146	165	187
	13	52	74	94	122	147	166	188
	14	53	75	95	123	148	167	189
	15	54	76	96	124		168	190
MODERATE	16	55	77	97	125		169	191
	17	56	78	98	126		170	192
20	18		79	99	127		171	
	19			100				
	20			101				
	21			102				
	○	○	○	○	○	○	○	○
	22	57	80	103	128	149	172	193
	23	58	81	104	129	150	173	194
	24	59	82	105	130		174	195
	25	60	83	106	131		175	196
MILD	26	61		107	132			197
	27			108	133			
10				109	134			
				110	135			
	○	○	○	○	○	○	○	○
	28	62	84	111	136	151	176	198
	29	63	85	112	137	152	177	199
	30	64	86	113	138		178	
	31			114	139		179	
MINIMAL/NO	32				140		180	
	33							
0	34							
	35							
	36							
	37							
	38							
	39							
COULD NOT SCORE	40 ○	65 ○	87 ○	115 ○	141 ○	153 ○	181 ○	200 ○

For each scale: (1) mark the item number(s) which correspond to those marked on the CAFAS form, (2) fill in the circle indicating severity level, (3) connect the circles.

Youth's Name _____ ID# _____

	Severe Impairment *Severe disruption or incapacitation* (30)	Moderate Impairment *Major or persistent disruption* (20)	Mild Impairment *Significant problems or distress* (10)	Minimal or No Impairment *No disruption of functioning* (0)
SCHOOL/WORK SUBSCALE Role Performance ☐	001 Out of job or school due to behavior (e.g., asked to leave or refuses to attend). 002 Expelled or equivalent from school. 003 Judged to be a threat to others because of aggressive potential (i.e., resulting from youth's actions or statements); monitoring or supervision needed. 004 Harmed or made serious threat to hurt a teacher/peer/co-worker/supervisor. 005 Unable to meet minimum requirements for behavior in classroom (either in regular or specialized classroom in public school or equivalent) without special accomodations. 006 Chronic truancy resulting in negative consequences (e.g., loss of course credit, failing courses or tests, parents notified). 007 Chronic absences, other than truancy, resulting in negative consequences (e.g., loss of course credit, failing courses or tests, parents notified). 008 Disruptive behavior, related to poor attention or high activity level, persists despite the youth having been placed in a special learning environment or receiving a specialized program or treatment. 009 Failing all or most classes. 010 Dropped out of school and holds no job.	012 Non-compliant behavior which results in persistent or repeated disruption of group functioning or becomes known to authority figures other than classroom teacher (e.g., principal) because of severity and/or chronicity. 013 Inappropriate behavior which results in persistent or repeated disruption of group functioning or becomes known to authority figures other than classroom teacher (e.g., principal) because of severity and/or chronicity. 014 Frequently truant (i.e., approximately once every two weeks or for several consecutive days). 015 Frequent absences from school (i.e., approximately once every two weeks or for several consecutive days) due to impairing behavior and excluding truancy or physical illness. 016 At work, missed days or tardiness results in reprimand or equivalent. 017 Behavior is disruptive, related to poor attention or high activity level, resulting in individualized program or specialized treatment being needed or implemented. 018 Receiving a reprimand, warning, or equivalent at work. 019 Grade average is lower than "C" and is not due to lack of ability or any physical disabilities. 020 Failing at least half of courses and this is not due to lack of ability or any physical disabilities.	022 Non-compliant behavior results in teacher or immediate supervisor bringing attention to problems or structuring youth's activities so as to avoid predictable difficulties, more than other youth. 023 Inappropriate behavior results in teacher or immediate supervisor bringing attention to problems or structuring youth's activities so as to avoid predictable difficulties, more than other youth. 024 Occasionally disobeys school rules, with no harm to others or to property, more than other youth. 025 Problems in school, related to poor attention or high activity level, are present but are not disruptive to the classroom (can be managed in the regular classroom, with the youth able to achieve satisfactorily). 026 School/work productivity is less than expected for abilities due to failure to execute assignments correctly, complete work, hand in work on time, etc.	028 Reasonably comfortable and competent in relevant roles. 029 Minor problems satisfactorily resolved. 030 Functions satisfactorily even with distractions. 031 School grades are average or above. 032 Schoolwork is commensurate with ability and youth is mentally retarded. 033 Schoolwork is commensurate with ability and youth is learning disabled. 034 Schoolwork is commensurate with ability and youth is a slow learner. 035 Schoolwork is commensurate with ability and youth has a learning impairment due to maternal alcohol or drug use. 036 In a mostly vocational program and doing satisfactorily. 037 Graduated from high school or received GED. 038 Dropped out of school and is working at a job or is actively looking for a job.
	011 EXCEPTION	021 EXCEPTION	027 EXCEPTION	039 EXCEPTION
	Explanation:			COULD NOT SCORE: 040

Strengths(S)/Goals (G) for School/Work Subscale
(OPTIONAL: UNNECESSARY FOR CAFAS RATING)

S1 G1 Is permitted to attend school
S2 G2 Attends more days than not
S3 G3 Attends regularly
S4 G4 Benefits from assistance when problems arise
S5 G5 Behavior at school is devoid of aggressive acts or threats
S6 G6 Sent to school disciplinarians infrequently
S7 G7 No incidents of being sent to school disciplinarians
S8 G8 Teacher in specialized classroom can manage behavior
S9 G9 Regular classroom teacher can manage behavior
S10 G10 Stays on task (appropriate to age)
S11 G11 Good behavior in classroom (not a problem)
S12 G12 Gets along okay with teachers
S13 G13 Completes schoolwork
S14 G14 School grades are average or above
S15 G15 Graduated or received GED
S16 G16 Feels good about school work
S17 G17 Likes going to school
S18 G18 Appreciates importance of learning academic skills
S19 G19 Likes to read
S20 G20 Participates in after-school activities, clubs, or sports
S21 G21 Maintains steady employment
S22 G22 Satisfactory performance in job/vocation
S23 G23 For teenage parent, is continuing education
S24 G24 Other_____

Youth's Name _____ ID# _____

	Severe Impairment *Severe disruption or incapacitation* **(30)**	**Moderate Impairment** *Major or persistent disruption* **(20)**	**Mild Impairment** *Significant problems or distress* **(10)**	**Minimal or No Impairment** *No disruption of functioning* **(0)**
HOME SUBSCALE Role Performance ☐	041 Not in the home due to behavior in the home (if youth were in the home, extensive management by others would be required in order for youth to be maintained in the home). 042 Extensive management by others required in order to be maintained in the home. 043 Deliberate and serious threats of physical harm to household members. 044 Repeated acts of intimidation toward household members. 045 Behavior and activities are beyond caregiver's influence almost all of the time (i.e., serious and repeated violations of expectations and rules, such as curfew). 046 Behavior and activities have to be constantly monitored in order to ensure safety in the home. 047 Supervision of youth required, which does or would interfere with caregiver's ability to work or carry out other roles. 048 Run away from home overnight more than once, or once for an extended time, and whereabouts unknown to caregiver. 049 Deliberate and severe damage to property in the home (e.g., home structure, grounds, furnishings).	051 Persistent failure to comply with reasonable rules and expectations within the home (e.g., bedtime, curfew); active defiance much of the time. 052 Frequent use of profane, vulgar, or curse words to household members. 053 Repeated irresponsible behavior in the home is potentially dangerous (e.g., leaves stove on). 054 Run away from home overnight and likely whereabouts are known to caregivers, such as friend's home. 055 Deliberate damage to the home.	057 Frequently fails to comply with reasonable rules and expectations within the home. 058 Has to be "watched" or prodded in order to get him/her to do chores or comply with requests. 059 Frequently "balks" or resists routines, chores, or following instructions, but will comply if caregiver insists. 060 Frequently engages in behaviors which are intentionally frustrating or annoying to caregiver (e.g., taunting siblings, purposeful dawdling).	062 Typically complies with reasonable rules and expectations within the home. 063 Minor problems satisfactorily resolved.
	050 EXCEPTION	056 EXCEPTION	061 EXCEPTION	064 EXCEPTION
	Explanation:			COULD NOT SCORE: 065

Strengths(S)/Goals (G) for Home Subscale

(OPTIONAL: UNNECESSARY FOR CAFAS RATING)

S25	G25	Behavior at home is devoid of aggressive acts or threats
S26	G26	Does not use profanity toward others in home
S27	G27	Respectful of property in the home
S28	G28	Can be managed in the home with assistance
S29	G29	Can be managed in the home without assistance
S30	G30	Safe behavior even without close supervision
S31	G31	Reacts non-impulsively over disagreements
S32	G32	Acknowledges the need for parental supervision
S33	G33	Obeys curfew
S34	G34	Obeys rules routinely
S35	G35	Informs parents of activities ahead of time
S36	G36	Good behavior on home visits
S37	G37	Accepts consequences for undesirable behavior
S38	G38	Participates in family-oriented activities (gatherings, vacation, traditions)
S39	G39	Shares responsibilities within the home (e.g., caring for younger children, grandparents)
S40	G40	Other_____

Youth's Name _____ ID# _____

	Severe Impairment *Severe disruption or incapacitation* (30)	Moderate Impairment *Major or persistent disruption* (20)	Mild Impairment *Significant problems or distress* (10)	Minimal or No Impairment *No disruption of functioning* (0)
COMMUNITY SUBSCALE Role Performance ☐	066 Confined related to behavior which seriously violated the law (e.g., stealing involving confrontation of a victim, auto theft, robbery, mugging, purse snatching, fraud, dealing or carrying drugs, break-ins, rape, murder, drive-by shooting). 067 Substantial evidence of, or convicted of, serious violation of the law (e.g., stealing involving confrontation of a victim, auto theft, robbery, mugging, purse snatching, fraud, dealing or carrying drugs, break-ins, rape, murder, drive-by shooting). 068 Involvement with legal system (or became a ward of the state or hospitalized) because of physically assaultive behavior or threatening with a weapon. 069 Involvement with legal system (or became a ward of the state or hospitalized) because of sexually assaultive behavior or inappropriate sexual behavior. 070 Deliberate and severe damage of property outside the home (e.g., school, cars, buildings). 071 Deliberate firesetting with malicious intent.	073 Serious and/or repeated delinquent behavior (e.g., stealing without confronting a victim as in shoplifting, vandalism, defacing property, taking a car for a joyride). 074 On probation or under court supervision for an offense which occurred during the last 3 months. 075 On probation or under court supervision for an offense which occurred prior to the most recent 3 month period. 076 Currently at risk of confinement because of frequent or serious violations of the law. 077 Has been sexually inappropriate such that adults have concern about the welfare of other children who may be around the youth unsupervised. 078 Repeatedly and intentionally plays with fire such that damage to property or person could result.	080 Minor legal violations (e.g., minor driving violations, unruly conduct such that complaint was made, trespassing onto neighbor's property, or harassing neighbor). 081 Single incidents (e.g., defacing property, vandalism, shoplifting). 082 Plays with fire on more than one occasion.	084 Youth does not negatively impact on the community. 085 Typically able to resolve minor problems.
	072 EXCEPTION	079 EXCEPTION	083 EXCEPTION	086 EXCEPTION
	Explanation:			COULD NOT SCORE: 087

Strengths(S)/Goals (G) for Community Subscale
(OPTIONAL: UNNECESSARY FOR CAFAS RATING)

S41	G41	No new arrests	S54	G54	Follows established laws, rules
S42	G42	No new illegal activity	S55	G55	Shows respect to others
S43	G43	No incidents of firesetting	S56	G56	Hangs out with prosocial peers
S44	G44	No sexually inappropriate behavior	S57	G57	Is a member of a prosocial club
S45	G45	Avoids gang activities	S58	G58	Has leisure activities which are alternatives to antisocial behavior
S46	G46	Is trying to disengage from friends who get into trouble			
S47	G47	Doesn't carry weapons	S59	G59	Has supportive relationships (outside of family)
S48	G48	Keeps out of trouble (i.e., is "street smart").	S60	G60	Volunteers
S49	G49	Is not known in community for troublesome behaviors	S61	G61	Respectful of own cultural heritage/elders
S50	G50	Fulfills responsibilities related to juvenile justice, court, etc.	S62	G62	Positively identifies with own cultural heritage
			S63	G63	Participates in activities related to own cultural heritage
S51	G51	Is motivated to stay out of trouble			
S52	G52	Accepts responsibility for misbehavior	S64	G64	Participates in religious/spiritual activities (e.g., attends church)
S53	G53	Genuinely acknowledges how own behavior has hurt or negatively impacted others	S65	G65	Other_____

Youth's Name _____ ID# _____

	Severe Impairment *Severe disruption or incapacitation* (30)	Moderate Impairment *Major or persistent disruption* (20)	Mild Impairment *Significant problems or distress* (10)	Minimal or No Impairment *No disruption of functioning* (0)
BEHAVIOR TOWARD OTHERS ☐	088 Behavior consistently bizarre or extremely odd. 089 Behavior so disruptive or dangerous that harm to others is likely (e.g., hurts or tries to hurt others, such as hitting, biting, throwing things at others, using or threatening to use a weapon or dangerous object). 090 Attempted or accomplished sexual assault or abuse of another person (e.g., used force, verbal threats, or, toward younger youth, intimidation or persuasion). 091 Deliberately and severely cruel to animals.	093 Behavior frequently/typically inappropriate and causes problems for self or others (e.g., fighting, belligerence, promiscuity). 094 Inappropriate sexual behavior in the presence of others or directed toward others. 095 Spiteful and/or vindictive (e.g., deliberately and persistently annoying to others, intentionally damaging personal belongings of others). 096 Poor judgment or impulsive behavior resulting in dangerous or risky activities that could lead to injury or getting into trouble. 097 Frequent display of anger toward others; angry outbursts. 098 Frequently mean to other people or animals. 099 Predominantly relates to others in an exploitative or manipulative manner (e.g., uses/cons others). 100 Involved in gang-like activities in which others are harassed, bullied, intimidated, etc. 101 Persistent problems/difficulties in relating to peers due to antagonizing behaviors (e.g., threatens, shoves).	103 Unusually quarrelsome, argumentative, or annoying to others. 104 Poor judgment or impulsive behavior that is age-inappropriate and causes inconvenience to others. 105 Upset (e.g., temper tantrum) if cannot have or do something immediately, if frustrated, or if criticized. 106 Easily annoyed by others and responds more strongly than other children; quick-tempered. 107 Does not engage in typical peer recreational activities because of tendency to be ignored or rejected by peers. 108 Difficulties in peer interactions or in making friends due to negative behavior (e.g., teasing, ridiculing, picking on others). 109 Immature behavior leads to poor relations with same-age peers or to having friends who are predominantly younger.	111 Relates satisfactorily to others. 112 Is able to establish and sustain a normal range of age-appropriate relationships. 113 Occasional disagreements are resolved reasonably.
	092 EXCEPTION	102 EXCEPTION	110 EXCEPTION	114 EXCEPTION
	Explanation:			COULD NOT SCORE: 115

Strengths(S)/Goals (G) for Behavior Toward Others Subscale
(OPTIONAL: UNNECESSARY FOR CAFAS RATING)

S66	G66	Is aware of problems related to social skills and is working on improving them
S67	G67	Is motivated to have more/better friends
S68	G68	Actively uses coping strategies to deal with difficult situations
S69	G69	Is able to control impulses
S70	G70	Expresses anger through appropriate verbalizations or healthy physical outlets
S71	G71	Has good/close peer friendships which are age appropriate
S72	G72	Is respectful to others
S73	G73	Asserts self in healthy ways
S74	G74	Belongs to community clubs (e.g., scouts, drill corps, musical or dance groups, church fellowship)
S75	G75	Participates in positive peer activities (e.g., sports)
S76	G76	Shows empathy towards others
S77	G77	Is gentle and caring with animals
S78	G78	Has a good relationship with at least one caregiver
S79	G79	Feels loved by at least one adult caregiver/parent figure (e.g. grandmother, aunt)
S80	G80	Has a good relationship with at least one sibling
S81	G81	Views home as nurturant/supportive
S82	G82	For teenage parents, has responsible parenting behavior
S83	G83	Responsible sexual behavior (e.g., abstains or is monogamous)
S84	G84	Other_____

Youth's Name _____ ID# _____

	Severe Impairment *Severe disruption or incapacitation* **(30)**	**Moderate Impairment** *Major or persistent disruption* **(20)**	**Mild Impairment** *Significant problems or distress* **(10)**	**Minimal or No Impairment** *No disruption of functioning* **(0)**
MOODS/ EMOTIONS SUBSCALE (Emotions = anxiety, depression, moodiness, fear, worry, irritability, tenseness, panic, anhedonia) ☐	116 Viewed as odd or strange because emotional responses are incongruous (unreasonable, excessive) most of the time. 117 Fears, worries, or anxieties result in poor attendance at school (i.e., absent for at least one day per week on average) or marked social withdrawal (will not leave the home to visit with friends). 118 Depression is associated with academic incapacitation (i.e., absent at least one day a week on average, or if made to attend school, does not do work) or social incapacitation (i.e., isolates self from friends). 119 Depression is accompanied by suicidal intent (i.e., really wants to die).	121 Marked changes in moods that are generally intense and abrupt. 122 Depressed mood or sadness is persistent (i.e., at least half of the time), with disturbance in functioning in at least one of the following areas: sleeping, eating, concentration, energy level, or normal activities. If only irritability or anhedonia (i.e., marked diminished interest or pleasure in typical activities) is present, there should be disturbance in two or more areas. 123 Youth worries excessively (i.e., out of proportion) and persistently (i.e., at least half of the time), with disturbance in functioning manifested by at least one of the following: sleep problems, tiredness, poor concentration, irritability, muscle tension, or feeling "keyed up." 124 Fears, worries, or anxieties result in the youth expressing marked distress upon being away from the home or parent figures; however, the youth is able to go to school or engage in some social activities. 125 School-age children require special accomodations because of worries or anxieties (e.g., sleeping near parents, calling home). 126 Emotional blunting (i.e., no or few signs of emotional expression; emotional expression is markedly flat).	128 Often anxious, fearful, or sad, with some related symptom present (e.g., nightmares, stomachaches). 129 Disproportionate expression of irritability, fear, or worries. 130 Very self-critical, low self-esteem, feelings of worthlessness. 131 Easily distressed if makes mistakes. 132 Sad, withdrawn, hurt, or anxious if criticized. 133 Sad (or depressed or anhedonic) or anxious in at least one setting for up to a few days at a time. 134 Notable emotional restriction (e.g., has difficulty expressing strong emotions such as fear, hate, love).	136 Feels normal distress, but daily life is not disrupted. 137 Considers self to be an "OK" person. 138 Can express strong emotions appropriately. 139 Experience of sadness and anxiety are age-appropriate.
	120 EXCEPTION	127 EXCEPTION	135 EXCEPTION	140 EXCEPTION
	Explanation:			COULD NOT SCORE: 141

Strengths(S)/Goals (G) for Moods/Emotions Subscale
(OPTIONAL: UNNECESSARY FOR CAFAS RATING)

S85	G85	Can express strong emotions appropriately	S97	G97	Uses distraction to manage mood/anxiety
S86	G86	Is able to express emotional needs appropriately	S98	G98	Talks about concerns to determine if they are warranted
S87	G87	Shows a range of emotions (e.g., not flat affect)			
S88	G88	Has self-awareness of emotional state/emotions	S99	G99	Talks with an adult or others to help keep emotional reactions reasonable
S89	G89	Shows interest in friends and activities			
S90	G90	Has an appropriate understanding of "blame"; does not place too much blame on self	S100	G100	Emotional reactions are consistent with "provoking" circumstances
S91	G91	Feels good about self	S101	G101	No somatic complaints
S92	G92	Has a positive self-perception	S102	G102	Attends school despite feelings
S93	G93	Has a good sense of humor	S103	G103	Participates in peer activities despite feelings
S94	G94	Has healthy outlets for emotional feelings (consistent with culture)	S104	G104	Can be away from caregivers without undue distress
S95	G95	Self-nurturing	S105	G105	No suicidal wish or intent
S96	G96	Uses "self-talk" to manage mood/anxiety	S106	G106	Other_____

Youth's Name _____ ID# _____

	Severe Impairment *Severe disruption or incapacitation* **(30)**	**Moderate Impairment** *Major or persistent disruption* **(20)**	**Mild Impairment** *Significant problems or distress* **(10)**	**Minimal or No Impairment** *No disruption of functioning* **(0)**
SELF-HARMFUL BEHAVIOR SUBSCALE ☐	142 Non-accidental self-destructive behavior has resulted in or could result in serious self-injury or self-harm (e.g., suicide attempt with intent to die, self-starvation). 143 Seemingly non-intentional self-destructive behavior has resulted in or could likely result in serious self-injury (e.g., runs out in the path of a car, opens car door in moving vehicle), and youth is aware of the danger. 144 Has a clear plan to hurt self, or really wants to die.	146 Non-accidental self-harm, mutilation, or injury which is not life-threatening but not trivial (e.g., suicidal gestures or behavior without intent to die, superficial razor cuts). 147 Talks or repeatedly thinks about harming self, killing self, or wanting to die.	149 Repeated non-accidental behavior suggesting self-harm, yet the behavior is very unlikely to cause any serious injury (e.g., repeatedly pinching self or scratching skin with a dull object).	151 Behavior is not indicative of tendencies toward self-harm.
	145 EXCEPTION	148 EXCEPTION	150 EXCEPTION	152 EXCEPTION
	Explanation:			COULD NOT SCORE: 153

Strengths(S)/Goals (G) for Self-Harmful Behavior Subscale
(OPTIONAL: UNNECESSARY FOR CAFAS RATING)

S107	G107	No self-destructive actions
S108	G108	No self-destructive talk
S109	G109	Seeks help if experiences self-destructive urges
S110	G110	Uses coping strategies other than self-harm (e.g., "tuning out")
S111	G111	Uses appropriate outlets (e.g., walks)
S112	G112	Respects his/her body (e.g., not cutting)
S113	G113	Resists being abused
S114	G114	Avoids being sexually exploited
S115	G115	Practices safe sex (e.g., uses condom) or abstinence
S116	G116	Eats at regular intervals; intakes at least minimum daily calories
S117	G117	Maintains adequate weight without supervision
S118	G118	Other_____

Youth's Name _____ ID# _____

	Severe Impairment *Severe disruption or incapacitation* (30)	Moderate Impairment *Major or persistent disruption* (20)	Mild Impairment *Significant problems or distress* (10)	Minimal or No Impairment *No disruption of functioning* (0)
	THESE ITEMS APPLY TO YOUTH OF ALL AGES			
SUBSTANCE USE (Substances = alcohol or drugs) ☐	154 Lifestyle centers on acquisition and use (e.g., preoccupied with thoughts or urges to use substances, cravings for substances, uses in the morning). 155 Dependent on continuing use to maintain functioning (e.g., likely to experience withdrawal symptoms such as feeling sick, headaches, nausea, vomiting, shaking, etc.). 156 Failing or expelled from school related to effects of usage. 157 Fired or losing job related to effects of usage. 158 Frequently intoxicated or high (e.g., more than two times a week). 159 Use of substances results in serious negative consequences (e.g., injured, doing illegal acts, failing classes, experiencing physical health problems). 160 Is pregnant or is a parent and is a drug user. 161 Is pregnant or is a parent and gets drunk or routinely uses alcohol. 162 Has blackouts, drinks alone, or cannot stop drinking once started.	165 Uses in such a way as to interfere with functioning (e.g., job, school, driving) in spite of potential serious consequences (e.g., traffic violations, work or school absences or tardiness, misses out on activities, uses on school days or before work/school). 166 Gets into trouble because of usage (e.g., argues, fights with family or friends, in accident, trouble with teachers, picked up by police, breaks rules, misses curfew). 167 Behavior potentially endangers self or others because of usage (e.g., injury, vulnerable to date rape). 168 Friendships change to mostly substance users. 169 High or intoxicated once a week.	172 Infrequent excess and only without serious consequences. 173 Regular usage (e.g., once a week) but without intoxication or being obviously high.	176 No use of substances. 177 Substance use is denied; unable to confirm. 178 Has only "tried" them; does not use them. 179 Occasional use with no negative consequences.
	IF YOUTH IS **12** OR YOUNGER, USE THESE ADDITIONAL ITEMS			
	163 For 12 years or younger, uses regularly (once a week or more).	170 For 12 years or younger, occasional use without intoxication and without becoming obviously high.	174 For 12 years or younger, has used substances more than once.	
	164 EXCEPTION	171 EXCEPTION	175 EXCEPTION	180 EXCEPTION
	Explanation:			COULD NOT SCORE: 181

Strengths(S)/Goals (G) for Substance Use Subscale
(OPTIONAL: UNNECESSARY FOR CAFAS RATING)

S119	G119	No use of substances	S126	G126	Is participating in treatment for substance use
S120	G120	Occasional use without excess	S127	G127	Acknowledges substance use and its negative effects on own behavior
S121	G121	Perceives no need to use			
S122	G122	Is aware of the negative effects of alcohol/drug use	S128	G128	Complies with requests for drug tests
S123	G123	Friends don't use	S129	G129	Has strategies for coping with factors that trigger use
S124	G124	Intentionally selects friends who are non-users	S130	G130	Parents don't use and do educate youth about drugs
S125	G125	Is trying to disengage from friends who use (to develop non-using social network)	S131	G131	Is involved in alternative pro-social activities
			S132	G132	Other_____

Youth's Name _____ ID# _____

	Severe Impairment *Severe disruption or incapacitation* **(30)**	**Moderate Impairment** *Major or persistent disruption* **(20)**	**Mild Impairment** *Significant problems or distress* **(10)**	**Minimal or No Impairment** *No disruption of functioning* **(0)**
THINKING ☐	CANNOT ATTEND A NORMAL SCHOOL CLASSROOM, DOES NOT HAVE NORMAL FRIENDSHIPS, AND CANNOT INTERACT ADEQUATELY IN THE COMMUNITY DUE TO ANY OF THE FOLLOWING: 182 Communications which are impossible or extremely difficult to understand due to incoherent thought or language (e.g., loosening of associations, flight of ideas). 183 Speech or nonverbal behavior is extremely odd and is noncommunicative (e.g., echolalia, idiosyncratic language). 184 Strange or bizarre behavior due to frequent and/or disruptive delusions or hallucinations; can't distinguish fantasy from reality. 185 Pattern of short-term memory loss/disorientation to time or place most of the time.	FREQUENT DIFFICULTY IN COMMUNICATION OR BEHAVIOR, **OR** SPECIALIZED SETTING OR SUPERVISION NEEDED DUE TO ANY OF THE FOLLOWING: 187 Communications do not "flow," are irrelevant, or disorganized (i.e., more than other children of the same age). 188 Frequent distortion of thinking (obsessions, suspicions). 189 Intermittent hallucinations that interfere with normal functioning. 190 Frequent, marked confusion or evidence of short term memory loss. 191 Preoccupying cognitions or fantasies with bizarre, odd, or gross themes.	OCCASIONAL DIFFICULTY IN COMMUNICATIONS, IN BEHAVIOR, OR IN INTERACTIONS WITH OTHERS DUE TO ANY OF THE FOLLOWING: 193 Eccentric or odd speech (e.g., impoverished, digressive, vague). 194 Thought distortions (e.g., obsessions, suspicions). 195 Expression of odd beliefs or, if older than eight years old, magical thinking. 196 Unusual perceptual experiences not qualifying as pathological hallucinations.	198 Thought, as reflected by communication, is not disordered or eccentric.
	186 EXCEPTION	192 EXCEPTION	197 EXCEPTION	199 EXCEPTION
	Explanation:			COULD NOT SCORE: 200

Strengths(S)/Goals (G) for Thinking Subscale
(OPTIONAL: UNNECESSARY FOR CAFAS RATING)

S133	G133	Can communicate needs to others
S134	G134	Can express self adequately and clearly
S135	G135	Good problem solving ability
S136	G136	Thinks logically
S137	G137	Has good understanding of personal circumstances
S138	G138	Can envision long-term goals
S139	G139	No hallucinations or delusions
S140	G140	Fantasies are "within normal limits" for age
S141	G141	Understands that thoughts cannot directly cause events to happen
S142	G142	Has age-appropriate self-care behaviors
S143	G143	Understands the need for medication
S144	G144	Tries to control inappropriate thoughts, feelings, and impulses
S145	G145	Other_____

CAREGIVER BEING RATED: PRIMARY FAMILY Youth's Name _____ ID# _____

Caregiver Being Rated	Relationship to Child	Informant	Youth Placement	Rater	Date	Adm #

	Severe Impairment *Severe disruption or incapacitation* **(30)**	**Moderate Impairment** *Major or persistent disruption* **(20)**	**Mild Impairment** *Significant problems or distress* **(10)**	**Minimal or No Impairment** *No disruption of functioning* **(0)**
CAREGIVER RESOURCES Material Needs Subscale ☐	201 Youth's needs for food, clothing, housing, medical attention, or neighborhood safety are not being met such that severe risk to health or welfare of youth is likely.	203 Frequent negative impact on youth's functioning OR a major disruption in the youth's functioning due to youth's needs for food, housing, clothing, medical attention, or neighborhood safety not being met.	205 Occasional negative impact on the youth's functioning due to the youth's needs for food, housing, clothing, medical attention, or neighborhood safety not being met.	207 Basic material needs are arranged for or adequately met so that there is no disruption in the youth's functioning. 208 Able to use community resources as needed.
	202 EXCEPTION	204 EXCEPTION	206 EXCEPTION	209 EXCEPTION
	Explanation:			COULD NOT SCORE: 210
CAREGIVER RESOURCES Family/Social Support Subscale ☐	211 Sociofamilial setting is potentially dangerous to the youth due to lack of family resources required to meet the youth's needs/demands. 212 Gross impairment in parental judgment or functioning (may be related to psychosis, substance abuse, severe personality disorder, mental retardation, etc.). 213 Caregiver is frankly hostile, rejecting, or does not want youth to return to the home. 214 Youth is subjected to sexual abuse in the home by a caregiver. 215 Youth is subjected to physical abuse or neglect in the home by a caregiver. 216 Caregiver "kicks" youth out of the home, without trying to make other living arrangements. 217 Youth currently removed from the home due to sexual abuse, physical abuse, or neglect. 218 Failure of caregivers to provide an environment safe from possible abuse to a youth previously abused or traumatized. 219 Severe or frequent domestic violence takes place in the home. 220 Caregiver is openly involved in unlawful behavior or contributes to or approves of youth being involved in potentially unlawful behavior.	222 Youth's developmental needs cannot be adequately met because youth's needs/developmental demands exceed family resources. 223 Marked impairment in parental judgment or functioning (may be related to emotional instability, psychiatric illness, substance use, physical illness, criminal activities, or other impairing condition). 224 Family conflict is pervasive and continual (characterized by hostility, tension, and/or scapegoating, etc.). 225 Family members are insensitive, angry and/or resentful to the youth. 226 Marked lack of parental supervision or consistency in care (e.g., frequently does not know whereabouts of youth; does not know youth's friends). 227 Failure of caregiver to provide emotional support to youth who has been traumatized or abused. 228 Domestic violence, or serious threat of domestic violence, takes place in the youth's home.	230 Family not able to provide adequate warmth, security or sensitivity relative to the youth's needs. *Support from other sources outside the immediate family are unable to compensate for this inadequacy. 231 Frequent family arguments and/or misunderstandings resulting in bad feelings. 232 Family relations are characterized by poor problem solving, poor communication, or emotional insensitivity. 233 Family not able to provide adequate supervision, firmness, or consistency in care over time relative to the youth's needs; no other supports compensate for this deficit.	235 Family is sufficiently warm, secure, and sensitive to the youth's major needs. 236 Parental supervision is adequate. 237 Even though there are temporary problems in providing adequate support to the youth, there is compensation from the wider social support system.
	221 EXCEPTION	229 EXCEPTION	234 EXCEPTION	238 EXCEPTION
	Explanation:			COULD NOT SCORE: 239

Strengths(S)/Goals (G) for Primary Family - See page 14

CAREGIVER BEING RATED: NON-CUSTODIAL FAMILY OR PARENT NOT LIVING IN YOUTH'S HOME

Youth's Name _____ ID# _____

Caregiver Being Rated	Relationship to Child	Informant	Youth Placement	Rater	Date	Adm #

	Severe Impairment *Severe disruption or incapacitation* **(30)**	**Moderate Impairment** *Major or persistent disruption* **(20)**	**Mild Impairment** *Significant problems or distress* **(10)**	**Minimal or No Impairment** *No disruption of functioning* **(0)**
CAREGIVER RESOURCES Material Needs Subscale ☐	240 Youth's needs for food, clothing, housing, medical attention, or neighborhood safety are not being met such that severe risk to health or welfare of youth is likely.	242 Frequent negative impact on youth's functioning OR a major disruption in the youth's functioning due to youth's needs for food, housing, clothing, medical attention, or neighborhood safety not being met.	244 Occasional negative impact on the youth's functioning due to the youth's needs for food, housing, clothing, medical attention, or neighborhood safety not being met.	246 Basic material needs are arranged for or adequately met so that there is no disruption in the youth's functioning. 247 Able to use community resources as needed.
	241 EXCEPTION	243 EXCEPTION	245 EXCEPTION	248 EXCEPTION
	Explanation:			COULD NOT SCORE: 249

CAREGIVER RESOURCES Family/Social Support Subscale ☐	250 Sociofamilial setting is potentially dangerous to the youth due to lack of family resources required to meet the youth's needs/demands. 251 Gross impairment in parental judgment or functioning (may be related to psychosis, substance abuse, severe personality disorder, mental retardation, etc.). 252 Caregiver is frankly hostile, rejecting, or does not want youth to return to the home. 253 Youth is subjected to sexual abuse in the home by a caregiver. 254 Youth is subjected to physical abuse or neglect in the home by a caregiver. 255 Caregiver "kicks" youth out of the home, without trying to make other living arrangements. 256 Youth currently removed from the home due to sexual abuse, physical abuse, or neglect. 257 Failure of caregivers to provide an environment safe from possible abuse to a youth previously abused or traumatized. 258 Severe or frequent domestic violence takes place in the home. 259 Caregiver is openly involved in unlawful behavior or contributes to or approves of youth being involved in potentially unlawful behavior.	261 Youth's developmental needs cannot be adequately met because youth's needs/developmental demands exceed family resources. 262 Marked impairment in parental judgment or functioning (may be related to emotional instability, psychiatric illness, substance use, physical illness, criminal activities, or other impairing condition). 263 Family conflict is pervasive and continual (characterized by hostility, tension, and/or scapegoating, etc.). 264 Family members are insensitive, angry and/or resentful to the youth. 265 Marked lack of parental supervision or consistency in care (e.g., frequently does not know whereabouts of youth; does not know youth's friends). 266 Failure of caregiver to provide emotional support to youth who has been traumatized or abused. 267 Domestic violence, or serious threat of domestic violence, takes place in the youth's home.	269 Family not able to provide adequate warmth, security or sensitivity relative to the youth's needs. Support from other sources outside the immediate family are unable to compensate for this inadequacy. 270 Frequent family arguments and/or misunderstandings resulting in bad feelings. 271 Family relations are characterized by poor problem solving, poor communication, or emotional insensitivity. 272 Family not able to provide adequate supervision, firmness, or consistency in care over time relative to the youth's needs; no other supports compensate for this deficit.	274 Family is sufficiently warm, secure, and sensitive to the youth's major needs. 275 Parental supervision is adequate. 276 Even though there are temporary problems in providing adequate support to the youth, there is compensation from the wider social support system.
	260 EXCEPTION	268 EXCEPTION	273 EXCEPTION	277 EXCEPTION
	Explanation:			COULD NOT SCORE: 278

Strengths(S)/Goals (G) for Non-Custodial Family or Parent Not Living in Youth's Home - See page 14

CAREGIVER BEING RATED: SURROGATE CAREGIVER

Youth's Name _____ ID# _____

Caregiver Being Rated	Relationship to Child	Informant	Youth Placement	Rater	Date	Adm #

	Severe Impairment *Severe disruption or incapacitation* **(30)**	**Moderate Impairment** *Major or persistent disruption* **(20)**	**Mild Impairment** *Significant problems or distress* **(10)**	**Minimal or No Impairment** *No disruption of functioning* **(0)**
CAREGIVER RESOURCES Material Needs Subscale ☐	279 Youth's needs for food, clothing, housing, medical attention, or neighborhood safety are not being met such that severe risk to health or welfare of youth is likely.	281 Frequent negative impact on youth's functioning OR a major disruption in the youth's functioning due to youth's needs for food, housing, clothing, medical attention, or neighborhood safety not being met.	283 Occasional negative impact on the youth's functioning due to the youth's needs for food, housing, clothing, medical attention, or neighborhood safety not being met.	285 Basic material needs are arranged for or adequately met so that there is no disruption in the youth's functioning. 286 Able to use community resources as needed.
	280 EXCEPTION	282 EXCEPTION	284 EXCEPTION	287 EXCEPTION
	Explanation:			COULD NOT SCORE: 288

CAREGIVER RESOURCES Family/Social Support Subscale ☐	289 Sociofamilial setting is potentially dangerous to the youth due to lack of family resources required to meet the youth's needs/demands. 290 Gross impairment in parental judgment or functioning (may be related to psychosis, substance abuse, severe personality disorder, mental retardation, etc.). 291 Caregiver is frankly hostile, rejecting, or does not want youth to return to the home. 292 Youth is subjected to sexual abuse in the home by a caregiver. 293 Youth is subjected to physical abuse or neglect in the home by a caregiver. 294 Caregiver "kicks" youth out of the home, without trying to make other living arrangements. 295 Youth currently removed from the home due to sexual abuse, physical abuse, or neglect. 296 Failure of caregivers to provide an environment safe from possible abuse to a youth previously abused or traumatized. 297 Severe or frequent domestic violence takes place in the home. 298 Caregiver is openly involved in unlawful behavior or contributes to or approves of youth being involved in potentially unlawful behavior.	300 Youth's developmental needs cannot be adequately met because youth's needs/developmental demands exceed family resources. 301 Marked impairment in parental judgment or functioning (may be related to emotional instability, psychiatric illness, substance use, physical illness, criminal activities, or other impairing condition). 302 Family conflict is pervasive and continual (characterized by hostility, tension, and/or scapegoating, etc.). 303 Family members are insensitive, angry and/or resentful to the youth. 304 Marked lack of parental supervision or consistency in care (e.g., frequently does not know whereabouts of youth; does not know youth's friends). 305 Failure of caregiver to provide emotional support to youth who has been traumatized or abused. 306 Domestic violence, or serious threat of domestic violence, takes place in the youth's home.	308 Family not able to provide adequate warmth, security or sensitivity relative to the youth's needs. Support from other sources outside the immediate family are unable to compensate for this inadequacy. 309 Frequent family arguments and/or misunderstandings resulting in bad feelings. 310 Family relations are characterized by poor problem solving, poor communication, or emotional insensitivity. 311 Family not able to provide adequate supervision, firmness, or consistency in care over time relative to the youth's needs; no other supports compensate for this deficit.	313 Family is sufficiently warm, secure, and sensitive to the youth's major needs. 314 Parental supervision is adequate. 315 Even though there are temporary problems in providing adequate support to the youth, there is compensation from the wider social support system.
	299 EXCEPTION	307 EXCEPTION	312 EXCEPTION	316 EXCEPTION
	Explanation:			COULD NOT SCORE: 317

Strengths(S)/Goals (G) for Surrogate Caregiver - See page 14

Strengths(S)/Goals (G) for Primary Family
(OPTIONAL: UNNECESSARY FOR CAFAS RATING)

S146	G146	Caregiver provides stable environment	S159	G159	Caregiver is aware of when he/she needs help
S147	G147	Caregiver communicates clearly	S160	G160	Caregiver seeks help when his/her problem solving skills break down
S148	G148	Caregiver cooperates with agencies providing services to youth	S161	G161	Caregiver is caring in the face of difficult behavior from youth
S149	G149	Caregiver encourages positive identification with cultural heritage	S162	G162	Caregiver exercises good control when provoked
S150	G150	Caregiver reinforces desirable behaviors and ignores undesirable behaviors	S163	G163	Caregiver tries to minimize negative impact of their own limitations
S151	G151	Caregiver is clear about behavioral expectations/values	S164	G164	Caregiver tries to minimize negative impact of other family members on youth (e.g., an abusing parent)
S152	G152	Caregiver adheres to a daily routine			
S153	G153	Caregiver sets realistic and age-appropriate goals for youth	S165	G165	Caregiver is consistent and predictable in behavior toward youth
S154	G154	Family eats dinner together	S166	G166	Domestic abuse does not takes place
S155	G155	Family talks about problems	S167	G167	Caregiver seeks services for own concerns/problems
S156	G156	Caregiver models prosocial behavior and talk	S168	G168	Substance using caregiver is seeking services to deal with his/her own substance use
S157	G157	Caregiver models verbal problem solving skills			
S158	G158	Emotional support and physical protection is given to a youth previously abused	S169	G169	Other_____

Strengths(S)/Goals (G) for Non-Custodial Family or Parent Not Living in Youth's Home
(OPTIONAL: UNNECESSARY FOR CAFAS RATING)

S170	G170	Caregiver provides stable environment	S183	G183	Caregiver is aware of when he/she needs help
S171	G171	Caregiver communicates clearly	S184	G184	Caregiver seeks help when his/her problem solving skills break down
S172	G172	Caregiver cooperates with agencies providing services to youth	S185	G185	Caregiver is caring in the face of difficult behavior from youth
S173	G173	Caregiver encourages positive identification with cultural heritage	S186	G186	Caregiver exercises good control when provoked
S174	G174	Caregiver reinforces desirable behaviors and ignores undesirable behaviors	S187	G187	Caregiver tries to minimize negative impact of their own limitations
S175	G175	Caregiver is clear about behavioral expectations/values	S188	G188	Caregiver tries to minimize negative impact of other family members on youth (e.g., an abusing parent)
S176	G176	Caregiver adheres to a daily routine			
S177	G177	Caregiver sets realistic and age-appropriate goals for youth	S189	G189	Caregiver is consistent and predictable in behavior toward youth
S178	G178	Family eats dinner together	S190	G190	Domestic abuse does not takes place
S179	G179	Family talks about problems	S191	G191	Caregiver seeks services for own concerns/problems
S180	G180	Caregiver models prosocial behavior and talk	S192	G192	Substance using caregiver is seeking services to deal with his/her own substance use
S181	G181	Caregiver models verbal problem solving skills			
S182	G182	Emotional support and physical protection is given to a youth previously abused	S193	G193	Other_____

Strengths(S)/Goals (G) for Surrogate Caregiver
(OPTIONAL: UNNECESSARY FOR CAFAS RATING)

S194	G194	Caregiver provides stable environment	S207	G207	Caregiver is aware of when he/she needs help
S195	G195	Caregiver communicates clearly	S208	G208	Caregiver seeks help when his/her problem solving skills break down
S196	G196	Caregiver cooperates with agencies providing services to youth	S209	G209	Caregiver is caring in the face of difficult behavior from youth
S197	G197	Caregiver encourages positive identification with cultural heritage	S210	G210	Caregiver exercises good control when provoked
S198	G198	Caregiver reinforces desirable behaviors and ignores undesirable behaviors	S211	G211	Caregiver tries to minimize negative impact of their own limitations
S199	G199	Caregiver is clear about behavioral expectations/values	S212	G212	Caregiver tries to minimize negative impact of other family members on youth (e.g., an abusing parent)
S200	G200	Caregiver adheres to a daily routine			
S201	G201	Caregiver sets realistic and age-appropriate goals for youth	S213	G213	Caregiver is consistent and predictable in behavior toward youth
S202	G202	Family eats dinner together	S214	G214	Domestic abuse does not takes place
S203	G203	Family talks about problems	S215	G215	Caregiver seeks services for own concerns/problems
S204	G204	Caregiver models prosocial behavior and talk	S216	G216	Substance using caregiver is seeking services to deal with his/her own substance use
S205	G205	Caregiver models verbal problem solving skills			
S206	G206	Emotional support and physical protection is given to a youth previously abused	S217	G217	Other_____

OPTIONAL: TREATMENT PLAN

INSTRUCTIONS: Write in scale name. For the PROBLEM(S), GOALS(S), and STRENGTH(S), provide the CAFAS item number and the item description. For the PROBLEM(S), you may want to elaborate on the details (e.g., expelled for taking a butter knife to school on January 5, 1999). Under PLAN, you can provide details for accomplishing the specified goal.

Scale_____

	Item #(s)	Description
Problems		
Goals		
Strengths		
Plan		

Scale_____

	Item #(s)	Description
Problems		
Goals		
Strengths		
Plan		

Scale_____

	Item #(s)	Description
Problems		
Goals		
Strengths		
Plan		

Scale_____

	Item #(s)	Description
Problems		
Goals		
Strengths		
Plan		

Scale_____

	Item #(s)	Description
Problems		
Goals		
Strengths		
Plan		

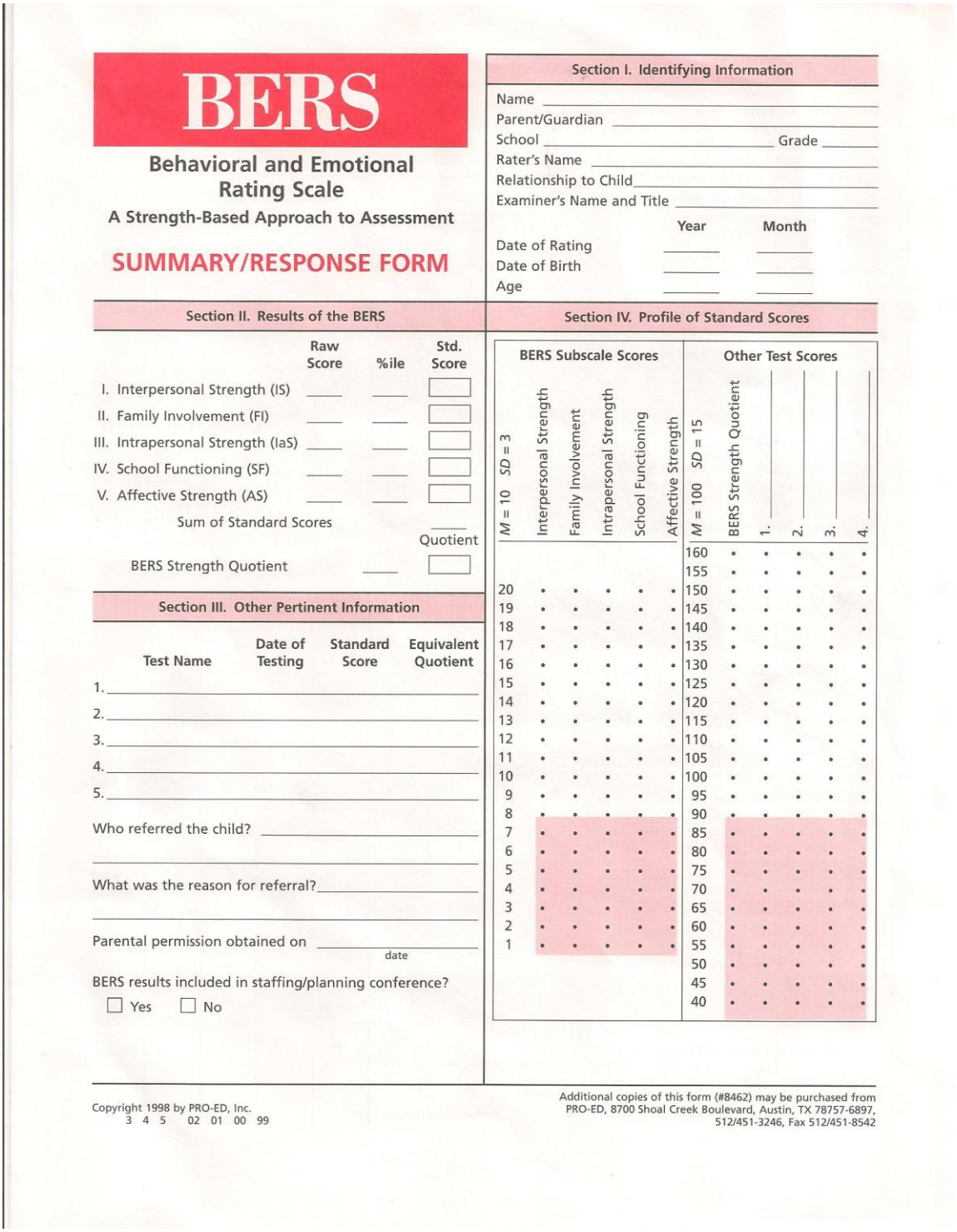
Scale_____

	Item #(s)	Description
Problems		
Goals		
Strengths		
Plan		

Date	Signature	Title

Appendix D

Behavioral and Emotional Rating Scale (BERS)



BERS

Behavioral and Emotional Rating Scale

A Strength-Based Approach to Assessment

SUMMARY/RESPONSE FORM

Section I. Identifying Information

Name _____

Parent/Guardian _____

School _____ Grade _____

Rater's Name _____

Relationship to Child _____

Examiner's Name and Title _____

	Year	Month
Date of Rating	_____	_____
Date of Birth	_____	_____
Age	_____	_____

Section II. Results of the BERS

	Raw Score	%ile	Std. Score
I. Interpersonal Strength (IS)	_____	_____	☐
II. Family Involvement (FI)	_____	_____	☐
III. Intrapersonal Strength (IaS)	_____	_____	☐
IV. School Functioning (SF)	_____	_____	☐
V. Affective Strength (AS)	_____	_____	☐
Sum of Standard Scores			_____
			Quotient
BERS Strength Quotient		_____	☐

Section III. Other Pertinent Information

Test Name	Date of Testing	Standard Score	Equivalent Quotient
1.			
2.			
3.			
4.			
5.			

Who referred the child? _____

What was the reason for referral? _____

Parental permission obtained on _____ (date)

BERS results included in staffing/planning conference?

☐ Yes ☐ No

Section IV. Profile of Standard Scores

	BERS Subscale Scores						Other Test Scores					
	M = 10 *SD* = 3	Interpersonal Strength	Family Involvement	Intrapersonal Strength	School Functioning	Affective Strength	*M* = 100 *SD* = 15	BERS Strength Quotient	1. _____	2. _____	3. _____	4. _____
							160	•	•	•	•	•
							155	•	•	•	•	•
	20	•	•	•	•	•	150	•	•	•	•	•
	19	•	•	•	•	•	145	•	•	•	•	•
	18	•	•	•	•	•	140	•	•	•	•	•
	17	•	•	•	•	•	135	•	•	•	•	•
	16	•	•	•	•	•	130	•	•	•	•	•
	15	•	•	•	•	•	125	•	•	•	•	•
	14	•	•	•	•	•	120	•	•	•	•	•
	13	•	•	•	•	•	115	•	•	•	•	•
	12	•	•	•	•	•	110	•	•	•	•	•
	11	•	•	•	•	•	105	•	•	•	•	•
	10	•	•	•	•	•	100	•	•	•	•	•
	9	•	•	•	•	•	95	•	•	•	•	•
	8	•	•	•	•	•	90	•	•	•	•	•
	7	•	•	•	•	•	85	•	•	•	•	•
	6	•	•	•	•	•	80	•	•	•	•	•
	5	•	•	•	•	•	75	•	•	•	•	•
	4	•	•	•	•	•	70	•	•	•	•	•
	3	•	•	•	•	•	65	•	•	•	•	•
	2	•	•	•	•	•	60	•	•	•	•	•
	1	•	•	•	•	•	55	•	•	•	•	•
							50	•	•	•	•	•
							45	•	•	•	•	•
							40	•	•	•	•	•

Additional copies of this form (#8462) may be purchased from
PRO-ED, 8700 Shoal Creek Boulevard, Austin, TX 78757-6897,
512/451-3246, Fax 512/451-8542

Section V. Response Form

Directions: The *Behavioral and Emotional Rating Scale* (BERS) contains a series of statements that are used to rate a child's behaviors and emotions in a positive way. Read each statement and circle the number that corresponds to the rating that best describes the child's status over the past 3 months. If the statement is *very much like* the child, circle the 3; if the statement is *like* the child, circle the 2; if the statement is *not much like* the child, circle the 1; if the statement is *not at all like* the child, circle the 0. Rate each statement to the best of your knowledge of the child.

Statement	very much like the child	like the child	not much like the child	not at all like the child	IS	FI	IaS	SF	AS
1. Demonstrates a sense of belonging to family	3	2	1	0		____			
2. Trusts a significant person with his or her life	3	2	1	0		____			
3. Accepts a hug	3	2	1	0					____
4. Participates in community activities	3	2	1	0		____			
5. Is self-confident	3	2	1	0			____		
6. Acknowledges painful feelings	3	2	1	0					____
7. Maintains positive family relationships	3	2	1	0		____			
8. Demonstrates a sense of humor	3	2	1	0			____		
9. Asks for help	3	2	1	0					____
10. Uses anger management skills	3	2	1	0	____				
11. Communicates with parents about behavior at home	3	2	1	0		____			
12. Expresses remorse for behavior that hurts or upsets others	3	2	1	0	____				
13. Shows concern for the feelings of others	3	2	1	0					____
14. Completes a task on first request	3	2	1	0				____	
15. Interacts positively with parents	3	2	1	0		____			
16. Reacts to disappointments in a calm manner	3	2	1	0	____				
17. Considers consequences of own behavior	3	2	1	0	____				
18. Accepts criticism	3	2	1	0	____				
19. Participates in church activities	3	2	1	0		____			
20. Demonstrates age-appropriate hygiene skills	3	2	1	0			____		
21. Requests support from peers and friends	3	2	1	0			____		
22. Enjoys a hobby	3	2	1	0			____		
23. Discusses problems with others	3	2	1	0					____
24. Completes school tasks on time	3	2	1	0				____	
			Column subtotals		☐	☐	☐	☐	☐

Statement	very much like the child	like the child	not much like the child	not at all like the child	IS	FI	IaS	SF	AS
25. Accepts the closeness and intimacy of others	3	2	1	0					____
26. Identifies own feelings	3	2	1	0			____		
27. Identifies personal strengths	3	2	1	0			____		
28. Accepts responsibility for own actions	3	2	1	0	____				
29. Interacts positively with siblings	3	2	1	0		____			
30. Loses a game gracefully	3	2	1	0	____				
31. Completes homework regularly	3	2	1	0				____	
32. Is popular with peers	3	2	1	0			____		
33. Listens to others	3	2	1	0	____				
34. Expresses affection for others	3	2	1	0					____
35. Admits mistakes	3	2	1	0	____				
36. Participates in family activities	3	2	1	0		____			
37. Accepts "no" for an answer	3	2	1	0	____				
38. Smiles often	3	2	1	0			____		
39. Pays attention in class	3	2	1	0				____	
40. Computes math problems at or above grade level	3	2	1	0				____	
41. Reads at or above grade level	3	2	1	0				____	
42. Is enthusiastic about life	3	2	1	0			____		
43. Respects the rights of others	3	2	1	0	____				
44. Shares with others	3	2	1	0	____				
45. Complies with rules at home	3	2	1	0		____			
46. Apologizes to others when wrong	3	2	1	0	____				
47. Studies for tests	3	2	1	0				____	
48. Talks about the positive aspects of life	3	2	1	0			____		
49. Is kind toward others	3	2	1	0	____				
50. Uses appropriate language	3	2	1	0	____				
51. Attends school regularly	3	2	1	0				____	
52. Uses note-taking and listening skills in school	3	2	1	0				____	
Column subtotals									
Previous page column subtotals									
Total Raw Score									

Section VI. Key Questions

1. What are the child's favorite hobbies or activities? What does the child like to do? _____

2. What is the child's favorite sport(s)? _____

3. In what school subject(s) does the child do best? _____

4. Who is this child's best friend(s)? _____

5. Who is this child's favorite teacher(s)? _____

6. What job(s) or responsibilities has this child held in the community or in the home? _____

7. At a time of need, to whom (e.g., parent, teacher, friend, relative) would this child turn for support? _____

8. Describe the best things about this child. _____

Section VII. Interpretations and Recommendations

Appendix E

Family Assessment Device (FAD)

Form Approved
OMB NO. 0930-0209
Exp. Date 05/31/2003

FAMILY ASSESSMENT DEVICE– GENERAL FUNCTIONING SCALE (FAD–GFS): Caregiver

FADDATE (Today's date) ☐☐/☐☐/☐☐☐☐
Month Day Year

CHILDID (Macro-assigned ID) ☐☐☐☐☐☐☐☐

TIMEFRAM (Assessment period)
1 = Intake
2 = 6 months
3 = 12 months
4 = 18 months
5 = 24 months
6 = 30 months
7 = 36 months

FADINTV (Who administered interview)
1 = Person providing services to child
2 = Data Collector

FADMETH (Method of administering interview)
1 = In person
2 = Telephone

FADLANG (Language version of interview)
1 = English
2 = Spanish
3 = Other

FADVERS (Version of the FAD)
1 = Caregiver
2 = Youth 11 and older

I'm going to read some statements about families. Please listen carefully as I read each statement, and then decide how well it describes your own family over the <u>past 6 months</u>. You should answer according to how <u>you</u> see your family. For each statement there are four possible responses [CARD]. After I read each statement, please tell me which response best reflects how much you agree with the statement. Try not to spend too much time thinking about each statement, but respond as quickly and as honestly as you can. If you have trouble with one, answer with your first reaction.

[CARD]

		Strongly disagree	Disagree	Agree	Strongly agree
1.	Planning family activities is difficult because we misunderstand each other.	1	2	3	4
6.	In times of crisis we can turn to each other for support.	1	2	3	4
11.	We cannot talk to each other about the sadness we feel.	1	2	3	4
16.	Individuals are accepted for what they are.	1	2	3	4
21.	We avoid discussing our fears and concerns.	1	2	3	4
26.	We can express feelings to each other.	1	2	3	4
31.	There are lots of bad feelings in the family.	1	2	3	4
36.	We feel accepted for what we are.	1	2	3	4
41.	Making decisions is a problem for our family.	1	2	3	4
46.	We are able to make decisions about how to solve problems.	1	2	3	4
51.	We don't get along well together.	1	2	3	4
56.	We confide in each other.	1	2	3	4

Appendix F

SPSS Missing Value Analyses (MVA)

The MCAR test considers all of the variables specified, and all of the missing data patterns in those variables (Tabachnick & Fidell, 2007). Table F1 shows a list of each of the 12-month variables, a list of other variables fed into the MVA syntax with that 12-month variable, and the Little's MCAR test observed (i.e. Chi-Square value or χ^2-tests, df, and p). A statistically non-significant p-value is desired for Little's MCAR (Tabachnick & Fidell, 2007). MAR is inferred if the Little's MCAR test is statistically significant but missingness is predictable from variables (other than the dependent or outcome) as indicated in the Separate Variance t Tests output from MVA. MNAR is inferred if the t test shows that missingness is related to the dependent variable. Results supported that there may be no significant differences between adolescents who provided data and those who had missing data at 12 months.

Table F1

Missing Data at Baseline and 12 months

Measures	Baseline		12 months	
	Valid n	Missing (n, %)	N	% Missing
Internalizing T-score, CBCL	179	0	126	0 (0)
Externalizing T-score, CBCL	179	0	126	0 (0)
Total Problem T-score, CBCL	176	3 (1.7)	126	0 (0)
Total CAFAS	179	0	126	0 (0)
BERS Strength Quotient	176	3 (1.7)	124	2 (1.8)
Average FAD score	176	14 (7.8)	118	6 (5.1)

Table F2

Examining Pattern of Missingness for each 12-month variable

12-month Measures	Other baseline variables in the syntax	Little's MCAR test (χ^2 statistics)	df	p
Total CAFAS Score	1.Total CAFAS, internalizing, externalizing, and Total CBCL 2.BERS and FAD	9.906 1.918	8 8	.272 .983
BERS Strength Quotient	1.Total CAFAS, internalizing, externalizing, and Total CBCL 2. BERS, FAD, age at enrollment	10.323 8.465	8 14	.243 .864
Average FAD score - caregiver	1.Total CAFAS, internalizing, externalizing, age at enrollment 2. baseline FAD, BERS, and age at enrollment	11.667 5.690	8 14	.167 .974

Note: non significant p is desirable for Little's MCAR and indicates that missingness is random

Appendix G

Collinearity Diagnostics for Independent variables FAD and BERS Strength Quotient

Dimension	Eigenvalue	Condition Index	Constant	Variance proportions: Average FAD score - caregiver	Variance proportions: BERS Strength Quotient
1	2.97	1.00	.00	.00	.00
2	.02	11.45	.11	.21	.98
3	.01	15.23	.89	.78	.01

Appendix H

Univariate Outputs for Each of the BERS Subscales Modeled Separately Interpersonal Strength. Results from the univariate models are displayed in Tables J1, J2, J3, and J4. The univariate models explained 17.1% of the variance in Internalizing CBCL, 51.3% of the variance in change in Externalizing CBCL, 38.1% of the variance in Total CBCL, and 36.8% of the variance in total CAFAS. In each of the four univariate models, change in Interpersonal Strength contributed by far the largest amount in accounting for the variability in each outcome variable as evidenced by its part r^2 values. It was negatively associated with change in Internalizing, Externalizing, and Total CBCL scores, and change in total CAFAS. Age, race, gender, and caregiver type were not significant predictors in the model.

Table H1

Multiple Linear Regression with Change in Interpersonal Strength as the Key Independent Variable and Change in Internalizing CBCL as Outcome Variable

Model		B	Beta	t	Sig.	r^2
1	(Constant)	16.90		1.92	.057	
	Δ Interpersonal Strength	-1.14	-.39	-4.22	.000	.14
	age	-1.18	-.19	-2.01	.047	.03
	race	-.88	-.05	-.516	.607	.02
	gender	-3.21	-.16	-1.75	.083	.02
	Caregiver type	-2.76	-.13	-1.40	.163	.02

R^2 = 17.1%; F (5, 106) = 4.39, p = .001

Table H2

Multiple Linear Regression with Change in Interpersonal Strength as Key the Independent Variable and Change in Externalizing CBCL as Outcome Variable

Model		B	Beta	t	Sig.	r^2
2	(Constant)	-10.25		-1.43	.155	
	Δ Interpersonal Strength	-2.12	-.68	-9.67	.000	.43
	age	.54	.08	1.13	.262	.01
	race	1.66	.09	1.19	.235	.01
	gender	-.34	-.02	-.23	.819	.00
	Caregiver type	-1.30	-.06	-.81	.418	.00

R^2 = 51.3%; F (5, 106) = 22.33, p = .000

Table H3

Multiple Linear Regression with Change in Interpersonal Strength as the Key Independent Variable and Change in Total CBCL as Outcome Variable

	Model	B	Beta	t	Sig.	r^2
3	(Constant)	-2.89		-.39	.695	
	Δ Interpersonal Strength	-1.68	-.619	-7.55	.000	.34
	age	.00	.00	.01	.994	.00
	race	.99	.06	.69	.491	.00
	gender	-1.28	-.07	-.84	.401	.00
	Caregiver type	-1.13	-.06	-.68	.500	.00

R^2 = 38.1%; F (5, 103) = 12.69, p = .000

Table H4

Multiple Regression with Change Interpersonal Strength as the Key Independent Variable and Change in Total CAFAS as Outcome Variable

4	Model	B	Beta	t	Sig.	r^2
	(Constant)	-72.59		-1.51	.134	
	Δ Interpersonal Strength	-10.60	-.58	-7.21	.000	.32
	age	4.06	.10	1.27	.208	.01
	race	-.96	-.01	-.10	.918	.00
	gender	-7.09	-.06	-.71	.481	.00
	Caregiver type	6.57	.05	.61	.542	.00

R^2 = 36.1%; F (5, 106) = 12.35, p = .000

Family Involvement

Results of the univariate models are presented in Tables K5, K6, K7, and K8. The univariate models were all significant and explained 18.5% of the variance in Internalizing CBCL, 36% of the variance in change in Externalizing CBCL, 28.1% of the variance in Total CBCL, and 27.7% of the variance in total CAFAS. Similar to the model fit for change in Interpersonal Strength, only the regression weight for change in Family involvement was significantly different from zero and indicated that change in Family Involvement was negatively associated with change in each of the outcome variables. Age, race, gender, and caregiver type were not significant predictors in the univariate models.

Table H5
Multiple Linear Regression with Change in Family Involvement as the Key Independent Variable and Change in Internalizing CBCL as Outcome Variable

1	Model	B	Beta	t	Sig.	r^2
	(Constant)	19.75		2.21	.029	
	Δ Family Involvement	-1.09	-.39	-4.30	.000	.14
	age	-1.40	-.21	-2.34	.021	.04
	race	-.86	-.05	-.49	.621	.00
	gender	-3.40	-.17	-1.84	.069	.03
	Caregiver type	-2.24	-.11	-1.15	.253	.01

R^2 = 18.5%; F(5, 107) = 4.84, p = .000

Table H6

Multiple Linear Regression with Change in Family Involvement as the Key Independent Variable and Change in Externalizing CBCL as Outcome Variable

2	Model	B	Beta	t	Sig.	r^2
	(Constant)	-8.98		-1.05	.295	
	Δ Family Involvement	-1.67	-.56	-6.85	.000	.28
	age	.37	.05	.65	.520	.00
	race	2.12	.11	1.28	.204	.01
	gender	-.42	-.02	-.24	.812	.00
	Caregiver type	-.15	-.01	-.08	.937	.00

R^2 = 36.0%; F(5, 107) = 12.06, p = .000

Table H7

Multiple Linear Regression with Change in Family Involvement as the Key Independent Variable and Change in Total CBCL as Outcome Variable

3	Model	B	Beta	t	Sig.	r^2
	(Constant)	.64		.08	.940	
	Δ Family Involvement	-1.41	-.52	-5.88	.000	.24
	age	-.27	-.04	-.47	.639	.00
	race	1.38	.07	.84	.402	.00
	gender	-1.63	-.08	-.93	.352	.01
	Caregiver type	-.71	-.03	-.38	.706	.00

R^2 = 28.1%; F(5, 104) = 8.11, p = .000

Table H8

Multiple Linear Regression with Change in Family Involvement as Key Independent Variable and Change in Total CAFAS as Outcome Variable

4	Model	B	Beta	t	Sig.	r^2
	(Constant)	-62.89		-1.19	.234	
	Δ Family Involvement	-8.72	-.51	-5.83	.000	.23
	age	2.99	.07	.85	.397	.00
	race	.83	.01	.08	.935	.00
	gender	-7.63	-.06	-.70	.485	.00
	Caregiver type	12.46	.09	1.09	.280	.01

R^2 = 27.7 %; F(5, 107) = 8.21, p = .000

Intrapersonal Strength

Results of the univariate regression are displayed in Tables K9, K10, K11, K12, and K13. The univariate models explained 17.9% of the variance in change in Internalizing CBCL, 26.5% of the variance in change in Externalizing CBCL, 26.3% of the variance in change in Total CBCL, and 28.7% of the variance in change in total CAFAS. The regression weight for change in Intrapersonal Strength was significantly different from zero and indicated that it was negatively associated with each outcome. However, age, race, gender, and caregiver type were not significant predictors in the model.

Table H9
Multiple Linear Regression with Change in Intrapersonal Strength as the Key Independent Variable and Change in Externalizing CBCL as Outcome Variable

1	Model	B	Beta	t	Sig.	r^2
	(Constant)	14.38		1.65	.102	
	Δ Intrapersonal Strength	-1.11	-.38	-4.19	.000	.14
	age	-1.04	-.16	-1.76	.081	.02
	race	-1.10	-.06	-.63	.532	.00
	gender	-3.81	-.19	-2.04	.044	.03
	Caregiver type	-2.14	-.10	-1.09	.278	.01

R^2 = 17.9 %; F(5, 106) = 4.61, p = .001

Table H10

Multiple Linear Regression with Change in Intrapersonal Strength as the Key Independent Variable and Change in Externalizing CBCL as Outcome Variable

2	Model	B	Beta	t	Sig.	r^2
	(Constant)	-18.25		-2.04	.044	
	Δ Intrapersonal Strength	-1.41	-.45	-5.18	.000	.19
	age	.99	.14	1.64	.105	.02
	race	2.39	.12	1.33	.188	.01
	gender	-.89	-.04	-.47	.642	.00
	Caregiver type	.12	.01	.06	.951	.00

R^2 = 26.5%; F(5, 106) = 7.66, p = .000

Table H11

Multiple Linear Regression with Change in Intrapersonal Strength as the Key Independent Variable and Change in Total CBCL as Outcome Variable

3	Model	B	Beta	t	Sig.	r^2
	(Constant)	-5.97		-.71	.478	
	Δ Intrapersonal Strength	-1.42	-.49	-5.58	.000	.22
	age	.18	.03	.32	.747	.00
	race	1.27	.07	.76	.450	.00
	gender	-2.26	-.11	-1.26	.209	.01
	Caregiver type	-.53	-.03	-.27	.784	.00

R^2 = 26.3%; F(5, 103) = 7.37, p = .000

Table H12

Multiple Linear Regression with Change in Intrapersonal Strength as the Key Independent Variable and Change in Total CAFAS as Outcome Variable

4	Model	B	Beta	t	Sig.	r^2
	(Constant)	-103.45		-2.03	.045	
	Δ Intrapersonal Strength	-9.26	-.51	-5.97	.000	.24
	age	5.73	.14	1.67	.098	.02
	race	-.19	-.00	-.02	.986	.00
	gender	-11.76	-.09	-1.08	.285	.01
	Caregiver type	14.45	.11	1.26	.211	.02

R^2 = 28.7%; F(5, 106) = 8.35, p = .000

School Functioning

Results of the univariate models are presented in Tables K13, K14, K15, and K16. The univariate models were significant and explained 22.5% of the variance in change in Externalizing CBCL, 18.1% of the variance in Total CBCL, and 16.4% of the variance in total CAFAS, but not for change in Internalizing CBCL ($p = .086$). The regression weight for change in School Functioning was significantly different from zero and indicated that change in School Functioning was negatively associated with change in each of the outcome variables. Age, race, gender, and caregiver type were not significant predictors in the univariate models.

Table H13

Multiple Linear Regression with Change in School Functioning as the Key Independent Variable and Change in Internalizing CBCL as Outcome Variable

1	Model	B	Beta	t	Sig.	r^2
	(Constant)	16.05		1.70	.092	
	Δ School Functioning	-.76	-.25	-2.46	.016	.06
	age	-1.29	-.19	-2.02	.047	.04
	race	-.14	-.01	-.08	.939	.00
	gender	-1.47	-.07	-.76	.452	.04
	Caregiver type	-.88	-.04	-.42	.679	.00

$R^2 = 9.1\%$; $F(5, 100) = 1.99$, $p = .086$

Table H14

Multiple Linear Regression with Change in School Functioning as the Key Independent Variable and Change in Externalizing CBCL as Outcome Variable

2	Model	B	Beta	t	Sig.	r^2
	(Constant)	-14.25		-1.53	.130	
	Δ School Functioning	-1.38	-.42	-4.52	.000	.16
	age	.63	.09	1.00	.320	.01
	race	2.06	.11	1.12	.265	.01
	gender	1.45	.07	.75	.453	.00
	Caregiver type	1.29	.06	.62	.535	.00

R^2 = 22.5%; F(5, 100) = 5.82, p = .000

Table H15

Multiple Linear Regression with Change in School Functioning as the Key Independent Variable and Change in Total CBCL as Outcome Variable

3	Model	B	Beta	t	Sig.	r^2
	(Constant)	-4.78		-.55	.584	
	Δ School Functioning	-1.19	-.41	-4.23	.000	.16
	age	-.03	-.01	-.06	.954	.00
	race	1.22	.07	.71	.482	.00
	gender	.36	.02	.19	.843	.00
	Caregiver type	1.25	.06	.63	.531	.00

R^2 = 18%; F(5, 97) = 4.27, p = .001

Table H16

Multiple Linear Regression with Change in School Functioning as the Key Independent Variable and Change in total CAFAS as Outcome Variable

4	Model	B	Beta	t	Sig.	r^2
	(Constant)	-99.68		-1.73	.086	
	Δ School Functioning	-6.79	-.35	-3.62	.000	.11
	age	5.05	.12	1.29	.199	.00
	race	1.96	.02	.17	.863	.00
	gender	-.11	-.00	-.01	.993	.00
	Caregiver type	20.59	.16	1.61	.112	.02

R^2 = 16.4%; F(5, 100) = 3.91, p = .003

Affective Functioning

The univariate models explained 10.8% of the variance in change Internalizing CBCL, 23.6% of the variance in change in Externalizing CBCL, 18.4% of the variance in change in Total CBCL, and 22.2% of the variance in change in total CAFAS (Tables K17, K18, K19, and K200. The regression weight for change in Affective Strength was significantly different from zero and indicated that it was negatively associated with each outcome. However, age, race, gender, and caregiver type were not significant predictors of the individual outcomes in the univariate models.

Table H17

Multiple Linear Regression with Change in Affective Strength as the Key Independent Variable and Change in Internalizing CBCL as Outcome Variable

1	Model	B	Beta	t	Sig.	r^2
	(Constant)	11.72		1.30	.195	
	Δ Affective Strength	-.76	-.29	-3.02	.003	.08
	age	-.92	-.14	-1.52	.133	.02
	race	-.63	-.03	-.365	.723	.00
	gender	-2.73	-.13	-1.42	.159	.02
	Caregiver type	-1.62	-.08	-.79	.427	.01

R^2 = 10.8%; F(5, 105) = 2.54, p = .033

Table H18

Multiple Linear Regression with Change in Affective Strength as Key Independent Variable and Change in Externalizing CBCL as Outcome Variable

2	Model	B	Beta	t	Sig.	r^2
	(Constant)	-20.86		-2.36	.020	
	Δ Affective Strength	-1.13	-.40	-4.58	.000	.15
	age	1.09	.16	1.85	.069	.02
	race	2.61	.13	1.5	.140	.02
	gender	.35	.02	.19	.860	.00
	Caregiver type	.66	.03	.33	.742	.00

R^2 = 23.6%; F(5, 105) = 6.49, p = .000

Table H19

Multiple Linear Regression with Change in Affective Strength as Key Independent Variable and Change in Total CBCL as Outcome Variable

3	Model	B	Beta	t	Sig.	r^2
	(Constant)	-11.11		-1.33	.185	
	Δ Affective Strength	-.98	-.39	-4.26	.000	.15
	age	.43	.07	.76	.447	.00
	race	1.59	.09	.97	.335	.01
	gender	-.68	-.04	-.39	.701	.00
	Caregiver type	.51	.03	.26	.792	.00

R^2 =18.4%; F(5, 102) = 4.60, p = .001

Table H20

Multiple Linear Regression with Change in Affective Strength as the Key Independent Variable and Change in Total CAFAS as Outcome Variable

4	Model	B	Beta	t	Sig.	r^2
	(Constant)	-125.02		-2.38	.019	
	Δ Affective Strength	-6.82	-.412	-4.66	.000	.16
	age	6.79	.170	1.93	.057	.03
	race	1.11	.010	.11	.915	.00
	gender	-1.01	-.008	-.09	.928	.00
	Caregiver type	17.96	.139	1.52	.133	.01

R^2 =22.2%; F(5, 105) = 5.99, p = .000

Appendix I

Assessing Multicollinearity for the BERS subscales

Table I1

Correlations Among of Caregiver-Rated BERS Subscales

Correlations

		Δ Interpersonal Strength	Δ Family Involvement	Δ Intrapersonal Strength	Δ School Functioning	Δ Affective Strength
Δ Interpersonal Strength	Pearson Correlation	1	.82**	.71*	.53**	.71**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	112	112	111	106	111
Δ Family Involvement	Pearson Correlation	.82**	1	.70**	.53**	.69**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	112	113	112	106	111
Δ Intrapersonal Strength	Pearson Correlation	.71**	.70**	1	.54**	.69**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	111	112	112	106	110
Δ School Functioning	Pearson Correlation	.53**	.53**	.54**	1	.42**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	106	106	106	106	105
Δ Affective Strengths	Pearson Correlation	.71**	.69**	.69**	.42**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	111	111	110	105	111

**. Correlation is significant at the 0.01 level (2-tailed).

Δ = change defined as 12-month scores – Baseline scores

Table I2

Collinearity Diagnostics for the Change in Each of the BERS Subscales

				Variance Proportions				
	Eigen value	Condition Index	Constant	Δ Interpersonal Strength	Family Involvement	Δ Intrapersonal Strength	School Functioning	Δ Affective Strength
1	3.59	1.00	.00	.02	.02	.02	.02	.02
2	1.06	1.84	.75	.00	.00	.01	.05	.02
3	.57	2.51	.19	.01	.01	.00	.80	.08
4	.35	3.21	.05	.18	.22	.19	.03	.31
5	.26	3.69	.00	.01	.01	.76	.10	.57
6	.18	4.50	.00	.78	.75	.02	.00	.01

There are at least two ways to assess multicollinearity : Condition Index and variance proportions criteria include:

Condition Index > 30 suggest serious collinearity problems Condition Index greater than 15 suggests possible collinearity problems. If a factor has high condition Index, one looks in the variance proportions for values .50 and greater.

Using Tolerance or VIF and criteria are: Tolerance < 2 indicates a multicollinearity problem. On the converse, Tolerance > .20 indicates no multicollinearity.

Variance Inflation Factor, VIF > 4 suggest there may be a multicollinearity problem. On the other hand, VIF < 4 suggests no multicollinearity. Some researchers use the lenient cut-off point of 5.0 or even 10.0 to signal multicollinearity problem.

Source

Multiple Regression. http://faculty.chass.ncsu.edu/garson/PA765/regress.htm. Retrieved May, 14th, 2010.

Appendix J

Correlations of the Outcome Variables

Table J1

Correlations of the Outcome Variables at Baseline

Correlations using baseline data

		Baseline Total CAFAS Score	Internalizing T-score, CBCL	Externalizing T-score, CBCL	Total problem T-score, CBCL
Baseline Total CAFAS Score	Pearson Correlation	1	.63**	.80**	.83**
	Sig. (2-tailed)		.000	.000	.000
	N	179	179	179	176
Internalizing T-score, CBCL	Pearson Correlation	.63**	1	.62**	.85**
	Sig. (2-tailed)	.000		.000	.000
	N	179	179	179	176
Externalizing T-score, CBCL	Pearson Correlation	.80**	.62**	1	.89**
	Sig. (2-tailed)	.000	.000		.000
	N	179	179	179	176
Total problem T-score, CBCL	Pearson Correlation	.83**	.85**	.89**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	176	176	176	176

** Correlation is significant at the 0.01 level (2-tailed).

Table J2

Correlations of the Outcome Variables at 12 months

		12 Month CAFAS Score	Internalizing T-score, CBCL	Externalizing T-score, CBCL	Total problem T-score, CBCL
12 Month CAFAS Score	Pearson Correlation	1	.60**	.70**	.72**
	Sig. (2-tailed)		.000	.000	.000
	N	126	126	126	126
Internalizing T-score, CBCL	Pearson Correlation	.60**	1	.61**	.87**
	Sig. (2-tailed)	.000		.000	.000
	N	126	126	126	126
Externalizing T-score, CBCL	Pearson Correlation	.70**	.61**	1	.88**
	Sig. (2-tailed)	.000	.000		.000
	N	126	126	126	126
Total problem T-score, CBCL	Pearson Correlation	.72**	.87**	.88**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	126	126	126	126

**. Correlation is significant at the 0.01 level (2-tailed).

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health services system-of-care demonstration site. *Journal of Emotional & Behavioral Disorders, 15*(3), 143-155.

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CURRICULUM VITAE
UKAMAKA MARIAN. ORUCHE

EDUCATION:

Degree	Institution Clinical/Functional Preparation	Year	
BS	University of Lagos, Nigeria Biochemistry	1988	
BSN	Indiana University	1994	Nursing
MSN	Indiana University Psychiatric-Mental Health Nursing	1999	
PhD	Indiana University Nursing Science/Mental Health	2011	

CLINICAL APPOINTMENTS:

Institution	Title/Rank	Dates
Midtown Community Mental Health Center Indianapolis, Indiana	Certified Clinical Nurse Specialist (part-time)	8/2008-present
Midtown Community Mental Health Center Indianapolis, Indiana	Clinical Nurse Manager	7/2002-8/2008
Community Health Network Indianapolis, Indiana	Staff Nurse (part-time)	10/2004-2/2006
Mercury Center Inc Indianapolis, IN	Clinical Nurse Specialist	10/2001-6/2002
Wishard Health Services Indianapolis, Indiana	Staff Nurse II	1/1995-5/1999

LICENSURE:

Registered Nurse Licensure Indiana
Clinical Nurse Specialist Licensure Indiana
Control Substance Registration Indiana

CERTIFICATION:

ANCC Certification as Clinical Nurse Specialist in Child and Adolescent Mental Health:
American Nurses Credentialing Center

PROFESSIONAL SOCIETIES:

Full Name	**Dates**
American Psychiatric Nurses Association	2010-present
International Society of Psychiatric-Mental Health Nurses	2009-present
Midwest Nursing Research Society	2008-present
Sigma Theta Tau International Honor Society of Nursing, Alpha Chapter	1995-present

HONORS AND AWARDS:

Full Name	**Granted By**	**Dates**
Lee D. Fuller for Clinical Excellence in Care of the Mentally Ill	Indiana University School of Nursing	2009, 2011
SREB-Doctoral Scholar Education Board-Institutionally Funded	Southern Regional	2010
APNA-Janssen Scholar	American Psychiatric Nurses Association	2010
F31 Pre-doctoral Fellow	National Institute of Nursing Research	2010-2012
T32 Pre-doctoral Fellow	National Institute of Nursing Research	2007-2010
M. Elizabeth Carnegie African American Memorial Scholarship	Nurses Educational Fund Inc. Award $4000	2009
Nurse Practitioner Health Care Foundation/AstraZeneca Diversity Scholarship Award	Nurse Practitioner Health Care Foundation $5000	2008
Research Incentive Fellowship	Indiana University School of Nursing	2007-2009
Nancy-Dart Opie Research Award	Indiana University School of Nursing	1999
Graduate Nursing Scholarship	Indiana University School of Nursing	1998
Behavioral Science Student Fellowship	Epilepsy Foundation $2000	1998
Estelle Massey Osborne Scholar	Nurses Educational Funds, Inc. $2500	1998
Chi Eta Phi Sorority Scholarship	Eta Chi Chapter	1993, 1998
Who's Who among Students in American Universities & Colleges		1998

Professional Nurse Traineeship	Indiana University School of Nursing $6599.97	1998
Michelle White Research Award	Indiana University School of Nursing	1994
National Dean's List	Indiana University School of Nursing	1994
Summer Research Opportunity Fellowship	Indiana University Purdue University in Indianapolis $6000	1992, 1993

INVITED TEACHING PRESENTATIONS:

Oruche, U., "Care for the Health Care Provider". Presented to Psychiatric-Mental Health MSN Nursing Students, Indiana University School of Nursing, Indianapolis, Indiana; December, 2010.

Oruche, U., "Clinical Nurse Specialist Psychiatric Assessment". Presented to Psychiatric-Mental Health Nursing Students, Indiana University School of Nursing, Indianapolis, Indiana; October, 2010.

Oruche, U., "Drugs Use Among Youths". Presented to elementary school youths, Christ the King Grade School, Indianapolis, Indiana; August, 2005.

Clinical Preceptor:
P651, Psychiatric Mental Health Nursing with Families. Indiana University School of Nursing Graduate Program, Fall 2002

RESEARCH STUDIES AND PUBLICATIONS:

Publications:

Austin, J.K., **Oruche, U**.M., Dunn, D.W., Levstek, D. A. (winter, 1995). New-onset childhood seizures: Parents concerns and needs, *Clinical Nursing Practice in Epilepsy*, 8-10.

Oruche, U. (2009). Research with cognitively impaired participants. Journal of Nursing Law, 13(3), 89-94. doi: 10.1891/1073-7472.13.3.89

Oruche, U., Gerkensmeyer, J., Stephan, L., Wheeler, C. & Hanna, K., (2011). Described experiences of caregivers of children with mental health problems. Accepted with Revision.

Oruche, U., Gerkensmeyer, G., Lindsey, L., Exploring Recruitment Strategies: Intervention for Caregivers of Children with Mental Health Needs. Manuscript to be submitted June 2011.

Presentations:

Oruche, U., Gerkensmeyer, J., & Stephan, L. (2010, April). Lived experiences of caregivers of children with mental health needs. Paper Presented at the 12th Annual Conference of the International Society of Psychiatric-Mental Health Nurses (ISPN), St. Louis MO.

Gerkensmeyer, J., **Oruche, U**., Alkhattab, H; Stephan, l., & Wheeler, C. (2009, April). Lived experiences of caregivers of children with mental health needs. Poster presented at the 1st Annual IUPUI Student Research Day, Indianapolis IN.

Gerkensmeyer, J., **Oruche, U**., Alkhattab, H; Stephan, l., & Wheeler, C. (2009, March). Lived experiences of caregivers of children with mental health needs. Poster presented at the 22nd Annual Research Conference- Proceedings. A System of Care for Children's Mental Health: Expanding the Research Base, Tampa, Florida.

Research Support Awards:

Full Name/Study Title/Role	**Dates**
F31 NR011378 (**PI: Oruche**)	2010-2012
National Institute of Nursing Research (NINR)	$66,000
Individual Ruth L. Kirschstein National Research Service Award	
Study: Predicting Treatment Response of Adolescents with Serious Emotional Disturbance	
R21 NR01059301 (PI: Gerkensmeyer)	2009-2011
Indiana University School of Nursing	$275,000
R21-Problem Solving Interventions for Primary Caregivers of Children with Metal Health Problems	
Role: Co-Investigator	
T32 NR07066 (PI: Austin/Rawl)	2007-2010
National Institute of Nursing Research (NINR)	$70,000
Institutional National Research Service Awards (NRSA)	
The goal of this training program is to train pre-doctoral and postdoctoral nursing fellows in the area of health behavior research in chronic illness across the lifespan.	
Role: Pre-doctoral fellow	
Research Incentive Fellowship Award	2009-2010
Indiana University School of Nursing	$10,000
Study: The Association between Levels of Caregiver Depression and Child Behavioral Functioning	
Role: PI	
Research Incentive Fellowship Award	2008-2009
Indiana University School of Nursing	$10,000
Study Title: The lived experiences of caregivers of children with mental health problems	
Role: PI	
Research Incentive Fellowship Award	2007-2008
Indiana University School of Nursing	$10,000
Study Title: Factors associated with clinical outcomes in children and adolescents with mental health problems after discharge from community-based treatment.	
Role: PI	
Center for Enhancing Quality of Life Grant	2007

Indiana University School of Nursing (PI: Gerkensmeyer) $10,000
Pre-pilot study: Problem solving interventions for caregivers of children and adolescents with mental health problems.
Role: Co-Investigator

Study # 0904-60B (PI: Aalsma) 2009
Midtown Community Mental Health Center Child & Adolescent Program
Study Title: Indentifying Barriers to Care for Youth in a Mental Health Program: A Qualitative Study
Role: Co-Investigator

SERVICE:

Professional Service:

Sigma Theta Tau International Honor Society of Nursing 2010-2012
Abstract Reviewer

Choices Technical Assistance Advisory Board 2008-2010
Focus: Development and Implementation of Systems of Care in Mental Health Services for Youth and their families

Indiana University School of Nursing
Career Connections 2008-present
Recruit and mentor talented and under-represented ethnic groups to the doctoral program

PhD Summer Intensive Program 2008
Presenter, discussion with PhD students. *Thriving in a PhD Program*.

Community Service:

The Mercy Foundation Inc. Indianapolis, Indiana
Team Leader 2004-2010
Board member 2008-2010

Midtown CMHC Community Health Fairs 2004-2008
Focus: Coordinated and provided mental health screenings and education to the public at Community Health Fairs