EVALUATION OF THE EFFICACY OF STRENGTHS BASED MOBILE THERAPY

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The number of children and adolescents with emotional and behavioral disorders has grown dramatically, yet evidenced-based mental health treatment services have long been inadequate. To address this gap, this study evaluates the impact one particular children's mental health treatment intervention has on the functioning of serious emotionally disturbed children and adolescents.

This pre-experimental pre-posttest design study evaluates the impact of a community-based children's mental health treatment program, Strengths Based Mobile Therapy, on the level of functioning of children and adolescents receiving treatment in the program. Additionally, this study examines the relationship between age, gender, treatment provider, primary DSM-IV diagnosis, length of treatment, outside agency involvement, and entry level of care with treatment outcome. The primary tool for evaluation of treatment outcome for this study is the Child and Adolescent Functional Assessment Scale (CAFAS), along with data from a pre-existing database.

The preliminary findings in this study suggest that this treatment model may have an impact on level of functioning. Additionally, findings of this study suggest that this treatment model may have a maximum effective length or "dose" of treatment to obtain optimal results.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Figure Page

CHAPTER ONE

STATEMENT OF THE PROBLEM

Introduction

The number of children and adolescents with emotional and behavioral disorders, either demonstrated or diagnosed, are growing dramatically (Mears, Yaffe, & Harris, 2009). Evidenced-based mental health treatment services for these children and adolescents with emotional and behavioral disorders have long been inadequate (Mears, et al., 2009). To address this gap, this study evaluates the impact of one particular children's mental health treatment intervention on the level of functioning of serious emotionally disturbed children and adolescents.

In order to orient the reader, I shall begin this chapter with a brief overview of children mental illness, the historical overview of the development of services for children with serious emotional and behavioral disorders, and the lack of focus on the establishment of need and funding for services. Then, I will present a brief overview of the pilot project that serves as the basis for this evaluation, along with a brief explanation of the treatment intervention- strengths based mobile therapy. Next, a brief overview of the research itself, briefly describing the nature of the study, its genesis, objectives, and limitations will follow. Finally, I will conclude this chapter with an outline of the structure of this dissertation.

Overview of the Problem

Mental illness is a very challenging disease for those who suffer from the symptoms of this illness. Mental illness often leads to impaired social and familial

relationships, along with economic impacts on the individual and/or the family (Vingilis E. & State S., 2011). Mental illness also often leads to stigma and social isolation.

The end of the twentieth and start of the twenty-first century encompassed many societal and political changes in the United States that directly affected children and adolescents. Specifically, transformation of children's mental health services was beginning in the early 1980's (Rugs & Kutash, 1994). Prior to the 1980's, children's mental health services were institutionally based, medical model oriented treatment services that were the primary design of service delivery for the previous quarter century. The transformation in the early 1980's was to the provision of community-based services with a focus on delivery of family-centered services tailored to the individual needs of children and youth with multi-faceted problems (Rugs & Kutash, 1994). This movement in mental health services delivery was to the provision of comprehensive, community-based services coordinated across agencies dealing with the population of youth with serious emotional and behavioral disorders and their families (Kupermine & Cohen, 1995).

Even with the increasing identification of the needs of this at-risk population of children and adolescents in the 1980's, the adult mental health system continued to receive most of the available fiscal resources by virtue of its size, visibility, and political influence (Kupermine & Cohen, 1995). As identified by Schwartz, Goldfinger, Ratener & Cutler, 1983), gains traditionally occur in the adult mental health treatment arena only when a mental health agency has been willing to assume direct responsibility for assuring and managing the care of those with serious psychiatric disorders. Even though children's needs were increasing, no mental health agency nor the overarching mental health

treatment arena were willing to assume the same level of responsibility for the growing at-risk population of children and adolescents. Therefore, as of the mid 1980's, similar gains were not occurring in the child and adolescent mental health treatment arena.

Although, no mental health agency was assuming a clear sense of primary responsibility and accountability for mental health treatment for children who were experiencing serious emotional disturbance (Schwartz, et al., 1983), other entities were assuming responsibilities for other facets of children's complex needs. For example, the education system, which has a legal mandate historically to provide appropriate educational services to emotionally disturbed youth, was fulfilling its mandate to these needy children (Knopff & Batche, 1990). Additionally, other agencies, such as Children and Youth services and Juvenile Probation services, did have mandated responsibilities for child at-risk due to neglect and/or abuse; however, these responsibilities did not extend to meeting the mental health needs of youth with serious emotional disturbances (SED) (Kupermine & Cohen, 1995). Unlike, Children and Youth services and Juvenile Probation services, there are no mental health authorities that have any legal mandate to serve youth with serious emotional disorders. Therefore, along with no legal mandates for service provision, there was also a lack of associated funding allocated for treatment, as well as, research or evaluation. Thus, youth with serious emotional disturbance (SED) or with complex multiple needs experience a critical lack of resources to meet those needs (National Advisory Mental Health Council, 1990). Goldfine, et. al. (1985) summarized the state of child mental health as a reflection of a "non-system" based on tradition, political money-saving ventures, and a patchwork of occasional incentives through

demonstration grants that were offset by disincentives through reliance on a third party payment system (p. 149).

In addition to the general absence of child mental health services, the service delivery system for youth reflects a lack of clarity of roles and responsibilities among child serving agencies, poor inter-agency relationships and communication, non-productive expenditures of energy, and territorial arguments (Kupermine & Cohen, 1995). This inadequacy in this overarching service delivery system itself, with no clarity of expectations and functions, has negatively affected children and families requiring treatment services (Knitzer, 1982). This disjointed service delivery system, for children and adolescents, leads to a variety of overlapping services, with service delivery by mental health, education, social services, or juvenile justice agencies. The service delivery entity becomes dependent on the point of entry of the youth in the system versus delivery by the most qualified and appropriate entity based on the true needs of the child (Kupermine & Cohen, 1995).

Because of disconnects within the service delivery system, identification of the need for establishment of a coherent system for delivering child and adolescent mental health services arose. Specifically the delivery of children's mental health services through a community-based system arose as a viable option alternative to the existing service delivery system. Proponents argued that a community-based service delivery system would reach greater numbers of children in need of treatment, would be more cost-effective, and would reduce social stigma for children and their families (Stroul & Goldman, 1990).

Beginning in the early 1980s with the establishment of the Community Mental Health Centers (Rafferty, 1988), children's services have focused on providing community-based services which are family-centered and tailored to the individual needs of the children and youth. Although experts agree upon the concept of a comprehensive community-based system of care for children and adolescents with severe emotional disturbances (SED), widespread implementation of such a system has not come to reality. Some argue that the gap that exists between large numbers of children and families requiring services and the lack of available services, especially, "non-categorical" and "non-residential" services, drives the need for change (Friedman & Kutash, 1993). Therefore, in fact, most states continue to spend expensive resources on residential placement and inpatient psychiatric hospitalization (Kupermine & Cohen, 1995).

In addition to fragmentation in service delivery, lack of economic support and commitment for services, some believe that the children's service delivery system has evolved without the benefit of enough research or evaluation (Heflinger, 1992). Various explanations may be viable for the lag between research and practice in the field of children's mental health (Rugs & Kutash, 1994). Children's mental health services are a newer research arena, with researchers facing challenges deciding which areas require investigation and how to best measure the area. In addition, as there continues to be limited funding available for children's services, funding for children's systems research is only recently becoming available. Furthermore, the complicated nature of the children's mental health service delivery system itself makes the area much more difficult to study, and not easily addressed by traditional clinical trials. Compounding this complex nature of the research is a lack of available researchers in this area.

National Institute of Mental Health and the Family Branch of the Center for Mental Health Services initiated significant research demonstration grants in the 1990s to investigate the efficacy of model service systems for children and families. These studies used quasi and experimental designs, covering a wide range of systems interventions, to begin to bridge the gap between practice and theory (Rugs & Kutash, 1994).

The present research study will add to current available body of limited research, and will contribute specifically to the literature on outcomes of children's mental health treatment. It represents a case study evaluation conducted to determine the outcome of treatment interventions, and will examine the impact of a unique children's community-based mental health treatment service on the level of functioning of children and adolescents with serious emotional disturbances.

Background of the Case Study Model and Context

Currently, Pennsylvania has an array of mental health services that target children and adolescents who demonstrate behaviors that place them at-risk for out-of-home placement. Each available mental health service serves a specific purpose and targets a unique population, based on presenting need or identified medical necessity criteria. However, many of these services are team-delivered, almost as costly as out-of-home placement, and service provision is often by multiple providers who experience fragmented coordination and communication. Therefore in 2005, in response to a perceived gap in the continuum of available community based mental health services in the local community and based on existing literature, Value Behavioral Health of Pennsylvania, Inc. (VBH-PA), a Western Pennsylvania based Medicaid Managed Care

Organization, developed a pilot project to implement a unique community based mental health service.

Titled strengths based mobile therapy, Value Behavioral Health of Pennsylvania, Inc. offers the program in six counties in Western Pennsylvania through seven participating pilot provider organizations. Designed for children and adolescents who demonstrate serious emotional and behavioral disorders, this program involves a single master's level clinician who can work with the child or adolescent, do collateral family therapy to strengthen the family system, and serve as the single point of contact for all involved service providers.

In 2005, Value Behavioral Health of Pennsylvania, Inc., in collaboration with the Community Guidance Center initiated a pilot of this model in Indiana and Armstrong counties. Additional provider organizations joined the pilot over the next several years. Strengths based mobile therapy seeks to add to the available services for at-risk children and adolescents through provision of a treatment service that is less costly than many existing treatment services, easily accessible for prompt initiation, community-based, focused on treating the child and family, and accessible in a less cumbersome manner than many existing services. Furthermore, strengths based mobile therapy utilizes a single clinician rather than multiple disconnected service providers, but at a lower cost than many existing services.

The program has continued under pilot status in the eyes of the state of Pennsylvania, since its inception in 2005, which limits the availability of the treatment to children and adolescents insured through Value Behavioral Health of Pennsylvania. Now, Value Behavioral Health of Pennsylvania is exploring with the Pennsylvania Office of

Mental Health and Substance Abuse Services moving the strengths based mobile therapy pilot to an "in-plan" service. Movement to an "in-plan" status would mean that strengths based mobile therapy would be available to any child or adolescent in the state of Pennsylvania, if determined medically necessary, and would be eligible for payment by any Medical Assistance (MA) insurance program. Furthermore, any Pennsylvania licensed mental health provider agency may then pursue approval as a license provider of the service, which would allow for greater access to the service for at-risk children and adolescents.

Purpose of the Study

In 1984, Knitzer postulated that in order for treatment of at-risk children to be effective, services should be intensive, work with children and adolescents in their homes, and involve parents and other family members. Beginning in the 1980's, with programs like the Homebuilders, an intensive family preservation program designed to prevent out-of-home placement of children, Kinney and others began to utilize intensive in-home mental health services to work with children at-risk for out-of-home placement (Hinckley & Ellis, 1985). Research demonstrates that children who have experienced out-of-home placement have lower rates of returning to out-of-home placement when these at-risk children have access to an organized array of community-based mental health services (Pavkov, George, & Lee, 1997). These findings serve as the fundamental rationale for this dissertation research.

The purpose of this study is to evaluate the impact of this particular program has on the level of functioning of the children and adolescents it serves. Additionally, the evaluation will examine the relationship of gender, age, treatment provider, primary

DSM-IV diagnosis, length of treatment, outside agency involvement, and entry level of care with treatment outcome.

This research will add to the available research literature on children's mental health treatment and outcomes, addressing the gap in the literature between practice in and research.

Research Questions

In 2005, Value Behavioral Health of Pennsylvania, in response to concern about the available array of service and increasing cost of services for at-risk children and adolescents, began to postulate the creation of a pilot of a unique, low-cost community based behavioral health program to target the needs of at-risk children and adolescents-strengths based mobile therapy. This research will evaluate the overall effectiveness of the program. Throughout this case study evaluation, examination of the following research questions is the focus:

1. Does the introduction of an intensive children's community-based mental health treatment, strengths based mobile therapy (SBMT), influence the level of functioning for children and adolescents treated?
2. Is there a relationship between a child's primary DSM-IV diagnosis and the outcome of treatment?
3. Is there a relationship between entry level of care/treatment and the outcome of treatment?
4. Is there a relationship between length of stay in treatment and exit level of care?

5. Is there a relationship between change in level of functioning and exit level of care?
6. Is there a relationship between entry level of functioning and outcome of treatment?

This study will seek to answer these questions and contribute to the available body of research literature on children's mental health treatment and outcomes. Specifically, this dissertation intends to expand the knowledge base about the impact of community-based, family-focused, children's mental health treatment on the level of functioning of children and adolescents served. The study sample was limited to children and adolescents, who received strengths based mobile therapy from January 1, 2007 to December 31, 2008, inclusively, in the Value Behavioral Health of Pennsylvania pilot program. While this research was intentional, it extremely limits the ability to generalize the results beyond the program under study. Due to the real world focus of this research, on an active children's behavioral health treatment program, the study lacks a control group.

Despite its limitations, this evaluation has merit in that it will investigate whether this treatment programs is effective in terms of having an impact on the individuals treated and will seek to add to the body of research on children's mental health treatment and outcomes.

Organization of the Evaluation

The first chapter describes the need for the research, the background and purpose for the study, and its significance.

The second chapter presents a literature review that examines the historical progression of children's mental health treatment with a focus on the important role of the family, along with the impact of treatment service delivery in the community versus clinic setting. This review will begin with an exploration of the early history of clinical problems and clinical services for children, which serves as the foundation for clinical service delivery for children today. I will include an exploration of the roots of wraparound treatment services in the United States and the theoretical underpinnings of the service. The roots of intensive in-home services, in the creation of the Homebuilder's Model in the 1970's, which originated to address youth at-risk of out-of-home placement, will follow. Next, an exploration of the theoretical underpinnings of children's wraparound services follows with a review of systems and family systems theory, along with social learning theory. Finally, the review discusses Minuchian's structural family therapy model, and the relationship of this model to the strengths based mobile therapy treatment model will close the chapter.

The third chapter provides a more detailed context of the case study through a detailed examination of the payment and service delivery system structure for child and adolescent behavioral health services in Pennsylvania. The chapter concludes with a detailed description of the strengths based mobile therapy treatment model, along with an explanation of the Value Behavioral Health of Pennsylvania treatment pilot explanation.

The fourth chapter describes the research methods and summarizes the Child and Adolescent Functional Assessment measure is detail, along with the literature supporting the reliability and validity of the measure. Additionally, a summary of the data collection and data analysis procedures of this research concludes the chapter.

The fifth chapter presents the findings of the statistical analyses for the research questions as they relate to data collected in the strengths based mobile therapy treatment pilot.

The final chapter summarizes the case study evaluation and presents conclusions of the research findings. A summary of the significant implications of this research occurs and recommendations for future research conclude this research.

CHAPTER TWO

LITERATURE REVIEW

This chapter will begin with an exploration of the history of the development of children's mental health treatment services, which serves as the foundation for clinical service delivery for children today. This overview will educate the reader on the journey the children's mental health service delivery system has traveled from the institutionalization of problem children in the 1800s through the emergence of wraparound beginning in the 1980's- the direct descendant to modern day community-based children's mental health services. This overview will include a brief review of the literature on community-based treatment services, a brief overview of the specific community-based children's mental health treatment model evaluated in this research, and a summary of the Homebuilder's model that laid the initial groundwork for intensive community-based services. Once the historical foundation for today's community-based treatment services is set, a review of the theoretical framework for this research, will examine the theories that directly relate to key features of the strengths based mobile therapy treatment model.

History of Children's Treatment Services

A review of history dating back prior to the late 1800s demonstrates that humans have always had a need to care for those unable to care for themselves, whether they be widows and orphans, the sick, the old, developmentally disabled, or the mentally ill. From the time of the American colonists until the early 1800s, the United States has followed the patterns set by the English poor laws of 1601. During this period, institutionalization was the primary solution in the form of undifferentiated almshouses.

In the early 1800s, as the market for apprentices was slowing and the economy was moving into a factory system of production, dependent youth were more problematic. This led to the building of prisons and asylums during the first quarter of the 1800s, followed by the building of "houses of refuge" in the mid-1820s for boys who had committed less serious offenses. In addition, these "house of refuge" were home to runaways and disobedient and vagrant children. Along with these institutions, during this time, specialized institutions also housed orphans and different types of children with disabilities (Levine & Levine, 1992).

As cities in the Northeast United States experienced massive immigration from Ireland and later Germany, care from children began to move from the institutions to the community. In the 1840s and 1850s, voluntary organizations began to offer some predominantly religious based community services for children and youth.

The real movement that one may associate most with the development of today's community-based treatment for children and adolescents did not emerge until between 1880 and 1930. Specifically, the roots of modern community-based services for children and adolescents were established between 1890 and the beginning of World War I in 1914, as part of the general concern in that era for the welfare of children (Levine & Levine, 1992). However, Cohen (1958) identifies a list of agencies that either directly or indirectly pertained to child welfare and to services for children, starting with the organization of the Young Women's Christian Association (YWCA) in 1906 and concluding with Healy's Juvenile Psychopathic Institute in 1990. Therefore, although the movement began as early as the 1880s, as near as the 1990s this movement from the

institution to the community has had noted stops in the journey to where community-based treatment is today.

Kanner (1962) summarizes the era as marking the start of the "century of the child". A "community orientation" marks this era and the field of child study began about this time in Europe as well as in the United States.

During this era, the movement was to provide clinical services that were part of the community, were concerned with education, and were oriented toward prevention. Because of the work in this era, as individuals plan children's services today, they are more aware of the need for those services or clinical models that do not rely totally on inpatient treatment, or outpatient psychotherapy (Levine & Levine, 1992).

It is the developments/movements of this era, along with the ferment in the United States accompanying great social and economic changes, led to the provision of professional clinical services for children (Levine & Levine, p. 10).

The origin of the term "clinical" began with Lightner Witmer, who in the spring of 1896 started seeing a few children several hours each week to help them overcome certain specific disabilities in educational subject matter. He urged the opening of a clinic, supplemented by a hospital school to treat children with "mental and moral retardation". Witmer proposed these individuals, which he newly termed as the "psychological experts" in a new profession, as the psychological expert, to treat these children in the clinic (Levine & Wishner, 1997). This clinical psychologist was interested in the individual child and examined the proposed treatment to achieve the next steps for the child in terms of mental and physical development (Levine & Levine, 1992).

Originally, Witmer believed that clinical psychology would closely align with medicine and thus it became known as the "medical model". However, by 1906, his position changed. Witmer continued to recognize a close relationship with medicine, but also recognized the close relationship that clinical psychology held to sociology and pedagogy (Witmer, 1906). Witmer strove to apply the scientific psychology of the day to the education of children with a goal that focused on the individual needs of the child. What was unique is that Witmer did not start with assumptions that people were inferior or sick because they did not respond to the current methods. Thus, the focus of Witmer's clinic gave the field of clinical psychology a much different view than the traditional medical model (Levine & Levine, 1992).

The next major movement in the historical development of community-based treatment for at-risk children is the pre-World War I settlement house. The settlement house sought to promote the organic unity of society by reducing the distance between social classes and arose as a means of coping with the social disorganization induced by the rapid industrialization, urbanization, and immigration of the era (Levine & Levine, 1992).

The early settlement houses design was as "living laboratories" for the "sociologists" of the day. The settlement house workers were comprised of many young ministers and other socially conscious men; however, the movement also experienced an influx of young, highly educated women, such as Jane Adams (Woods & Kennedy, 1922). The settlement house grew out of moral fervor and intellectual ideas, out of the need for young, educated individuals to find a useful place in the world, and out of the needs of individuals struggling to live in massive urban slums created by an industrial revolution

that produced both progress and poverty (Levine & Levine, 1992). The Settlement House set the venue for the two classes to meet and gain fellowship in pursuit of common purpose to satisfy mutual needs. The Settlement House movement served as the birthplace for new social workers.

By the 1920s, efforts toward social reform had dwindled. Psychiatric and psychoanalytic thinking influenced the professional training for social workers because of the development of schools of psychiatry and social work. Casework formalized and the "social service" of the earlier day became less important to the professionally trained worker (Lubove, 1965).

Following the end of World War I, the next major children's service arrives on the scene- the Community Child Guidance Clinic. With a goal of prevention of juvenile delinquency, the Commonwealth Fund, a private foundation working toward a high performing health system, launched a bold program with demonstration child guidance clinics opening in a number of cities in 1921. These clinics were reflective of today's community mental health centers. These clinics became treatment agencies that sought to treat individuals seeking help (Levine & Levine, 1992).

By the 1960's, family therapy models became popular with a focus on group therapy concepts and the practice of treating children and families separately, but simultaneously. This progress in family therapy theory viewed human behavior less as a matter of individual dynamics and more as a function of a family system (Levine & Levine, 1992).

In the mid 1970's, individuals working with violently and emotionally disturbed youth recognized a lack of treatment facilities for these children. Judges found

themselves sending these children to training schools, because no one else would take the children. This lack of available placement outlets for this population of children prompted a movement toward alternatives to out-of-home placement (Bruns & Walker, 2010).

Wraparound is what emerged in the 1980s as an alternative to out-of-home placement, specifically institutionalization, for children and adolescents with high levels of mental illness and related needs (Burchard & Clarke, 1990). Wraparound services arose as a by-product to the Willie M. class action lawsuit in the state of North Carolina. Specifically, a child named Willie M., age 10, and three other plaintiffs, in September of 1979, were the center of a class action lawsuit filed on their behalf by seven attorneys from private firms and two private organizations (Guthrie & Finger, 2003). Because of the lawsuit settlement in 1980, a completely new service delivery system for socially and emotionally disturbed (SED) children emerged, ranging from highly restrictive residential programs to daytime therapy in a child's home. With a price tag of about 744 million dollars generated through the settlement, the lawsuit fostered interagency collaboration, placement in least restrictive environments and the creation of new services and treatment centers.

From this lawsuit, one of the first systems of care in the nation arose and helped many children who once thought to be beyond helping. A system of care incorporates a broad array of services and supports organized into a coordinated network that integrates care planning and management across multiple levels, is culturally and linguistically competent, and builds meaningful partnerships with families and youth at the service delivery and policy levels (System of Care, 2013). This system of care philosophy gave

way to the wraparound approach, which incorporates many of the values associated with system of care, to include family-driven and youth-guided, home and community-based, strength-based and individualized, culturally and linguistically competent, integrated across systems, connected to natural support networks, and data driven and outcomes oriented.

Wraparound is a team based planning process intended to provide individualized, coordinated, family-driven care to meet the complex needs of children and youth who are at-risk of becoming involved or are involved with one of more systems. Systems may include, but are not limited to children and youth services, juvenile probation services, and/or children's mental health services. The wraparound process requires families, provider agencies, and key members of the family and their social support network to collaborate to compile a creative plan and engage in shared decision making to respond to the individualized needs of the child and family and identify services that are flexible and accommodating to the changing needs of the family (Karl & Lourie, 2006).

Since the 1990s, wraparound has grown to become one of the most popular approaches to providing flexible, comprehensive, community-based services for children and adolescents with serious emotional and behavioral disorders and their families (Bruns & Walker, 2010). A survey of state mental health directors recently indicates upwards of 100,000 youth receive wraparound services in over 800 wraparound programs or initiatives across the United States (Bruns & Walker, 2010). Wraparound provides community-based care for children and adolescents with complex mental health and related challenges. The principles that guide wraparound practice specify that wraparound services are strengths based, culturally competent, and should focus on

providing community based care (Bruns & Walker, 2010). These principles naturally lead to incorporation of the family system into the treatment of the child of or adolescent experiencing behavioral problems.

It is important to be mindful of this role of the family, when examining community-based mental health services. From the wraparound approach, the family plays an integral role in effective mental health treatment for children and adolescents. The role of the family in the mental health treatment process has garnered growing attention over the last 20 years. With increased attention have come increased expectations of the family. The family needs to be a strength in the child's life and empowered to assist their child or adolescent on the journey to stability and maintenance of in-home placement (Korloff & Friesen, 1997). To treat the individual child or adolescent and fail to treat the family system that child resides in ignores all the family factors that play an integral role in the child or adolescents life (Korloff &Friesen, 1997).

The important role of the family is central to the wraparound approach. In addition, the community-based delivery of treatment services is paramount to this approach. The next section will highlight the research in the area of community-based treatment services. Following this summary, the next section will orient the reader to the historical foundation of today's modern intensive community-based mental health treatment interventions- the Homebuilder's Model.

Community Based Treatment

Research on community-based treatment for children and adolescents support the availability of treatment outside of the clinic setting. A summary of this research serves to highlight the value of community-based treatment.

Pavkov, George, & Lee (1997) looked at demographics, service history, and clinical factors associated with readmission to inpatient psychiatric hospitals by children and adolescents. The authors utilized computerized administrative data records for 3,969 consecutive index admissions of individuals between the ages of 7 and 17 inclusive. The focus of the study was on hospital reentry. The results of the study indicate that hospital reentry, or out-of-home placement, occurs less frequently among youth living in areas having available an organized array of community-based mental health services (Pavkov et al., 1997).

In another study, 1,412 families responded to a survey commissioned by the Hunter Area Health Service in 1996. The survey arose in response to community concern regarding the provision of health resources for children with disruptive behaviors and their families (Hazell et al. 2002). Parents of children with DSM-IV diagnoses completed a questionnaire to prioritize options for improving or expanding clinical services and cutting treatment costs for their at-risk children and/or adolescents (Hazell et. al., 2002). Results of this study concluded that the highest priority among respondents was to the enhancement of existing community-based treatments (Hazell et al., 2002). Additionally, out-of-home placement is a desired alternative for a small group of parents categorized as disadvantaged and stressed (Hazell et al, 2002). These conclusions indicate the priority of intensive in-home mental health services targeting the child or adolescent and family, to contribute to a reduction of stress for families of this at-risk population. I surmise that a reduction in out-of-home placement will follow.

In another study, Mosier et al. (2001) identified six components as integral to successful services to target children and/or adolescents with emotional or behavioral

disorders. These components include intervention that is family focused, in-home, based on need rather than service category, and service provision that is intensive-yet short-term. Mosier et al. (2001) supported the premise that successful programs uncover and build on the strengths of the family. They indicate that in a successful intensive in-home treatment program, the interventions target enhancement of the family system to maintain the child or adolescent, who is at-risk of out-of-home placement, in the home.

In 2001, Mosier et al. conducted an evaluation of a large multi-state health care organization in the Rocky Mountain region of the United States. The Youth Outcome Questionnaire (Burlington, Wells, & Lambert, 1995), a parent reported measure of treatment progress for children and adolescents, was utilized to measure response to treatment in 104 patients ranging in age from 4 to 17, who received intensive in-home mental health services. It is important to note that the study had high participant attrition over the course of the study. The results indicate that children and adolescents referred for intensive in-home treatment had significantly higher levels of behavioral and emotional disturbances than those found in outpatient treatment (Mosier et al., 2001). What was of great interest, however, was that at the end of an 8-week intensive in-home treatment episode, children and adolescents in the study reported symptomatology at a similar level to children and adolescents receiving outpatient treatment services (Mosier et al., 2001). Although the research design is weak due to the lack of a comparison group, Mosier's et al. (2001) study suggests that intensive in-home treatment of at-risk children and adolescents was reliable and significantly reduces behavioral and emotional problems in children and adolescents who initially presented at-risk for out-of-home placement.

Pavkov et al. (1997) research further supported the premise that intensive community-based treatment programs reduce behavioral and emotional problems in children and adolescents. Their research specifically demonstrated that at-risk children and adolescents are more likely to stabilize in the home when arrays of community-based mental health services are available.

Although there is research literature that supports the use of community-based services, numerous studies focusing on the evaluation of the effectiveness of intensive in-home mental health treatment services are subject to criticism because they do not use reliable and valid outcomes measures (Mosier, Burlingame, Wells, Ferre, Latkowski, Johansen, Peterson & Walton, 2001). Furthermore, there is very limited available literature, in general on effectiveness of community-based mental health intervention.

This research will evaluate the effectiveness of an intensive, community-based treatment program. This research will specifically examine the impact of this treatment program on level of functioning of children and adolescent served. The impact on level of functioning is measured through an analysis of change scores on an outcome tool, the child and adolescent functional assessment scale. The Child and Adolescent Functional Assessment Scale documents well established reliability and validity in the research literature.

With a review of the community-based treatment research literature complete, I will now summarize the groundbreaking model that establishes the historical foundations for today's intensive community-based mental health treatment services for children and adolescents.

Influence of Homebuilders-Type Family Preservation Programs

The inception of intensive family preservation-type programs dates back to the 1970s in Tacoma, Washington. Family preservation services refer to services implemented with a goal of maintaining the child within the family when that child is at-risk for placement outside of the home. The Homebuilder's Model is an early example of these services. These programs laid the foundation for future intensive, community-based treatment services for children and adolescents, such as strengths based mobile therapy.

The Homebuilder program arose under the auspices of Catholic Community Services with a design to prevent out-of-home placement of children/adolescents who were at-risk (Kinney, Madsen, Fleming, & Haapala, 1977). Key elements of the Homebuilder type intensive family preservation services are short-term, intensive, flexible, and home/community-based (Allen, Emig, Farrow, & Kelly, 1993). The research literature indicates that in the implementation of intensive family preservation-type programs, the most success is from programs that most closely reproduce the original Homebuilder program elements (Fraser, Pecora & Haapala, 1991).

Homebuilders-type programs operate on the premise that the provision of intensive services in the home will permit at-risk children/adolescents to remain safely in the home, thus preventing unnecessary out-of-home placement (Wells, 1994). Specifically, due to the fact that these programs seek to resolve the crisis that is placing the child at-risk for out-of-home placement, while working to return the family to a level of functioning, these programs permit maintenance of the child/adolescent in the home.

Wells (1994) identifies that it can be difficult to examine the effectiveness of programs like Homebuilders due to the complex nature of the service delivery system.

Specifically, therapists use a variety of clinical interventions, provide or arrange for a variety of concrete services and assist families with accessing a plethora of community resources (Pecora et al., 1992). Due to the complex and individualized nature of need of each family, that requires interventions targeted to these unique needs, effectiveness becomes difficult to measure.

Many types of the intensive programs have been the focus of evaluation. Often the literature reflects that these evaluations are plagued with poor research designs, limited measures of child or family functioning, inadequate analyses, and small sample sizes (Pecora et al., 1992). Despite these limitations, the research does indicate that these programs are successful in preventing placement in 40 percent to 95 percent of the cases referred (Hinckley & Ellis, 1985). Furthermore, Fraser et al. (1991), found that for families served in Homebuilders-type programs successes include improvement in their level of functioning and maintenance of children in the home at service termination.

Additionally, research in this area has led to identification of factors that increase the risk of placement out-of-the- home. The factors include residence of child/adolescent outside the home at referral, previous out-of-home placement of the child/adolescent, employment of the parent, limited use of concrete services by the family, limited achievement of treatment goals, substance abuse by the child, request for placement by the parent, and uninhabitable family home at termination of service (Fraser et al., 1991). Additionally, mental health problems of parents, previous involvement of children in public systems, and poverty have also emerged as important characteristics of families of children in placement (Wells, 1994).

In spite of all these risk factors, research does show that a high proportion of families served by Homebuilders-type programs improve their functioning and maintain placement of their children in the home (Wells, 1994). As Wells (1994) highlights, a concrete determination that the program prevents placement is difficult and there is limited research "testing theoretically anchored hypotheses pertaining to differing outcomes in treatment (p. 480)".

Now that a compilation of the history of children's mental health services is complete, to include pertinent research on community-based treatment, along with an overview of the founding intensive family preservation model, an exploration of the theory relating to the integral components of the strengths based treatment model will follow. Formulation of this model drew upon social learning, systems, and family systems theories. Additionally, Minuchian's structural family therapy guides the therapy work within the strengths based treatment model. In the next section, a review of each of these key theories will occur.

Theoretical Framework

Wraparound services have grown to be among the most popular approaches to providing flexible, comprehensive, community-based services for children and adolescents with serious emotional and behavioral disorders and their families (Bruns & Walker, 2010). In the 1990s, wraparound services began to be associated with a series of values or principles, which formalized late in the 1990s (Walker & Matarese, 2011).

As practitioners gained practical experience in the implementation of wraparound services, there was no real focus on theory development or rationale for the emerging practice. However, in the early 2000s, it was noted that wraparound was "consistent

with" several influential theories of child development, particularly social-ecological (Bronfenbrenner, 1979) and systems theories (Munger, 1998). Additionally, the principles of wraparound suggest further connections to other theories, particularly theories of family-centered, strengths-based, and empowerment approaches to mental health care (Walker & Maltrese, 2011). Nonetheless, as noted by Walker and Maltrese (2011), there are no detailed descriptions of how wraparound relates to any of these various theories in any of the literature, just a loose association with a series of broad psychosocial theories.

Wraparound does have roots in the Homebuilder's model. Social learning theory (Bandura, 1985) is the base for the Homebuilders Model. Specifically, the emphasis on cognitive and behavioral training, which is integral to the homebuilder's model, has its roots in social learning theory (Wells, 1994). Therefore, an examination of the theory underlying the design of the strengths based treatment model will begin with social learning theory.

Social Learning Theory

Social learning theory stems back to work in the late 1800s. According to Grusec (1992), it began with Freud and his theory of personality development, which focused on internal drives as an explanation for behavior and development. The hypotheses of psychoanalytic theory, which were only identifiable within the work of psychoanalysis with a client, were very difficult to test analytically. Nonetheless, to link behaviorism and learning theories was occurring. Behaviorism provided a way of understanding observable behavior in terms of stimulus-response and conditioning (Carson, Butcher, & Coleman, 1988). The basis for both behaviorism and psychoanalytic theory is the

understanding that the purpose of behavior is drive reduction. For example, experiences such as pleasure would act as reinforcement for that particular behavior.

As these theories were in development, the other theory under design by researchers to explain social development was that of social learning theory with Albert Bandura and Robert Sears. The focus of Robert Sears's initial work was on socialization processes and how children learn to behave within their respective cultures (Sears, Rau, & Albert, 1965). Sears views were in line with prevailing stimulus-response theory of behaviorism and his work focused on aggression control, resistance to temptation, and the acquisition of appropriate sex-role behaviors (Sears, Whiting, & Nowlis, 1953).

While Sears was generating his work, Albert Bandura was in search of an explanation of how one learns. Bandura was not concentrating on psychoanalysis; rather, his concentration was on modeling and information processing as avenues to acquiring behavior. This concentration led Bandura to create social learning theory.

Social learning theory has several assumptions, which include vicariously learning through observation (Bandura, 1977). More specifically, social learning theory focuses on learning that occurs within a social context and the theory postulates that people learn from one another. This theory then takes it one-step further and adds a social element to the learning. These basic principles of social learning theory underlie behavioral therapy (Chavis, 2011).

Social learning theory is primarily concerned with how individuals think and how their thinking encourages behavior and development (Grusec, 1992). Barker (1995) defines behavior as "any action or response by an individual, including observable activity, measurable physiological changes, cognitive changes, fantasies, and emotions"

(p. 33). How individuals learn behaviors is dependent upon the positive and negative effects that result from the behavior. Bandura (1977) proposes that these response consequences work in three different ways. First, the consequences provide information about the behavior. Second, the consequences, based on the value the individual places on them, can act as motivators. Third, the consequences have the power to strengthen responses. These responses closely tie to respondent and operant conditioning, two aspects that Bandura (1977) associates to learning theory, along with modeling.

Respondent conditioning focuses on how environmental stimuli can bring about automatic reactions. Bandura (1977) states that people remember the circumstances of their behaviors and the rate at which there is reinforcement of their behaviors. People then extract the pattern of results from the events that occur over time. Then individuals utilize cognition or cognitive skills to integrate or link the effects of consequences on actions.

Operant conditioning, conversely, is concerned with how consequences shape the probability of a behavior reoccurring. Operant conditioning is a method of learning that occurs through rewards and punishment for behavior. Through operant conditioning, an association occurs between a behavior and a consequence for that behavior (Bandura, 1977).

Behavioral therapy has evolved in this way. Centered on principles of learned behavior that occurs within a social context, the principles of classical conditioning developed by Ivan Pavlov, and operant conditioning developed by B. F. Skinner are crucial to behavioral therapy (Chavis, 2011).

The third part of social learning theory is modeling (Bandura, 1977). Bandura (1997) describes modeling as a manner of learning that relies on the observation of others and their behaviors. Modeling requires that the individual learner be attentive to the significant features of the behavior and retain what has been observed. Furthermore, what the individual retains in memory, the symbolic representation of the observed behavior, converts into acceptable actions that connect with the original observed behavior. Then, to complete the modeling process, motivation must exist to perform the behavior.

The use of social learning theory in earnest, as an applicable approach to change human behaviors, stems back to the 1950s. In the 1950s, interest in social learning theory in the social and behavioral sciences, as a mental health intervention, grew as interest in insight-oriented or psychoanalytic approaches decreased. Social learning theory offers a structured and learned approach to dealing with many different behavioral concerns across a variety of settings as opposed to insight-oriented approaches, which relies on conversation between the therapist and individual.

Bandura (1977) added to the development of the concept of therapy by exploring the role of cognition and emphasizing that people learn vicariously. In 1977, Burman stated that behavioral therapy is an approach to psychotherapy based on learning theory, which has the goal of treating psychopathology through techniques designed to reinforce desired behaviors and extinguish undesirable behaviors, a reflection of Bandura's social learning theory.

Behavioral therapy is used to change general, as well as, dysfunctional behaviors such as depression, anorexia, chronic distress, substance abuse, anxiety, obesity, phobia, obsessive behavior, self-mutilating behavior, anger disorders, and many other behavioral

disorders (Mehr, 2001). According to Chavis (2011), explanation of these behaviors has its basis largely in culture. Specifically, culture is a major factor in explaining and intervening in human behaviors and it shapes human behavior and the social environment. Chavis further argues that all individuals are social beings and carry within them their cultural experiences that affect their behavior. Therefore, the importance of the social and cultural context in working with individuals who are seeking help with problem behaviors becomes paramount. Social and culture context includes the culture, community, family, school, and all other systems within the social environment of consumers.

The influence of social learning theory and the importance of the social and cultural context are evident in the design of the strengths based mobile therapy treatment model. Specifically, this behavioral therapy is to the individual child or adolescent with behavioral needs; however, the treatment is within the social and cultural context of the child or adolescent with specific focus on the systems within the individual's social environment. The role of those systems in the treatment of the individual child or adolescents problem behaviors will follow.

Systems Theory

Systems theory moves the focus from the study of objects or people discretely to the study of people in relationships (Becvar & Becvar, 1999). When looking through the lens of systems theory, it makes no sense to analyze any one person independently of the system. Likewise, mental health treatment that targets the child or adolescent alone does not serve to address all the factors that are contributing to the emotional and behavioral problems the child or adolescent is experiencing (Becvar & Becvar, 1999).

The first step to understanding general systems theory as a foundation for broader understanding of family systems theory starts with a general definition of a system. Miller (1978) defined the term system as follows:

> A system is a set of interacting units with relationships among them. The word "set" implies that the units have some common properties. These common properties are essential if the units are to interact or have relationships. The state of each unit is constrained by, conditioned by, or dependent on the state of other units. The units are coupled. Moreover, there is at least one measure of the sum of its units, which is larger than the sum of that measure of its units (Miller, 1978 P. 16).

General systems theory is a set of related definitions, assumptions, and propositions, which deal with reality as an integrated hierarchy of organizations of matter and energy (Spronck & Compernolle, 1997). Systems theory provides a zoom lens that allows one to look at problem on many different levels. When looking at the different levels, the examination is of the interactions with the levels below and above. When utilizing systemic thinking one does not always have to include the larger context, however, when, for example, looking at dysfunction within the family, one may also refer to the level of society (Spronck & Compernolle, 1997). When working from a systems perspective, one should be willing to take into account information about other levels, both higher and lower. Again, when looking at the family a higher-level examination may look at culture while a lower level examination may look at the individual and the brain (Spronck & Compernolle, 1997).

In light of systems theory, the best place for mental health treatment to occur for children and adolescents is in the context of the family. Furthermore, lack of treatment involving the family may very well contribute to higher rates of out-of-home placement and in turn lower levels of overall functioning for children and adolescents with emotional and behavioral problems. There is growing support in the literature that leads to doubt that out-of-home placement is either the most cost or clinically effective approach for children and adolescents with serious emotional and behavioral problems (Hinckley & Ellis, 1985).

Regardless of the fact that there has been recognition of the importance of the systematic dimension in children's difficulties, family therapists have not been viewed as experts on children's problems. Historically, schools and mental health professionals have generally referred children experiencing risk to therapists identified as child therapists and have not been inclined to target the family system to affect change concerning the child's risk (Wachtel, 1994).

In the past, systems and individually oriented approaches to therapy were seen as contradictory approaches that one must select from in isolation versus combine to effectively treat the at risk youth. Additionally, most literature on the topic indicates that attempts to explore the interface between the two approaches has been mostly limited to work with adults, the literature on integrating systematic and individual perspectives with young children historically has been quite sparse- further supporting the value of this current research.

A review of the child therapy literature demonstrates the occurrence of a dynamic shift as the field made a paradigm shift from an individual focus to the systematic

perspective. With movement into looking at the family system, no longer was the child's problem regarded as something that "resided" within him, thus implying that the child needed "fixed", but rather the child's emotional difficulties and resulting behaviors were understood as a symptom of family dysfunction and as serving a role in the family's life (Wachtel, 1994). Thus family systems theory takes the underpinnings of systems theory and moves child therapy from the focus on the individual child to a focus on the family system in work with troubled children.

In keeping with Korloff & Friesen's (1997) research, family systems theory may be very applicable when examining the critical role that the family plays in the treatment of children and adolescents with emotional and behavioral problems.

Family Systems Theory

Application of family systems theory to the study and treatment of families appears in the 1950s when "seminal thinkers" such as Bateson, Ackerman, Haley, and others first began to adapt various tenets of systems theory to the conceptualization, understanding, and treatment of human problems within the context of the family (Broderick & Schrader, 1981). Family systems theory joins two words that were rarely together prior to the 1950s (Merkel & Searight, 1992). By the 1980s, systems-oriented perspectives clearly dominated both theory and practice in marriage and family therapy. Family systems thinking offered a unique and major advance in understanding of behavioral issues. This theory allows one to view children's problems as a product of ongoing interactions, rather than simply a reflection of something coming from within, which is a critical perspective (Wachtel, 1994).

Juda (1997) indicates that much of contemporary mental health practice has underpinnings in general systems theory, especially in the area of family therapy practice. More specifically, family systems theory "provides a comprehensive definition of the family, utilizing both structure and function as major elements in the family system analysis" (Wood, 2002, p. 135).

"Family systems theory evolved through Murray Bowen's work with patients diagnosed with schizophrenia and their families at the Menninger Clinic and the National Institute of Mental Health" (Wood, 2002, p. 136). As the original founder of the family systems approach, Bowen proposed that all families fall on a continuum of differentiation levels (Coco & Courtney, 2003). Specifically, according to the Bowen Center for the Study of the Family (n.d.):

> families and other social groups tremendously affect how people think, feel, and act, but individuals vary in their susceptibility to a "group think" and groups vary in the amount of pressure they exert for conformity.
>
> These differences between individuals and groups reflect differences in people's levels of differentiation of self. The less developed a person's "self", the more impact others have on the individuals functioning and the more the individual tries to control, actively or passively, the functioning of others.
>
> An individual's family relationships during childhood and adolescence primarily determine how much "self" the individual develops. Once established, the level of "self" rarely changes unless the individual makes a structured and long-term effort to change (Bowen Theory-Differentiation of Self section, para. 1).

According to Coco and Courtney (2003), "differentiation, in conjunction with triangles, the nuclear family emotional system, the family projection process, emotional cutoff, the multigenerational transmission process, sibling position, and societal regression, shapes family functioning (p. 41)." Furthermore, Coco and Courtney (2003) reflect that Bowen contends that the transmission of pathology transcends generations and affects the patterns of behavior in the family.

In order to develop an understanding of family systems theory it is important to have a definition of a family from which to work. Woods (2002) develop a working definition that can serve to assist in the process of understanding the premises of family systems theory. The definition is as follows:

> A unit of group of two or more individuals (or beings) formally or informally connected through birth, law, and/or commonly recognized choices, circumstances, shared bonds, and personalities, who are considered by a structure of relationships and unique interests for achieving the functions of connection, guidance, and assignment of meaning, while also serving as a reflexive network that brings strengths, talents, and commonalities in providing emotional, spiritual, and/or social support (Woods, 2002, p. 136).

Merkel & Searight (1992) pulled together a list of major tenets of family systems theory, which represents a collage of definitions and ideas, which are prominent in the field. Merkel & Searight (1992, pp. 34-35) composed the following list, which is neither exhaustive nor exclusive:

1. A system is a set of interacting elements, the whole of which is greater than the sum of the parts.
2. These elements have a consistent, interdependent relationship with each other, which creates patterns and structures.
3. Causality in the system is circular, not linear. This leads observers to focus on process and description more than content and explanation.
4. Components of a system may relate to each other via feedback loops. Negative feedback loops operate to maintain a more or less steady state (homeostasis), whereas positive feedback loops may amplify changes until the entire system undergoes a major reorganization with a new structure.
5. Systems are hierarchically organized. A system is composed of subsystems and is itself part of a larger suprasystem.
6. The specific composition of a system may not be fixed but depends, to a greater or lesser extent, on the perspective and preferences of the observer. Systems have boundaries, which separate them from their environment.
7. Living systems are open systems, which can exchange energy and information with their environment. These systems may exhibit negative entropy whereby systems evolve to become more complex and more organized over time.
8. Systems exhibit "equifinality" whereby the interactional process helps determine the outcome of any specific set of events or reactions. Accordingly, different initial conditions may lead to similar outcomes and similar initial conditions may lead to different outcomes.

These tenets of family system theory serve as the foundation that is the target of structural work within the family.

The therapeutic process utilized in family work, from a family systems perspective, encompasses analysis of the family-of-origin issues with the client's current perspective, observation of family interactions, and analysis of "societal, cultural, or familial forces supporting undifferentiation" (Woods, 2002, p. 137).

According to Woods (2002), when working from a family systems perspective, there is specific goal exploration. It is imperative:

> to distinguish between the subjective feeling process and the intellectual thinking process in family therapy, along with establishing an "I position" to state the individual's own beliefs that are differentiated from the family-of-origins. Finally, the therapy must release the family triangle by refocusing the problem and identifying a family emotional system built within the triangle (Woods, 2002, p. 137).

In dysfunctional families, Goldenberg and Goldenberg (1991) indicate that each generation produces individuals with progressively poorer differentiation, who are increasingly vulnerable to anxiety and confusion. Conversely, "healthy" families reflect balanced degrees of cohesion and adaptability while problem families demonstrate the extremes of these constructs (Coco & Courtney, 2003).

According to Coco and Courtney (2003), the role of a therapist, operating from a structural perspective, is to use Bowen's concepts to design interventions that will rebalance the family system. It is through this rebalancing of the family system that child and adolescents can move in the direction toward overall higher levels of functioning.

Based on the tenets of family systems theory, proponents argue that the application of an intensive community based mental health treatment focusing treatment towards the child and adolescent and the family, may serve to improve the overall general level of functioning of children and adolescents treated.

Structural Family Therapy

Bowen's family system theory provides the underpinnings for Minuchin's (1974) structural approach to family therapy with its focus on the family system, rather than on the individual. Expanding on Bowen's family systems theory, the structural approach to family therapy conceives of families as systems and subsystems with a focus on roles and rules, boundaries, power, and hierarchy (Navarre, 1998).

A functional family possesses clear boundaries between individuals and subsystems, facilitates individual growth, prevents intrusion, promotes generational hierarchies, and provides flexible rules and roles, which are adaptable to the internal and external changes of an evolving family (Navarre, 1998). Minuchin (1974) postulates that those functional families possess well-organized boundaries between the subsystems. Boundaries, within these families, are based upon the ideal structure of the family, which should include essential functions such as support, nurturance, and socialization of each family member (Navarre, 1998). Minuchin (1974) identified boundaries as ranging from rigid at one extreme leading to disengagement, to clear in the middle, to diffuse boundaries leading to enmeshment at the other extreme. Keeping in mind the importance of boundaries, structural family therapy seeks to assist the family to change its structure or its organization with an aim of establishing a structure that lends its members and subsystems to clear differentiation and hierarchical integration (Minuchin, 1974).

Along with an organizational structure, Minuchin (1974) maintains that a family also possesses a set of cognitive schemas, which legitimatize and validate the family's organizational structure. As a result, when you change the family's structure, you also affect the family's worldwide view and visa versa (Navarre, 1998). This belief system provides further support for therapy, which involves the entire family unit versus an individual focus with the at-risk child or adolescent alone. Minuchin's premise is that individuals are not separable from the whole. Thus, change in the behavior of one family member will require a corresponding change in the behavior of another family member. This further supports the argument for therapy involving the family unit (Navarre, 1998). Furthermore, Minuchin states that changing of the family dynamics will ultimately result in a resolution of the presenting problem (Navarre, 1998).

Summary

In conclusion, based on systems and family systems theory, one can argue that the best place for mental health treatment is in the context of the family. In support of this argument, there are growing bodies of research that question whether out-of-home placement is either the most cost or clinically effective approach for children and adolescents with serious emotional and behavioral problems (Hinckley & Ellis, 1985). In keeping with this research, strengths based mobile therapy seeks to maintain the at-risk child or adolescent in the home, therefore increasing the opportunities for success through family system work.

Strengths based mobile therapy not only seeks to work with the child or adolescent in conjunction with their family with a focus on the family system, but also seeks to provide treatment outside the traditional clinic setting. Specifically, strengths

based mobile therapy delivers treatment to the child or adolescent in their community, to include in the home, school and surrounding community.

Social learning theory offers a structured and learned approach to dealing with a variety of behavioral concerns across different settings. The literature cites the wide use of social learning theory and the application to behavioral therapy. More specifically, the basic tenets of social learning, systems and family systems theories apply to the strengths based mobile therapy treatment model. Furthermore, strengths based mobile therapy incorporates community-based treatment, along with focus on working within the family system through a structural family therapy approach, into its treatment model. Proponents argue that the strengths based mobile therapy treatment model has built the crucial components of theory and therapy techniques into the model design. They suggest that each of these factors contribute to a strong clinical treatment model that produces positive treatment outcomes for children and adolescents with serious emotional and behavioral disorders.

Brannan (2003) highlights the important role of the family in effective treatment of at-risk children; however, the family is often ignored in the clinical research, which further supports the value of the current research to expand the clinical research knowledge base in this area.

Statement of Hypothesis

Conducting an evaluation of the existing pilot data, allows me to examine the impact of strength based mobile therapy on the level of functioning of children served in the pilot project. Utilizing the Child and Adolescent Functional Assessment Scale (CAFAS), which I will discuss in detail in Chapter IV, I was able to evaluate the impact

of introduction of treatment. The main research question for this study is "Does the introduction of strength based mobile therapy result in an increase in level of functioning?"

I propose the following hypotheses:

1. Children and adolescents treated in the strengths based mobile therapy treatment model will have higher levels of functioning on average at discharge from treatment than they had at intake to treatment.
2. Children and adolescents with DSM-IV diagnoses classified as behavioral disorders, such as Attention Deficit Hyperactivity Disorder (ADHD), will have greater improvement in their level of functioning at discharge from treatment than children and adolescents with other DSM-IV diagnoses.
3. Children and adolescents referred for treatment from higher levels of cares will demonstrate a greater change in level of functioning at discharge from treatment.
4. Children and adolescents with greater length of treatment will demonstrate greater increases in level of functioning.
5. Children and adolescents who experience an increase in level of functioning will receive referral to a lower exit level of care.
6. Children and adolescents with higher level of functioning at entry to treatment will experience a lower exit level of care.

Based on the literature review, I expected support for all of these hypotheses. The next chapter presents a thorough orientation to the funding and service delivery structure for children's mental health services in Pennsylvania.

CHAPTER THREE

CONTEXT OF CASE STUDY

Introduction

In order to understand the clinical model serving as the basis for this research, one must understand the structure of the payment and service delivery structure for child and adolescent behavioral health services within the state of Pennsylvania. This chapter begins with an outline of the insurance structure in Pennsylvania as it pertains to coverage of behavioral health services for children and adolescents, to include the Medical Assistance or "Medicaid" funding stream. Pennsylvania has a complex public funding structure for child/adolescent behavioral health treatment services. This explanation will serve to orient the reader to the role/impact of this structure on access to and challenges of the existing service delivery system. Specific focus will be on the role of Managed Care funding with particular attention to Valley Behavioral Health of Pennsylvania, as it is the site for the case study research.

Following the outline of the publicly funding structure in Pennsylvania, I will provide a detailed explanation of the available "in-plan" behavioral health services for children and adolescents in Pennsylvania. This will serve as an orientation to the reader to the complex structure of the continuum of publicly funded behavioral health services in Pennsylvania and identify the inherent challenges of each of these services, which ultimately played a role in Value Behavioral Health of Pennsylvania, Inc. establishing the strengths based mobile therapy pilot in 2005. This explanation will start with the least intensive and most cost effective level of care Outpatient Mental Health Services and

progress through Pennsylvania's continuum of publicly funded behavioral health services.

This chapter will conclude with a detailed summary of the unique community-based treatment model, which served as the basis for this research. This summary will include a detailed explanation of the pilot project which established the model and the data that for this research.

Program Historical Context

Pennsylvania's continuum of children's behavioral health services is complex and the funding mechanisms for these services are equally complex. In order to understand the structure of the continuum of behavioral health services for children and adolescents in Pennsylvania, an understanding of the structure of the insurance coverage is essential. Specifically, there are certain behavioral health services in Pennsylvania that are only available to children and adolescents with Medical Assistance funding. Furthermore, as is the case with strengths based mobile therapy, certain behavioral health services are only available to children and adolescents with Medical Assistance funding through a specific managed care company. Therefore, a detailed summary Medical Assistance funding will follow.

Medical Assistance

Medical Assistance (MA), also known as Medicaid, is a low-income health insurance program for children and adolescents in Pennsylvania (Disability Rights Network of PA, 2006). Medical Assistance eligibility depends on income levels, in general; however, for children with significant disabilities, a waiver of parental income applies when determining eligibility. As a result, almost all children with a documented

disability are eligible. Furthermore, having private insurance does not disqualify a child for Medical Assistance coverage, but private insurance does become the primary payment method. Medical Assistance then becomes the "insurer of last resort" in terms of the payment method for any remaining balance for services that are not reimbursable through traditional private insurers.

Children with disabilities who are receiving Social Security Income (SSI) automatically qualify for Medical Assistance (Pennsylvania Health Law Project, 2003). Further, children with severe disabilities who are not receiving SSI are also eligible for Medical Assistance, regardless of their parent's income and assets, if their own personal income is less than the poverty level (Pennsylvania Health Law Project, 2003). This is the category that Pennsylvania's Department of Public Welfare calls the "Loophole" category for Medical Assistance eligibility (Pennsylvania Health Law Project, 2003). Additionally, in this category, even if a child's income exceeds the national poverty level, the child may still qualify for the Children's Health Insurance Program (CHIP) (Pennsylvania Health Law Project, 2003). The "Loophole" category allows many children and adolescents in Pennsylvania to qualify for Medical Assistance based on their behavioral health diagnosis. The "Loophole", allows a child to have access medical assistance coverage, despite falling outside traditional qualification guidelines, which allows access to certain behavioral health services solely funded by Medical Assistance dollars in Pennsylvania.

Children with disabilities who qualify for Medical Assistance receive an "Access" card that they can use for the purchase of a variety of prevention and treatment services (Dugan, D. http://www.buzzle.com/editorials/2-21-2006-89457.asp). Since 1990, most

children in Pennsylvania who apply for Medical Assistance must choose a Medical Assistance managed care physical health plan and are automatically enrolled in their county's Medical Assistance managed behavioral health care plan (Disability Rights Network of PA, 2006). Once a child qualifies for medical assistance coverage, they are eligible and entitled to receive "in-plan" behavioral health services. "In-plan" behavioral health services are treatment services that qualify for Medicaid reimbursement as long as the individual is demonstrating a level of need that is congruent with the established medical necessity criteria for that specific level of treatment. Medical Assistance reimbursable services are free to the recipient and there are no additional charges or co-pays permitted by the service provider.

Pennsylvania's Health Choices Program- Medical Assistance Managed Care

According to Williams (2011):

> The Balanced Budget Act of 1997 established the State Children's Health Insurance Program (SCHIP) allowing states to cover uninsured children in families with incomes below 200% of Federal Poverty Level, who were otherwise ineligible for Medicaid. In addition, the Balanced Budget Act permitted states to require Medicaid beneficiaries to enroll in managed care plans During this same period, Medicaid expenditures accounted for 20% of
> states budgets, a larger portion than higher education (p.13).
>
> As a result, states grasped the opportunity provided by the Balanced Budget Act to make a relatively rapid transition to managed care as a means of controlling costs (p. 14).

Health Choices is the name of Pennsylvania's mandatory Managed Care program for Medical Assistance recipients. With the introduction of the Health Choices program in Pennsylvania, approximately 900,000 recipients are now receiving coverage across several zones in Pennsylvania (DPW, 2013, May 7).

The Health Choices program seeks to improve access to and the quality of health care services for Medical Assistance recipients, along with stabilizing Pennsylvania's Medical Assistance spending. Since 1999, Value Behavioral Health of Pennsylvania has been managing the behavioral health services for nine counties in southwestern Pennsylvania, as part of the Health Choices program. Additionally, in 2006, Value Behavioral Health of Pennsylvania assumed oversight for Cambria, Crawford, Erie, Mercer, and Venango counties under the Health Choices contract. As a result, Value Behavioral Health of Pennsylvania provides mental health and substance abuse services to approximately 280,000 Medicaid (MA) recipients in 13 Western Pennsylvania counties (Value Behavioral Health of PA, 2013).

Medical Assistance insurance coverage is the most comprehensive insurance coverage available in Pennsylvania for behavioral health services for children and adolescents. Children who are eligible for Medical Assistance coverage are also able to access "in-plan" services through their Medical Assistance funding. In addition, Medical Assistance will pay for specific children's behavioral health services that private insurance companies will not reimburse.

Behavioral health rehabilitative services (BHRS) is an example of an "in-plan" children's service funded solely through medical assistance dollars, which is not eligible for reimbursement under private insurance plans. Behavioral health rehabilitative services

are children's mental health treatment services delivered to the child in the home, school or community setting. In addition to "in-plan" behavioral health rehabilitative services (BHRS), medical assistance funding is the sole mechanism for funding of children's behavioral health services funded through the Office of Mental Health and Substance Abuse Services (OMHSAS), under the behavioral health rehabilitative services "waiver" program.

Behavioral Health Rehabilitative Services Waiver Program

The behavioral health rehabilitative services waiver program allows individual behavioral health provider organizations to develop "non-traditional behavioral health treatment services for children and adolescents in Pennsylvania. Services subject to the waiver program must undergo a specific approval process and are not "in-plan" services.

First, a provider or funder organization creates a comprehensive service description for a children's behavioral health treatment model that would fall outside the typical existing "in-plan" services. The description goes to the Pennsylvania Office of Mental Health and Substance Abuse Services for review. Upon approval, the proposed program falls under the behavioral health rehabilitative services level of care and becomes eligible for medical assistance reimbursement. Although, the program is eligible for medical assistance reimbursement, the program is not an "in-plan" service, but rather a behavioral health rehabilitative services "waiver" program. This means the service is eligible for medical assistance reimbursement but only to the individual provider approved by the Office of Mental Health and Substance Abuse Services to deliver the service as outlined in the approved service description. The program serving as the case study for this study, strengths based mobile therapy, is an example of a service that is not

"in-plan" but eligible for consideration for Medical Assistance coverage through this waiver process.

Typically, individual provider organizations create "waiver" programs. Once waiver programs receive approval by the state they are then eligible for funding through medical assistance funding for the individual provider organization. Strengths based mobile therapy is unique in that it is a service designed by and submitted for approval by Value Behavioral Health of Pennsylvania, Inc., a Medicaid managed care organization, not a provider organization. Therefore, as part of this "waiver" approval, the Office of Mental Health and Substance Abuse Services limits delivery of the particular service to individuals insured through Value Behavioral Health of Pennsylvania, Inc. As a result, individuals who have traditional Medical Assistance funding cannot currently access this service.

With the reader now oriented to the landscape of funding for publically funded children's behavioral health services and the role of the behavioral health rehabilitative services waiver program in establishing funding for services that are not "in-plan" the next section will detail the Pennsylvania continuum of children's behavioral health services. This review will cover the "in-plan" services, along with their strengths and challenges.

Pennsylvania Continuum of Child/Adolescent Mental Health Services

A multitude of Medical Assistance funded child and adolescent mental health treatment services exist in Pennsylvania (See Table 1). These services vary across a range from least intensive and restrictive at the Outpatient Mental Health Services level to very intensive and restrictive at the Residential Treatment Facility (RTF) level. Each level of

mental health services has identified strengths and challenges in terms of model design and utility of the service.

Table 1

Pennsylvania Continuum of Children's Mental Health Services

Service Type	Service Delivery Location	In-Plan	Eligible Insurance
Outpatient Mental Health Treatment	Clinic-Based	Yes	Commercial, Medical Assistance/Value Behavioral Health
Strengths Based Mobile Therapy	Community-Based	No	Value Behavioral Health only
Behavioral Health Rehabilitative Services	Community-Based	Yes	Medical Assistance/Value Behavioral Health
Family Based Mental Health Services	Community-Based	Yes	Medical Assistance/Value Behavioral Health
Child and Adolescent Partial Hospitalization Services	Clinic-Based	Yes	Commercial, Medical Assistance/Value Behavioral Health
Inpatient Psychiatric Hospitalization	Out-of-Home Placement	Yes	Commercial, Medical Assistance/Value Behavioral Health
Residential Treatment Facility	Out-of-Home Placement	Yes	Medical Assistance/Value Behavioral Health

Outpatient Mental Health Treatment Services

Outpatient mental health services are the least restrictive and least expensive level of mental health treatment available to children and adolescents in Pennsylvania. Outpatient mental health services are eligible for reimbursement through Medical Assistance, as well as, through most private insurances.

The location of services delivery, for outpatient mental health treatment, as named, is in an outpatient office-based, or clinic-based setting. These services include individual, family, and group therapy. In addition to therapy services, at the outpatient level, children and adolescents may receive treatment services from a psychiatrist, to include psychiatric evaluation and psychiatric medication management services. Because of outpatient services being the least restrictive level of services, typically most children and adolescents enter and exit behavioral health treatment at the outpatient level of care. Typically, outpatient mental health treatment reflects an hour a week of therapy that may

consist of individual, group, family, or a combination of one or more of these modalities. Furthermore, often children and adolescents with a social and emotional disturbed (SED) diagnosis additionally receive a psychiatric evaluation to determine need for medication management and an appropriate level of care (Chapter 5200, 1985).

Outpatient mental health treatment is considered the least restrictive because of the delivery of the service in the clinic setting, the cost associated with the service is less expensive than other behavioral health services, the intensity of the service is typically one hour per week, and the length of treatment is generally short. Each of these aspects are considered the strengths of this level of care. Specifically, the intensity level and the delivery of the service in a clinic setting make this level of care least intrusive.
With the rural nature of Western Pennsylvania, however, and the limited financial resources often experienced by families, it is often a challenge for families to get into the clinic to access needed Outpatient Mental Health treatment. This inability can be, in part, due to lack of financial resources for or lack of access to reliable transportation, or a lack of commitment on the families' part to the child's ongoing treatment in clinic-based services.

It is the above challenges that often lead families to explore other levels of behavioral health services that are not clinic-based and offer support to the family in their home environment. Thus, categorization of these interventions is as community-based services because the services delivery target is to the child in the community versus the clinic setting. Behavioral health rehabilitative services (BHRS) are the initial level of community-based behavioral health treatment accessed for children and adolescents with serious emotional and behavioral disorders.

Behavioral Health Rehabilitative Services (BHRS)

Behavioral health rehabilitative services or "wraparound services" follow outpatient mental health treatment as the next most restrictive level of care, in the mental health treatment spectrum for children and adolescents in Pennsylvania. Behavioral health rehabilitative services are treatment services occurring in the home, school, and/or community thus classifying these services as community-based. Behavioral health rehabilitative service delivery may consist of master's level behavioral specialist consultant services, master's level mobile therapy services, and bachelor's level therapeutic staff support services (Commonwealth of Pennsylvania, 1997).

Behavioral health rehabilitative services provide intensive, community-based treatment and support services to children and adolescents with an Axis I DSM-IV diagnosis, who may be at risk of out-of-home placement. It is this meeting of the established criteria or medical necessity, specific to this service, which qualifies the service delivery to be eligible for reimbursement through medical assistance (Commonwealth of Pennsylvania, 1997). Children recommended for this level of treatment typically have a documented history of ineffective lower level of care treatment; are stepping down from a higher level of care such as inpatient hospitalization, residential treatment facility, family based mental health services, or partial hospitalization; or there is clear documentation why a lower level of care will be ineffective (Commonwealth of Pennsylvania, 1997).

To access behavioral health rehabilitative services, a psychiatrist or psychologist conducts a comprehensive evaluation of the child/adolescent to establish medical necessity for behavioral health rehabilitative services (Commonwealth of Pennsylvania,

1997). Once medical necessity is established, the psychologist or psychiatrist issues a behavioral health rehabilitative service prescription that may include behavioral specialist consultant hours, mobile therapy hours, therapeutic staff support hours, or any combination of these three services. A typical service prescription reflects a weekly prescription for services. Generally, an individual receiving behavioral health rehabilitative services may have a behavior specialist consultant or mobile therapist prescribed for up to five hours per week. In addition, the child/adolescent may have therapeutic staff support services prescribed from five to 35 hours per week, depending on level of need. Behavioral health rehabilitative services prescriptions are re-evaluated to determine ongoing intensity and level of need every four months during a reevaluation with a psychiatrist or psychologist (Commonwealth of Pennsylvania, 1997).

Behavioral health rehabilitative services fall on the Pennsylvania spectrum of children's behavioral health services as the least intensive community-delivered mental health service. In contrast to outpatient mental health services, where treatment delivery is in the clinic setting, behavioral health rehabilitative services prescriptions have a goal of behavior modification and treatment that occurs in the home, school and community setting. As indicated earlier, many families prefer community-delivered services due to their inability or unwillingness to bring the child to the clinic setting for treatment. Therefore, parents may view this component as one strength of the service.

Behavioral health rehabilitative services in the state of Pennsylvania face many barriers. The cost of delivering the service has risen dramatically since its inception. Because a behavioral health rehabilitative services prescription typically consists of a

combination of behavioral specialist consultant or mobile therapist level services, along with therapeutic support staff services, this service can become very costly to deliver.

At the service delivery level, with the structure of the service often requiring multiple staff, for the fulfillment of the multiple level prescriptions for services, providers often face challenges, especially in the rural areas, of employing adequate staff to fulfill all the prescribed services. This inability to consistently fully staff prescriptions, ultimately affects the effectiveness of the treatment.

Additionally, a shrinking employee pool in the mental health field, along with increased scrutiny in the area of credentialing, leads to agencies struggling to employ sufficient properly credentialed staff to ensure prescription fulfillment. Furthermore, it can be logistically very difficult to coordinate staff schedules to cover the competing needs of multiple cases, with minimal hour prescriptions, in very rural geographic areas.

In addition to barriers surrounding sufficient staff to deliver the service, the structure of reimbursement for behavioral health rehabilitative services, prohibits provider agencies and their staff to deliver this treatment service to seek reimbursement for time associated with travel to and from various consumers in a very rural geographic region. The medical assistance payment structure for behavioral health rehabilitative services does not provide reimbursement for travel time/costs associated with a service delivery model based in a community setting (Commonwealth of Pennsylvania, 1997). As a result, this lack of financial reimbursement for travel time associated with delivering the community-based treatment can create a financial burden on the provider organization and further impact the ability to hire staff.

As highlighted above, behavioral health rehabilitative services face many challenges associated with funding and staffing of behavioral health rehabilitative services. In addition, there are other systematic/logistical challenges faced by this level of treatment.

First, at the program design level, the requirement of a licensed psychiatrist or psychologist for completion of the comprehensive evaluation required to establish medical necessity is problematic due to limited prescriber availability. Because of limited prescriber availability, the child often experiences delays in receiving a required evaluation, which in turn leads to a delay in implementation of needed treatment services. When working with children that are potentially at-risk for out-of-home placement upon referral, these delays can result in the need for higher levels of care, including inpatient psychiatric hospitalization.

Second, because behavioral health rehabilitative services prescriptions encompass multiple service providers for the same child, often communication is not coordinated concerning treatment, which can ultimately affect the level of effectiveness of treatment.

Finally, behavioral health rehabilitative services are primarily a service that delivers behavior modification to the child in need of treatment. Because of the focus of service delivery being on the individual child, the model does not support collateral family work. This lack of focus on the family can limit the impact on the family system that may be contributing to the child's current symptoms, which is counterintuitive to the research. Specifically, research reflects the effectiveness of family interventions with children with serious emotional and behavioral disorders and their families in a variety of settings (Kilpatrick & Holland, 2006). This research indicates significant decreases in

negative behaviors of children and increases in positive behaviors across environments, because of treatment that intervenes with the whole family.

Nonetheless, despite all the challenges, behavioral health rehabilitative services is a level of treatment that breaks down some of the barriers to service that face outpatient mental health treatment. First, treatment delivery occurs in the home, community and school setting thus eliminating the need for families to transport the child to the clinic to receive treatment services.

Secondly, behavioral health rehabilitative services design permits therapeutic staff supports to provide significant support in both the educational and home settings. This community-based focus of treatment can help children maintain educational placement and provide families support and treatment intervention in the settings where the problem behaviors are actually occurring.

Finally, parents of children receiving behavioral health rehabilitative services (BHRS) maintain a very strong advocacy group that works diligently to maintain this level of treatment, despite the many challenges faced by the program. This strong advocacy has insulated the service against significant reductions in the availability of the service in a time when the state of Pennsylvania has been vocal about reduction in the delivery of this service due to overprescribing and the high costs associated with the overutilization of this level of treatment.

In summary, when looking at Pennsylvania's continuum of children's mental health services for children and adolescents, behavioral health rehabilitative services (BHRS) follows outpatient mental health services. Many Pennsylvania parents value and strongly advocate for this level of care for support with the problem behaviors they face

with their child. Additionally, parent's value and research demonstrates the effectiveness of community-based intervention. Nonetheless, behavioral health rehabilitative services (BHRS) faces many challenges at the program design level, service delivery level and from the funding perspective.

It is these challenges that can lead families, prescribers, and funders to explore other levels/models of treatment for children experiencing significant behavioral problems, such as the most restrictive level of community-based services, which is family based mental health services.

Family Based Mental Health Services

Family Based Mental Health treatment is the most restrictive level of publicly funded, "in-plan", community-based mental health treatment in Pennsylvania. The primary goal of treatment in family based mental health services is to enable parents to care for their children who are serious mentally ill or emotionally disturbed at home, and to reduce the need for child and adolescent out-of-home placement. Related objectives are to strengthen and maintain families by means of therapeutic intervention, improving coping skills, teach family members to care for the child and adolescent, and serve as an advocate for the child and adolescent (May, 2010). Out-of-home placement may be inpatient psychiatric hospitalization, foster care, therapeutic foster care, or a resident treatment facility placement.

As is the case with behavioral health rehabilitative services, in order for a child to access family based mental health treatment services, they must have an evaluation by a psychologist or psychiatrist that documents medical necessity criteria for family based mental health services. This evaluation documenting the need for family based mental

health services permits reimbursement of the treatment through medical assistance dollars.

In order to meet medical necessity for this level of care, children and adolescents referred for treatment must have a documented treatment failure at a lower level of care, recent or past psychiatric inpatient hospitalization, imminent risk of out-of-home placement, and/or recently have returned from out-of-home placement. In addition, to qualify for this level of treatment the child or adolescent should have multi-system involvement (i.e. Children and Youth services, Juvenile Probation, and/or psychiatric services) or documented history of involvement (Foley, 1993).

A typical family based mental health services treatment period is eight months of intensive services that focus on treatment of the child, along with collateral family treatment. Weekly treatment service level does not reflect a specific prescriber prescription of hours, as is the case with behavioral health rehabilitative services; rather the clinical need of the identified child or adolescent and their family defines the intensity of treatment. Therefore, a child and family may receive anywhere from a minimum of one hour per week of service to upwards of 10 hours per week, depending on clinical need at any given point in treatment (Foley, 1993).

Family based mental health service provision is by a team of clinicians to include a master's level and a bachelor's level clinician providing both individually and team-focused service delivery to the child and family in the home, school, and community (Foley, 1993). This team component of service delivery is not reflective of the same design as that seen in behavioral health rehabilitative services. Specifically, a behavioral health rehabilitative services prescription may call for delivery by multiple providers, but

these providers are providing services different services individually, to include behavioral specialist consultant services, mobile therapy services, and therapeutic staff support services. In the behavioral health rehabilitative services model, each of these services are unique and focus on the independent delivery of each service directly to the child. In the family based mental health services design, two clinicians work as a team, often-delivering services together to the child or family. In addition, the family based mental health services model does allow for individually delivered services, which facilitates the ability of each team member to work one-on-one with the child or family system. This difference in service delivery design between behavioral health rehabilitative services and family based mental health services serves to address one of the challenges often faced in behavioral health rehabilitative services- lack of communication between individuals delivering the services.

Family based mental health service provision allows the clinicians to seek reimbursement for a variety of services, to include individual and/or family therapy, case management services, family support services, and crisis intervention services with availability 24 hours a day and 7 days a week (Foley, 1993). First, in the family based mental health services treatment model, therapy may occur with one or both of the team members and is targeted either individually to the child, to the child and other family members, to other family members independent of the child, or to the entire family system collectively. In contrast to the individual focus of behavioral health rehabilitative services, family based mental health services work to target both the individual child and the entire family system. As a result, interventions to address the behavioral problems of the child do not occur in isolation but direct change within the entire family system.

The second major component of family based mental health service delivery is the provision of case management services (Foley, 1993). Through provision of case management, family based mental health clinicians shall assist the child or the parents in accessing appropriate mental health services and in obtaining and maintaining culturally appropriate basic living needs and skills. Case management services provision, in family based mental health services, is in accordance with the child's written, individualized, treatment plan, which is goal and outcome oriented. The incorporation of the case management component with the family based mental health services model permits the assigned clinicians to complete case management functions for both the child receiving services, as well as, the family system, when there are areas that are directly affecting the ability for the child to address outstanding mental health needs.

The third major component of family based mental health service delivery is family support services (Foley, 1993). Within the state regulations that guide the delivery of family based mental health treatment, there are requirements that providers of this level of care delineate a certain portion of the reimbursement that they receive to a special fund, which is for family supportive services (Foley, 1993). These funds are available to each child and family involved in treatment to provide concrete financial assistance to assist with identified needs in the family that may be affecting the ability for the child to benefit from treatment (Foley, 1993). An example may be that the family does not have the financial resources to pay an outstanding electric bill, due to extenuating circumstances, which has resulted in the power company shutting of the families electric. Thus, family support funding is utilized for the whole family, and follows with the team working with the family to develop a plan to avoid future

electricity shut offs. The family support component of family based mental health is unique to this treatment model.

The fourth major component of family based mental health service delivery is the crisis intervention component with availability 24 hours per day and 7 days per week (Foley, 1993). Family based mental health services are available as a diversion from inpatient psychiatric hospitalization when a child or adolescent is experiencing a crisis but does not need treatment as restrictive as inpatient care. Family based mental health is the only publicly funded "in-plan" children's mental health treatment that provides this 24/7 availability to children and families. This component allows treatment intervention during the most critical periods of time, when behaviors have the most likelihood of resulting in removal of the child from the home and the family system.

A family based team has a maximum caseload of eight families at any one time, thus allowing for intensive clinical treatment for the child and family (Foley, 1993). The small caseload size permits the family based mental health team the opportunity to ensure that each family receives a minimum of one treatment session per week. Often the team has multiple contacts weekly with the child and the family. Additionally, the family based mental health team routinely has contact with the child's school and medication prescriber to ensure coordination of care and sound communication between all systems involved in the child's success.

In stark contrast to the reimbursement structure for behavioral health rehabilitative services, family based mental health reimbursement covers travel time associated with service delivery, clinical treatment with the child and family system, case management, and crisis management services (Foley, 1993). Therefore, the provider

agency and the staff delivering family based mental health treatment do not have a negative impact from financial burden in the delivery of this community-based service, as was the case in behavioral health rehabilitative services.

Family based mental health services is the most restrictive "in-plan" community-based mental health service for children and adolescents in Pennsylvania. Because the family based mental health services treatment model is intensive, team-delivered, available 24 hours a day and 7 days a week, and provides funding for family support services and travel, the service by design can be quite costly to deliver. Although, a costly service, family based mental health serves the most at-risk children in the home, school and community, which allows greater access to families that may struggle with getting into the clinic for clinic-based services. Additionally, the structure of the service delivery model with the high intensity of the service and focus on the child with collateral family work are benefits of family based mental health services, often cited by families, funders and providers.

The strengths of the family based mental health treatment model, as summarized throughout this section, include team-delivered, family system focused, available 24 hours and 7 days a week, intensive and community-based. The biggest challenge faced by family based mental health services in Pennsylvania is the cost of the service. However, due to the comprehensiveness of the model there has not been a corresponding outcry by funders in Pennsylvania to reduce the availability of this service, as has been seen with behavioral health rehabilitative services.

Falling parallel in terms of restrictiveness of service on the Pennsylvania continuum of publicly funded children's mental health services is child and adolescent

partial hospitalization services, which is a clinic-based treatment model. These services fall parallel with family-based services in terms of intensity on the continuum, with the difference being their location of service delivery. A typical child and adolescent partial hospitalization prescription is to the child either in isolation or simultaneously along with either family based mental health services or behavioral health rehabilitative services.

Child and Adolescent Partial Hospitalization Services

The most restrictive "in-plan", clinic-based, children's mental health service is child and adolescent partial hospitalization services. Child and adolescent partial hospitalization programs are designed for the treatment of adolescents and children 18 years of age or under as either an alternative to inpatient care or as a more intensive treatment program than is afforded by other clinic-based outpatient settings (PA Code 5210, 2010).

Child and adolescent partial hospitalization services provide a nonresidential treatment modality to children and adolescents struggling with serious emotional and behavioral disorders (PA Code 5210, 2010). The treatment modalities include psychiatric, psychological, social and vocational elements under the direct supervision of medical supervision by a licensed psychiatrist (PA Code 5210, 2010). Partial hospitalization services design is for treatment of children and adolescents experiencing moderate to severe mental or emotional disorders.

Children requiring partial hospitalization services require less than 24-hour care, but more intensive and comprehensive services than are offered in outpatient mental health services treatment programs. Provision of partial hospitalization services are on a planned and regularly scheduled basis for a minimum of 3 hours and maximum of six

hours in any one-day (PA Code 5210, 2010). These services emphasize a therapeutic milieu, and include therapeutic, recreational, social and vocational activities, individual, group, or family psychotherapy, psychiatric, psychological and social evaluations, medication evaluations and other activities as determined by the treatment team (PA Code 5210, 2010).

For children and adolescents, basic education and, in particular, special education is an essential and required part of service for emotionally disturbed children and youth. The regulations require such education by the Department of Education or its agents (PA Code 5210, 2010). Therefore, typically, child and adolescent partial hospitalization programs incorporate the education program at the same site as the partial hospitalization program. The educational program is considered a separate, though complementary, program and shall not be included as part of the partial hospitalization program for reimbursement purposes. Partial hospitalization staff may provide supportive services to children in the treatment program during the delivery of the educational program.

The goal of partial hospitalization is to increase the level of functioning of the child or adolescent in treatment struggling with moderate to severe mental and emotional disorders (PA Code 5210, 2010). To this end, partial hospitalization has several established treatment objectives. First, partial hospitalization seeks to divert or prevent children and adolescents from acute psychiatric inpatient hospitalization or shorten the length of stay by providing a viable treatment referral option. Secondly, partial hospitalization services are designed to provide crisis stabilization and treatment of chronically mentally ill children and adolescents who require more intensive services, for some period of time, than is available in other outpatient mental health treatment

programs. Finally, partial hospitalization provides an outlet for children and adolescents returning to the community from intermediate or long-term placement out-of-the-home, who may not be ready to return to the school setting (PA Code 5210, 2010).

As the most restrictive level of clinic-based children's mental health services, child and adolescent partial hospitalization services, as is typically the case with family based mental health services, serve the most at-risk children and adolescents. Partial hospitalization services may occur simultaneously with family based mental health services if a prescription reflects this and the funder authorizes the delivery simultaneously. Despite the benefits of this comprehensive treatment delivery approach, funders often discourage the simultaneous delivery due to the high costs that accompany this delivery structure.

Due to the clinic-based location of the service, another inherent challenge faced is that the treatment focus is heavily on the treatment of the child and there is a lack of treatment focus on the family system. Research has shown that children's mental health treatment with children with behavioral disorders and their families is effective (Kilpatrick & Holland, 2009). Research demonstrates significant decreases in negative behaviors in the children and subsequent increases in positive behavior at home and in school (Kilpatrick & Holland, 2009). Although families are encouraged to attend family therapy within partial, the clinic-based setting presents a challenge to these families, as it does in outpatient therapy, therefore potentially limiting the effect of the treatment.

Another potential challenge, as well as potential strength, is the intensive nature of the program that incorporates access to the psychiatrist and medication management services directly into the design of the service. Specifically, families value the immediate

access to and ongoing direct involvement of psychiatric services in the partial hospitalization program. From a funding perspective, however, the bundling of the psychiatrist directly into the reimbursement rate for the treatment service leads to the high cost associated with this most restrictive level of care. Nonetheless, partial hospitalization services continue to be less expensive than the more costly and restrictive alternatives of out-of-home placement in either an inpatient psychiatric hospital or a residential treatment facility.

To conclude, partial hospitalization services are the most costly and restrictive "in-plan", publicly funded, clinic-based, outpatient children's mental health treatment. The service treats children and adolescents with the greatest risk for out-of-home placement and it is a valuable treatment service to address factors that lead to more restrictive placement. Although, there are inherent challenges associated with the program design and the service is costly to operate, the alternatives are not favorable. Specifically, treatment failure at the most restrictive levels of either clinic-based or community-based treatment often result in a child or adolescent referral to out-of-home placement in inpatient psychiatric hospitalization or a residential treatment facility.

Inpatient Psychiatric Hospitalization Services

When looking next on the continuum of children's mental health treatment services in Pennsylvania, inpatient psychiatric hospitalization falls into the service delivery category of out-of-home placement. Prevention from placement into this level of care is the goal of all of the levels of treatment that have preceded this section.

Inpatient psychiatric hospitalization services provide secure/locked setting for children and adolescents with serious mental illness. These acute care services require

coordinated, intensive, and comprehensive treatment, tailored to the child's immediate status and needs with a goal of continued recovery (PA Code 5210, Chapter 1151, 1983). The intent of these services is to be short-term and individualized to stabilize the child for return to the community and a less restrictive treatment service.

Inpatient psychiatric hospitalization services may include a thorough psychiatric and medical assessment; individual, group and family therapy; education on psychiatric disorders and treatment options; psychiatric evaluation and medication management; classroom instruction during the school year; and coordination with and referral to a discharge level of care (PA Code 5210, Chapter 1151, 1983).

This level of treatment is very costly and restrictive, however, also very necessary, at times. When utilized, the goal is to address the acute needs that necessitated the placement and strive to discharge the child to a less restrictive treatment option. When this goal is not successful, children and adolescents often experience referral to the most restrictive level of treatment that exists within Pennsylvania's continuum of children's mental health treatment services, residential treatment facility services.

Residential Treatment Facility

The most restrictive and costly level of mental health treatment, available to Pennsylvania children experiencing significant emotional and behavioral problems, is a Residential Treatment Facility. As documented by Burns (1989), seventy percent of the nation's total funding for children's mental health services is consumed by residential and inpatient treatment services. This was the case in the late 1980's and continues to be the case today. As was the case with inpatient psychiatric hospitalization services, each of the less restrictive clinic-based and community-based treatment services focus treatment in

an attempt to reduce or eliminate need for referral to a residential treatment facility, due to this being the most restrictive and costly level of care, along with the resultant removal from the family.

The Office of Mental Health and Substance Abuse Services define residential treatment facilities (RTF) as childcare facilities that they license and certify to serve children with serious emotional disorders (PA Code 3800, 1983). Residential treatment facilities provide 24-hour living arrangements, education and mental health treatment for children and adolescents whose needs are such that they require a 24-hour residential placement.

Services at the residential treatment facility level focus on addressing the intensive treatment needs of children and adolescents with serious emotional and behavioral disorders. A residential treatment facility provides a setting in which a child or adolescent is expected to receive intensive reassessment, retraining, and skill building opportunities (PA Code 3800, 1983). Residential treatment facilities also offer the opportunity for optimization of psychotropic medications regime, when psychotropic intervention is an integral part of the child or adolescents treatment program. Additionally, this course of treatment supports the child to enhance their capacity and skills for interpersonal skills and relationship building. Finally, individualized treatment planning promotes positive change that will allow a child to succeed in his/her community upon discharge.

Research has generally yielded disappointing results in terms of the effectiveness of residential care (Steinberg & Fleisch, 1990). Questions arise as to whether taking a child or adolescent, who is experiencing significant emotional and behavioral issues, out

of the environment of the family, and placing them in a more restrictive environment, is an effective treatment intervention. Hinckley and Ellis (1985) argue that removing the child from the home and "treating" or "fixing" the child or adolescent in a hospital or residential setting does not address the multiple needs that exist for that child or adolescent. Furthermore, the family environment is typically one of the contributing factors that lead to out-of-home placement of the child or adolescent (Pavkov, George, & Lee, 1997). Thus, to treat the child outside the family environment and then return the child to the problematic environment of the family can be self-defeating (Hinckley & Ellis, 1985).

Challenges of this level of treatment include the cost and restrictive nature of the treatment with the removal of the child from the family unit. Placement outside of the home prevents consistent treatment intervention that effectively works with the entire family system. Specifically, the child's problem behaviors are the focus of treatment in the absence of the stressors, which originally may have contributed to the problem behaviors. As a result, the child's individual treatment gains at the residential treatment facility setting often do not transfer demonstrated effectiveness to the home environment containing the original stressors that led to placement.

It is the challenges faced by each of the levels of treatment services summarized in this section that led to Value Behavioral Health of Pennsylvania, Inc. to design a unique community-based children's mental health treatment model. In addition to an examination of these challenges, Value Behavioral Health of Pennsylvania, Inc. also examined the strengths of these services. As a result, Value Behavioral Health of Pennsylvania, Inc. created the strength based mobile therapy treatment model pilot to

target at-risk children and adolescents with a focus on reduction in service delivery costs, individualization of treatment with accompanying treatment intervention involving the family, and service delivery in least restrictive, community-based setting.

Strengths Based Mobile Therapy Treatment Model

In 2005, Value Behavioral Health of Pennsylvania, Inc. examined the aforementioned "in-plan" children's mental health treatment services available to children and adolescents in Pennsylvania. In their examination, Value Behavioral Health of Pennsylvania, Inc. focused on the strengths and challenges of each treatment service to identify potential gaps in the existing spectrum of children's behavioral health treatment services. In response to these comprehensive evaluation efforts, Value Behavioral Health of Pennsylvania, Inc. designed the strengths based mobile therapy treatment model and ultimately initiated a pilot in seven southwestern Pennsylvania mental health provider organizations.

In their examination, Value Behavioral Health of Pennsylvania, Inc. postulated that gaps in the service delivery system might lead to increased out-of-home placement for at-risk children and adolescents. As earlier noted, out-of-home placement is costly and many question the effectiveness of such an intervention to address the multiple needs of children and adolescents with serious emotional disturbances and their families (Hinckley & Ellis, 1985).

In 1984, Knitzer postulated that in order for treatment of at-risk children to be effective, services should be intensive, work with children and adolescents in their homes, and involve parents and other family members. Beginning in the 1980s, with programs like the Homebuilders, an intensive family preservation program designed to

prevent out-of-home placement of children, Kinney and others began to utilize intensive in-home mental health services to work with children at-risk for out-of-home placement with good results (Hinckley & Ellis, 1985). Furthermore, research shows that an organized array of community-based mental health services reduces reentry into out-of-home placement (Pavkov, George, & Lee, 1997).

As highlighted, the spectrum of children's mental health services in Pennsylvania comes with positive attributes and challenges, at each level. Each mental health service targets a specific population of children and adolescents, based on the level of need that child/adolescent is experiencing. The current array of "in-plan" children's behavioral health services addresses the needs of a majority of children and adolescents who are at-risk for out-of-home placement. Nonetheless, when designing the strengths based mobile therapy treatment model, Value Behavioral Health of Pennsylvania, Inc. targeted the challenges faced by the existing "in-plan" services, incorporated their perceived strengths, and looked at gaps that they may have been present.

When designing the strengths based mobile therapy treatment model, Value Behavioral Health of Pennsylvania, Inc. identified a specific population of children and adolescents for the treatment model. Specifically, the strengths based mobile therapy treatment model treats children and adolescents who meet the following medical necessity criteria for this level of treatment (Value Behavioral Health of Pennsylvania, 2005):

- Child/adolescent in need of an extended assessment from a master's level clinician;

- A step-up in service from outpatient mental health services, but not in need of full behavioral health rehabilitative services;
- A step-down from family based mental health services or full behavioral health rehabilitative services (currently receiving behavioral specialist consultant and therapeutic staff support services;
- Immediate service delivery following the discharge from a residential treatment facility with demonstrated history of outpatient treatment failures;
- Following the discharge from inpatient psychiatric hospitalization with a demonstrated history of outpatient mental health treatment failures;
- Delivery of community-based services for children/adolescents having difficulty leaving their home environment;
- Delivery of therapeutic services for families having difficulty maintaining clinic-based appointments;
- Delivery of therapeutic services for children/adolescents resistant to clinic-based appointments.

Under the strengths based mobile therapy treatment model, a single master's level therapist provides mobile therapy services. This structure replaces the traditional array of behavioral health rehabilitative services provision by a master's level behavioral specialist consultant, master's level mobile therapist and bachelor's level therapeutic staff support. The use of one clinician who can perform multiple evaluative, therapeutic and case management roles, within treatment of the child, targets the barriers often faced in traditional behavioral health rehabilitative services with multiple treatment providers

often leading to fragmented communication that ultimately negatively influences treatment of the child.

Strengths based mobile therapy has the ability to begin in the home or placement facility as early as 15 days prior to discharge from a residential treatment facility placement, inpatient psychiatric hospitalization, family based mental health services, or behavioral health rehabilitative services. This is not typically available from any other level of care. Specifically, the need for other services to receive an evaluation for a prescription for services versus the masters level clinician completing the evaluation, allows strengths based mobile therapy quicker treatment access to an at-risk child.

Furthermore, the major goal of this service is to provide treatment that maintains in-home placement for socially and emotionally disturbed (SED) children meeting established medical necessity criteria. The ability to introduce the child to their service provider, prior to discharge from their current treatment, allows the child to successfully transition from one level of treatment to another and improve the likelihood that the child will maintain in home placement.

Central to the design of the strengths based mobile therapy treatment model is a single point of contact: the master's level clinician. Unique to this treatment model, this clinician performs the evaluation that will prescribe strengths based mobile therapy. In traditional community-based children's mental health treatment services, a licensed psychiatrist or psychologist must complete the evaluation that serves as the prescription for services. With limited access to a licensed psychiatrist or psychologist, a child may be delayed in accessing services for weeks or even months. However, under the strengths based mobile therapy model, a licensed psychologist or psychiatrist, typically employed

by the pilot provider agency, reviews and signs off on the masters level therapist's assessment and a prescription for services is rendered. This allows quick access to this service and overcomes the barrier of long wait times for an evaluation by a psychiatrist or psychologist and delayed entry into needed treatment services.

The strengths based mobile therapy treatment model design is for delivery of services in a 36-week module. Typically, children and adolescents in this model have a prescription for services that reflects 6 hours per week of strengths based mobile therapy treatment. These services are available to consumers and their families 24 hours a day and 7 days a week. This availability for crisis intervention, not available with behavioral health rehabilitative services, is one of the noted strengths of family based mental health services that serve to divert children from potential out-of-home placement in times of significant risk and replication of this strength is in the design of strengths-based mobile therapy services.

Strengths based mobile therapy targets service delivery to the child and the family in the home, school and community to address the issues that put the child or adolescent at-risk. The community-based treatment focus of strengths based mobile therapy targets the barriers faced by traditional outpatient mental health treatment services of families being unable or unwilling to bring the child to the clinic consistently to receive treatment. Additionally, the model provides therapeutic structure that effectively targets the factors contributing to greater at-risk behaviors on the part of the child and adolescent. The model allows the strengths based mobile therapist to work with the child/adolescent and to do collateral family work. This feature of the treatment model overcomes the barriers faced by traditional behavioral health rehabilitative services in that treatment is not

isolated to a focus on the child's behavioral difficulties alone but includes the ability to examine and intervene in the larger family system to facilitate long-term outcomes. This component of the treatment design is a strength modeled from family based mental health services.

In the strengths based mobile therapy treatment model, the role of the mobile therapist expands to include consultation and collateral contacts, including meeting attendance, development of treatment plan goals, development of a crisis plan, and phone calls that relate to specific treatment objectives. The strengths based mobile therapist is able to complete clinical consultation, treatment (assessment, treatment/crisis plan development, clinical interventions, and Child and Adolescent Functional Assessment Scale (CAFAS) administering), and clinical case management. Clinical case management is clinical coordination that includes consultation with schools, other providers, physicians, and individuals/services relevant to the clinical treatment of the case.

Many of these roles, built into the design of the strengths based mobile therapy treatment model, are not available in traditional behavioral health rehabilitative services but are strengths of family based mental health services. However, the strengths based mobile therapy model permits one therapist to complete these tasks versus two, which naturally results in a cost savings.

As has been summarized in this section, Value Behavioral Health of Pennsylvania, Inc. incorporated the strengths and challenges into the design of the strengths based mobile therapy treatment model. Once the Office of Mental Health and Substance Abuse Services approved the model design, Value Behavioral Health of

Pennsylvania, Inc. introduced the service in Southwestern Pennsylvania, in 2005, under a pilot program.

Strengths Based Mobile Therapy Treatment Model Pilot

In 2005, the Value Behavioral Health of Pennsylvania, Inc. pilot project of the strengths based mobile therapy treatment model began in Indiana and Armstrong counties with Community Guidance Center as the sole initial service provider.

The Community Guidance Center is a private, non-profit Community Mental Health Center established in 1959 in Indiana County to serve the behavioral health needs of residents of Indiana and the surrounding counties. The Community Guidance Center provides a full spectrum of both adult and child behavioral health services to include clinic-based and community-based mental health services.

This research has in part originated from the role I play within this organization. Specifically, I am currently the Chief Operations Officer (COO) for the Community Guidance Center. In my current role as Chief Operations Officer, I have direct oversight of the Director who oversees the strengths based mobile therapy pilot at Community Guidance Center. It is because of this oversight that I initially became motivated to determine the efficacy of the strengths based mobile therapy treatment model.

The Community Guidance Center has seen positive clinical impacts on the target population through the pilot program and this research will add to the literature on community-based children's mental health services, which in turn can result in a direct impact on children and adolescents who are at-risk. Support and provision of all data for this research is from Value Behavioral Health of Pennsylvania, Inc.

Currently the strengths based mobile therapy pilot covers six different counties, utilizing seven different providers. With each of the individual pilot providers, referrals occur as a diversion from another service or as a step down from a higher level of care. This model also serves as an entry-level behavioral health treatment service for a child or adolescent identified as at-risk. The strengths based mobile therapy model utilizes an integrated treatment/crisis/discharge plan model with a typical course of treatment of approximately 36 weeks.

The strengths based mobile therapy treatment model pilot project utilizes the Child and Adolescent Functional Assessment Scale (CAFAS) as an outcome measurement tool. There is a Child and Adolescent Functional Assessment Scale (CAFAS) rating requirement for each child/adolescent in treatment to occur at the beginning, mid-point, and end of treatment. Additionally, Value Behavioral Health of Pennsylvania, Inc. requires that each pilot provider track the following information: gender, age, referral level of care, intake and discharge Child and Adolescent Functional Assessment Scale (CAFAS) scores, documentation of active Children and Youth Services (CYS)/Juvenile Probation Office (JPO) involvement, primary DSM-IV diagnoses, length of stay in program, and discharge level of care. Therefore, through these two required mechanisms, there is consistent data available for each child/adolescent who has received strengths based mobile therapy treatment through the pilot. These data will serve as the basis for this research.

The strengths based mobile therapy treatment program is a pilot because it is not currently a service that is “in-plan” in the state of Pennsylvania’s plan for mental health programs reimbursable by Medical Assistance funding. Therefore, without the current

identification as a "pilot", Value Behavioral Health of Pennsylvania, Inc. would not be able to reimburse providers through Medical Assistance dollars for the provision of the service. Additionally, because Value Behavioral Health of Pennsylvania, Inc. submitted the program to the Office of Mental Health and Substance Abuse Services for approval under the waiver program, only children covered under Value Behavioral Health are eligible to receive this service.

This research seeks to determine the efficacy of this treatment model. This research will be available to the Office of Mental Health and Substance Abuse Services to provide data on treatment outcomes of this unique community-based treatment for children and adolescents with serious emotional and behavioral disorders. The Office of Mental Health and Substance Abuse Services will take into consideration this data, along with other factors, to determine whether the strengths based mobile therapy treatment model should become an "in-plan" service. If the service would become "in-plan" it would then be available to all children in the state insured by medical assistance and meeting the medical necessity criteria for this treatment level.

Summary

This chapter has highlighted the public funding structure for children's mental health treatment services in Pennsylvania. Additionally, a summary of each of the existing children's mental health treatment services, including an analysis of strengths and challenges associated with each is included. It is these strengths and challenges that Value Behavioral Health of Pennsylvania, Inc. considered in their design of strengths based mobile therapy.

With an orientation complete to the funding and service delivery structure for publically funded children's mental health treatment, the next chapter discusses the research design, the Child and Adolescent Functional Assessment Scale, and the procedures of this research.

CHAPTER FOUR

RESEARCH METHODS AND PROCEDURES

Introduction

This research is an evaluation of a unique children's community-based mental health treatment pilot and this research utilizes analysis of a pre-existing standard data set from Value Behavioral Health of Pennsylvania, Inc. to test the hypotheses in Chapter III. This chapter is a discussion of my position as the researcher, the research design, and an in-depth review of the Child and Adolescent Functional Assessment and its properties and supporting literature in the research. This will include a review of the reliability and validity of the variables, as well as the procedures for data analysis.

As discussed in previous chapters, since 2005, Value Behavioral Health of Pennsylvania has collaborated with seven provider organizations, in six Western Pennsylvania counties, to provide a pilot program, strengths based mobile therapy, to children and adolescents who qualify for Value Behavioral Health of Pennsylvania insurance coverage and demonstrate medical necessity for this treatment. The pilot status limits provider opportunity to provide strengths based mobile therapy, which in turn limits access to strengths based mobile therapy to only those children and adolescents with Value Behavioral Health of Pennsylvania insurance coverage in Southwestern Pennsylvania counties. The purpose of this research is to examine the impact of this intensive, community-based mental health treatment on the level of functioning of children treated in the pilot project.

The goal of strengths based mobile therapy treatment is to provide intensive, affordable treatment to socially and emotionally disturbed (SED) children/adolescents

who are at-risk for out-of-home placement to work with the child/adolescent to increase ability to function, thus increase likelihood of maintenance of placement in the home.

Numerous studies, focusing on the effectiveness of intensive in-home services, have been criticized for the use of a variety of outcome measures that are not deemed reliable and/or valid (Mosier, J., Burlingame, G., Wells, G., Ferre, R., Latkowski, M., Johansen, J., Peterson, G., & Walton, E., 2001). This research seeks to add to the literature base utilizing an outcome measure with extensive use and expansive documentation in the literature concerning reliability and validity.

Research Questions

This research focuses on the evaluation of a children's community-based mental health treatment program and whether or not participation in the treatment influences the level of functioning of the child treated. This research examined existing data for 175 children and adolescents served by strengths based mobile therapy over the course of a two-year time span ranging from January 1, 2007 to December 31, 2008. This research investigated the impact of the treatment program by answering the following questions:

1. Does the introduction of an intensive children's community-based mental health treatment, strengths based mobile therapy (SBMT), influence the level of functioning for children and adolescents treated?
2. Is there a relationship between a child's primary DSM-IV diagnosis and the outcome of treatment?
3. Is there a relationship between entry level of care/treatment and the outcome of treatment?

4. Is there a relationship between length of stay in treatment and exit level of care?
5. Is there a relationship between change in level of functioning and exit level of care?
6. Is there a relationship between entry level of functioning and outcome of treatment?

Researcher's Position

In 2005, the Value Behavioral Health of Pennsylvania, Inc. pilot project, strengths based mobile therapy, launched in Indiana and Armstrong counties with Community Guidance Center as the sole initial service provider. Over the next several years, six other mental health provider organizations joined the strength based mobile therapy pilot project.

The Community Guidance Center is a private, non-profit Community Mental Health Center established in 1959 to serve the behavioral health needs of residents of Indiana and the surrounding counties. The Community Guidance Center provides a full spectrum of both adult and child mental health services to include both clinic-based and community-based services. This research has in part originated from the role I play within this organization. Specifically, I am the Chief Operations Officer for the organization.

In my role as Chief Operations Officer, I have direct oversight of the Director who oversees the strengths based mobile therapy pilot at Community Guidance Center. Additionally, I was an active participant in the initial stakeholders group of provider organizations, along with Value Behavioral Health of Pennsylvania, Inc., that designed

the strengths based mobile therapy model and facilitated the initiation of the service in Western Pennsylvania. Through my involvement in the mental health field, as well as, with strengths based mobile therapy over the years, I have seen the clinical impact the model can have on children and families participating in the treatment model. It is due to my involvement that I initially became motivated to evaluate the efficacy of the strengths based mobile therapy treatment program. The Community Guidance Center has seen positive impacts on the target population through the pilot program and it is my belief that this research can significantly affect the future availability of strengths based mobile therapy services.

Research Design

Research indicates that intensive in-home mental health treatment for children and adolescents reduces behavioral and emotional problems in children and adolescents. Furthermore, Pavkov, George and Lee (1997) demonstrated that at-risk children and adolescents are more likely to stabilize in the home when an array of community-based mental health services is available.

Since I am already familiar with strengths based mobile therapy treatment and the strengths based mobile therapy pilot underway through Value Behavioral Health of Pennsylvania, Inc., my approach to this research is from a pragmatic paradigm. Mertens (2004) defines pragmatism as an approach to research where the researcher is not a "distant observer" but is someone more apt to be the one who is, "free to study what interests you and is of value to you" and "to study it in the different ways that you deem appropriate" because "effectiveness is the criteria for judging the value of the research as opposed to the nature of what is scientific truth" (p. 27). The research design, theoretical

framework, operational definitions, sampling procedures, hypotheses and research questions, therefore, are intentional. The primary goal of this research is to evaluate the impact of the introduction of a community-based children's mental health treatment on the level of functioning of children/adolescents receiving treatment. Therefore, this research utilizes a pre-experimental, one-group, pre-posttest design to test the following research hypotheses:

1. Children and adolescents treated in the strengths based mobile therapy treatment model will have higher levels of functioning on average at discharge from treatment than they had at intake to treatment.
2. Children and adolescents with DSM-IV diagnoses classified as behavioral disorders, such as Attention Deficit Hyperactivity Disorder (ADHD), will have greater improvement in their level of functioning at discharge from treatment than children and adolescents with other DSM-IV diagnoses.
3. Children and adolescents referred for treatment from higher levels of cares will demonstrate a change in level of functioning at discharge from treatment.
4. Children and adolescents with greater length of treatment will demonstrate greater increases in level of functioning.
5. Children and adolescents who experience an increase in level of functioning will receive referral to a lower exit level of care.
6. Children and adolescents with higher level of functioning at entry to treatment will experience a lower exit level of care.

It is often difficult to conduct true experiments in treatment programs because of the need to ensure human subjects protection. This pre-experimental design is the most

viable research design for this real world evaluation of children/adolescents receiving strengths based mobile therapy. Because of the focus on a real world operating treatment program and due to the unavailability of assignment of individuals to a random control group the pre-experimental design is optimal. When no equivalent comparison group is available, the experimental group can serve as its own control group by observing that group and measuring the effects of a treatment intervention on them before and after their exposure to a specific intervention (Rossi, Lipsey & Freeman, 2004).

In this evaluation, the Child and Adolescent Functional Assessment Scale (CAFAS) is the outcome measure that will determine impact on level of functioning of children and adolescents treated. Child and Adolescent Functional Assessment Scale (CAFAS) scores were collected at intake to strengths based mobile therapy treatment and at discharge from treatment. This will serve to create a non-equivalent control group prior to strengths based mobile therapy and a comparison group within itself after completion of the treatment.

The pre-experimental design will open the research up to threats to internal validity, to include history, maturation, and design contamination. Specifically, children and adolescents treated in strengths based mobile therapy could have experienced an event or a maturational change, independent of strengths based mobile therapy treatment, which could result in the documented change in their Child and Adolescent Functional Assessment Scale (CAFAS) score. Specifically, without the availability of a control group, who may experience the same event or maturational change in the absence of the treatment, this design does present limitations in the ability to claim the effectiveness of strengths based mobile therapy. Having data for the entire population as well as the

ability to look at data for each individual pilot provider organization will seek to minimize the threats to internal validity.

Furthermore, pretest-posttest designs may be open to the threat of testing in that children/adolescents may do better on the posttest simply because it is the second time they are taking it. In the case of the Child and Adolescent Functional Assessment Scale (CAFAS), the measure is clinician-rated versus self-administered. As a result, there is a reduction in the threat of testing/instrumentation due to the clinician serving as the rater for each measure. Specifically, with the clinician administering the Child and Adolescent Functional Assessment Scale (CAFAS) at intake to services and again eight months later at discharge from services, in the absence of the original results, there is a further reduction in this threat to internal validity.

Finally, design contamination is when participants are know they are in a study or researchers are conducting a study and act differently because of it. This threat to internal validity is minimal in this research due to the focus being secondary data analysis of an existing pilot database.

This research is also subject to threats to external validity (generalizability) or the degree to which one can generalize the results to other individuals, settings, and times due to the unique program, treatment setting and sample of this study. Specifically the threats to external validity include vested interest of agencies/raters (experimenter effect) and cause and effect.

First, the external validity threat of vested interest of the agencies/raters is a real threat to this research. However, the data reflects seven different provider organizations

providing treatment and corresponding assessment of level of functioning, which will serve to minimize this threat to a degree.

Secondly, the threat of cause and effect is that research situations can be artificial and can affect outcome. In this research, again, due to the real world focus of an active treatment pilot program with secondary data analysis as the focus of the research, this external threat to validity minimizes to a degree.

Sampling Procedure

Development of the research design for this research, took into consideration how selection would influence the evaluation results. Since I was using secondary data analysis of data collected during a pilot treatment program with seven different provider agencies operating the treatment model, the sampling strategy is a non-probability sample. A purposive sample (Monette, Sullivan & DeJong, 2005) inclusive of all 175 children and adolescents discharging from the strengths based mobile therapy treatment program from January 1, 2007 to December 31, 2008 are the focus of this research. Random assignment was not possible for this research since families chose provider organizations that were identified a strengths based mobile therapy pilot organizations in their respective geographical locations. This purposive sample allows for the evaluation focus on an extremely targeted population.

This sample selection leads to threats to external validity, because the sampling frame is limited to children and adolescents treated in the pilot and discharged from January 1, 2007 to December 31, 2008. Although this population is very limited, the primary intent of this research is not to generalize the results to any other type of mental

health treatment program (Monette, Sullivan & DeJong, 2005; Rossi, Lipsey & Freeman, 2004).

The requirement for inclusion in this research is discharge from treatment during the period of January 1, 2007 to December 31, 2008 and each child or adolescent must have both an initial and discharge Child and Adolescent Functional Assessment Scale (CAFAS) score available. The definition of discharge, for the purposes of this research, is a completion of a full 36-week course of treatment, completion of greater than a 36-week course of treatment, or finally children or adolescents that complete less than the "traditional" full 36-week course of treatment.

The decision to use the discharge period from January 1, 2007 and December 31, 2008 was to ensure selection of a data period that encompasses a timeframe that is inclusive of data from all seven pilot provider organizations. This permits this research to analyze the most comprehensive dataset possible. Specifically, since inception of the pilot project was in February of 2005, with additional pilot provider organizations joining the pilot over the next two years, January 1, 2007 to December 31, 2008 is reflective of a period that all provider organizations were active in the pilot.

Study Variables

This research is the evaluation of a real world, community-based, children's mental health treatment program. The primary independent or predictor variable in the study is the introduction of a course of strength based mobile therapy treatment. Additional independent variables include pilot provider organization, agency involvement, length of treatment, and referral treatment level of care. Individual demographic variables include age, gender, and DSM-IV primary diagnosis.

The dependent or criterion variables in this study are discharge level of care, length of treatment, and degree of change in child and adolescent functional assessment scale (CAFAS) score.

Independent Variables

Length of Strength Based Mobile Therapy Treatment

The primary independent variable in this study is the introduction of a course of strength based mobile therapy treatment. All individuals in this research received a course of strengths based mobile therapy. There were no missing data.

Length of stay in treatment coding is based on design of the treatment model. Specifically, the treatment model design targets a typical course of treatment to fall between 225 and 255 days. There were no missing data. Categories and percentage recoded into each include:

Less Than 225 Days in Treatment-	20.6%
225 to 255 Days in Treatment-	35.2%
Greater Than 255 Days in Treatment-	43.8%

Pilot Provider Organization

There were seven organizations, in Western Pennsylvania, providing strength based mobile therapy to individuals participating in this research. There were no missing data. Provider organizations and percentages recoded into each include:

Provider A-	20%
Provider B-	24.5%
Provider C-	9%
Provider D-	10%

Provider E- 20%

Provider F- 7%

Provider G- 10%

Referral Level of Care

Referral level of care reflects the treatment level of care that an individual child or adolescent was receiving at the time of referral to the strengths based mobile therapy treatment pilot. There were no missing data. These treatment levels of care, from least to most restrictive, and percentages recoded into each include:

None- 38%

Case Management- 9%

Psychiatrist/Medication Prescriber- 7%

Outpatient Treatment- 13%

Behavioral Health Rehabilitative Services- 13%

Family Based Mental Health Services- 17%

Residential Treatment Facility- 3%

Children and Youth Services Juvenile Probation Office Involvement

As part of the data collection requirement, the treatment pilot providers were required to reflect whether the child or adolescent is actively involved with either Children and Youth Services or Juvenile Probation Services during the course of treatment. This variable is important due to concern that involvement with one or both of these services may put a child at greater risk for out-of-home placement. There were no missing data. Involvement in these services and percentages recoded include:

No CYS/JPO Involvement- 84.5%

CYS/JPO Involvement- 15.4%

Individual Demographic Variables

This category includes data on the age, gender, and DSM-IV diagnosis of the individuals evaluated in this research.

Age

Age is coded as under six years of age, six to twelve years of age, thirteen to 17 years of age, and eighteen to twenty-one years of age. There were no missing data. Listed below is the percentage of breakdown for each age category:

Under 6 Years of Age: 2.3%

6 to 12 Years of Age: 46.9%

13 to 17 Years of Age: 48.6%

18 to 21 Years of Age: 2.3%

Gender

Each individual is coded as either male or female. There were no missing data. Listed below is the percentage breakdown for each gender category:

Male- 59%

Female- 41%

Primary DSM-IV Diagnosis Category

Based on the data evaluated for the purposes of this research, there were initially 28 individual DSM-IV primary diagnoses reflected across all 175 individuals in the research. These original 28 diagnoses were coded into six diagnosis categories as adjustment disorders, anxiety disorders, attention deficit hyperactivity disorders,

bipolar/major depressive disorders, disruptive behavior/impulse control disorders, and organic mental/asperger's disorders. Listed below is the percentage breakdown for these categories:

Adjustment Disorders-	8%
Anxiety Disorders-	6%
Attention Deficit Hyperactivity Disorders-	31%
Bipolar/Major Depressive Disorders-	26%
Disruptive Behavior and Impulse Control Disorders-	19%
Organic Mental Disorders/Asperger's Disorders-	11%

Dependent Variables

Discharge Level of Care

Discharge level of care reflects the referral treatment level of care of the individual child or adolescent at the time of discharge from the strengths based mobile therapy treatment pilot. There were individuals who had either no referral at discharge or the discharge level of care is unknown because the pilot provider organization failed to record the data in the dataset. The discharge levels of care are ranked from least to most intensive. These treatment levels of care and percentages recoded into each include:

No Referral-	6%
Case Management-	10%
Outpatient Treatment-	68%
Psychiatrist/Medication Prescriber-	5%
Behavioral Health Rehabilitative Services-	6%
Family Based Mental Health Services-	3%

Residential Treatment Facility- 0%

Unknown- 2%

Change in Level of Functioning

Each individual included in this research is rated at intake and again at discharge from the treatment program with the Child and Adolescent Functional Assessment Scale (CAFAS) by the clinician delivering the strengths based mobile therapy treatment. The Child and Adolescent Functional Assessment Scale (CAFAS) is a measure of level of functioning often utilized as a measure of treatment outcome. A decrease in score on the measure, from treatment inception to discharge from treatment, is reflective of an improvement in level of functioning. For the purposes of this research, a new change score (PostCAFAS – PreCAFAS) was created that would follow the typical CAFAS scoring flavor such that a small score or negative represents a more desirable change and a larger or positive value represents a less desirable change. In this research, 89% of individuals demonstrated a decrease in Child and Adolescent Functional Assessment Scale (CAFAS) score between the intake and discharge rating. This demonstrates a majority of children receiving the treatment demonstrated a more desirable change from initiation to discharge from treatment.

Data Collection

As a requirement for participation in the strength based mobile therapy pilot, each of the seven mental health provider organizations, was required to collect and submit a standard data set. Specific data in the dataset includes name, date of birth, gender, referral level of care, Child and Adolescent Functional Assessment Scale (CAFAS) scores (intake and discharge), primary DSM-IV diagnosis, documentation of active involvement with

Children and Youth Services (CYS)/Juvenile Probation Office (JPO), length of stay in treatment, and discharge level of care. This dataset is the source of data for the analyses in this research. To ensure the privacy of children and adolescents evaluated during this research, Value Behavioral Health of Pennsylvania, Inc. redacted all identifying information from the data prior to providing the pilot dataset for the purpose of this research

The primary outcome measure for this research is the Child and Adolescent Functional Assessment Scale (CAFAS). This research will examine the initial Child and Adolescent Functional Assessment Scale (CAFAS) score rating at intake in comparison to the final Child and Adolescent Functional Assessment Scale score rating at discharge. This analysis will determine change in score, which will be reflective of change in level of functioning from entry to discharge from strengths based mobile therapy, the outcome that is the primary target of this research.

Due to the increased need for practitioners to demonstrate and document intervention outcomes (Nakamura, Daleiden, & Mueller, 2007), managed care companies are striving to require more and more documentation through measures such as the Child and Adolescent Functional Assessment Scale (CAFAS). Value Behavioral Health of Pennsylvania, Inc. requires each pilot provider organization to administer the Child and Adolescent Functional Assessment Scale (CAFAS) at intake and discharge from treatment specifically for outcome measurement purposes.

Child and Adolescent Functional Assessment Scale (CAFAS)

The research literature is rich with information on the Child and Adolescent Functional Assessment Scale (CAFAS). There is a wealth of data available that

summarizes the psychometric properties of the tool that targets the measurement of level of functional impairment in youth with emotional, behavioral, psychiatric, psychological, or substance use problems (Hodges, Doucette-Gates, & Kim, 2000).

The Child and Adolescent Functional Assessment Scale (CAFAS) is 200-item clinician report scale, intended for use with children/adolescents from age 6-17 who have or may have emotional, behavioral, substance use, psychiatric, or psychological problems (Bates, 2001) (See Appendix A- CAFAS). The Child and Adolescent Functional Assessment Scale (CAFAS) contains eight subscales to include School Role Performance (i.e., functions satisfactorily in a group educational environment), Home Role Performance (i.e., observes reasonable rules and performs age-appropriate tasks), Community Role Performance (i.e., respects the rights of others and their property such that they act lawfully), Behavior Toward Self and Others (i.e., appropriateness of youth's daily behaviors), Mood/Emotions (i.e., modulation of the youth's emotional life), Self-Harmful Behaviors (i.e., extent to which the youth can cope without resorting to self-harmful behavior and verbalization), Substance Abuse (i.e., youth's substance use and extent to which it is inappropriate and disruptive), and Thinking (i.e., ability of youth to use rational thought processes) (Nakamura et al., 2007 & Hodges, K., Doucette-Gates, A., & Kim, C., 2000).

As stated above, the Child and Adolescent Functional Assessment Scale (CAFAS) contains eight subscales that are each comprised of a set of behavioral descriptors that are grouped into levels of impairment, to include severe impairment (30= severe), moderate impairment (20= moderate), mild impairment (10= mild), or minimal or no impairment (0= minimal or no) (Boydell, Barwick, Ferguson, & Haines, 2005). In

administration of the measure, these eight individual subscales are rated and the scores are summed to create a total Child and Adolescent Functional Assessment Scale (CAFAS) score, which ranges between 0-240 (Roy, Roberts, Vernberg & Randall, 2007). The lower the corresponding Child and Adolescent Functional Assessment Scale (CAFAS) score the lower the corresponding level of functional impairment. The Child and Adolescent Functional Assessment Scale (CAFAS) completion is by a rater that has access to multiple sources of information on the youth. The rater selects behavioral indicators that describe the child's level of impairment in each of the eight domains over a specific period, typically the preceding three months (Roy et. al., 2008). For the purpose of this research, the data set consists of Child and Adolescent Functional Assessment Scale (CAFAS) scores at intake and discharge from strengths based mobile therapy treatment. Furthermore, this research will be reflective of analysis of the total sum score of the Child and Adolescent Functional Assessment Scale (CAFAS).

The Child and Adolescent Functional Assessment Scale (CAFAS) is a measurement of level of functional (LOF) assessment that is seeing utilization nationwide. The use of the Child and Adolescent Functional Assessment Scale (CAFAS) includes several states that are utilizing the measure as the sole tool to determine placement and make funding decisions in children's behavioral health services (Bates, 2001).

Levels of Functioning assessments have numerous uses reported throughout the literature to include diagnosis, treatment, and evaluation of children's mental health programs (Bates, 2001). Therefore, many states, counties and providers are utilizing the

Child and Adolescent Functional Assessment Scale (CAFAS) for outcome assessment for their children's behavioral health programs.

Levels of functioning assessments have become increasingly popular, for many reasons. One cited example, by Bates (2001), is that the definition of serious emotional disturbance (SED) by the Center for Mental Health Services (CMHS, 1999) cites functional impairment as a critical component of social and emotional disturbance (SED). Specifically, the Center for Mental Health Services (CMHS) defined social and emotionally disturbed (SED) youth as:

> Persons from birth up to age 18 who currently or at any time during the past year have had a diagnosable mental, behavioral, or emotional disorder of sufficient duration to meet diagnostic criteria specified in the DSM IV that resulted in functional impairment, which substantially interferes with or limits the child's role or functioning in family, school, or community activities (Federal Register, 1993, p. 29425 in Bates, 2001, p. 64).

The Center for Mental Health Services (CMHS) funds more than 40 nationwide sites for developing systems of care for comprehensive behavioral health services for youth who fall into the category of social and emotionally disturbed (SED) (Bates, 2001).

The construct of global functioning has also become paramount in the determination of eligibility to receive mental health services, especially for the Center for Mental Health Services (CMHS) funded services (Bates, 2001). As is in the case of strengths based mobile therapy, states and managed care organizations are also looking at outcome measures when making decisions about medical necessity for treatment

services. In the case of strengths based mobile therapy, youth must exhibit some level of functional impairment in order to qualify to receive services. This movement, over the last one to two decades, is away from traditional reimbursement models, which utilized diagnostic classification, such as the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM IV-R) to sufficiently establish eligibility treatment services (Bates, 2001).

In addition, there is extensive documentation in the research literature for the utility of level of functioning assessments scales in the area of outcome assessment (Bates, 2001 & Rosenblatt & Rosenblatt, 2002). Level of functioning assessment scales have found utility in outcome evaluation due to their ability to provide a standard means of comparing youth across diagnoses, setting, and/or both (Bates, 2001). Burlingame, Lambert, Reisinger, Neff, & Mosier (1995) summarized the utility of level of functioning assessment as outcome assessments as follows:

> Risk assessment establishes the pretreatment degree of severity of the patient to level the playing field when comparing outcomes from different providers, clinics, and patient groups. Outcome assessment procedures used in risk assessment should ensure that one is comparing apples with apples when it comes to initial severity of patients' disorders. If initial patient severity is not accounted for, then one health care institution may erroneously appear to exhibit poorer outcomes due solely to treating more or less symptomatically severe cases. Reliable risk assessment is even more important in mental health outcomes where improvement is

measured in shades of gray in contrast to the black-and-white comparisons often possible in other areas of the health care industry (in Bates, 2001, p. 64).

This aspect of a level of functioning assessment is particularly critical when dealing with treatment effectiveness for youths with social and emotional disturbance (SED) due to the population having a variety of diagnosis classifications and demonstrating a variety of emotional and behavioral problems (Bates, 2001). Bates (2001) denotes the level of functioning assessment tool potentially as the best available tool to provide a common metric by which to compare socially and emotionally disturbed (SED) youths.

The Child and Adolescent Functional Assessment Scale (CAFAS) is widely used at the statewide level for both performance outcome assessment and service eligibility determination (Bates, 2001). In 1995, Hodges and Gust conducted a survey of states usage of level of functioning assessment scales and found that four states were consistently utilizing the Child and Adolescent Functional Assessment Scale (CAFAS) statewide. By July 2000, Georgetown University National Technical Assistance Center (GUNTAC) determined that 30 states had implemented or were considering implementing the Child and Adolescent Functional Assessment Scale (CAFAS) statewide to severe in a variety of functions. Table I identifies the 30 states and their use of the CAFAS scale (Bates, 2001). This table comprehensively illustrates use of the Child and Adolescent Functional Assessment Scale (CAFAS) nationally. As seen in this table, there is no specific reference to the use of the Child and Adolescent Functional Assessment Scale (CAFAS) in Pennsylvania. The current research will serve to provide

data on the use of the CAFAS, in conjunction with the delivery of children's behavioral health services, in the state of Pennsylvania.

Table 2

Summary of Statewide Implementation of the CAFAS

State	Purpose of the CAFAS	Approx. Date of Implementation	Source
AL	Using CAFAS along with battery of other measures (CBCL, YSR, and Parent Questionnaire) for outcome evaluation on a statewide basis.	At least since 1999	Georgetown University National Technical Assistance Center (GUNTAC), 2000
AZ	Cutoff total score of 90 on CAFAS qualifies youth for Intensive Case Management Services funded by the Division of Behavioral Health Services of the Arizona Department of Health Services (considering revising criteria to include diagnostic information.	At least since October, 1993	Hodges & Gust, 1995; Schwartz & Perkins, 1997
CA	Component of state-mandated performance outcome assessment for all youths receiving Department of Mental Health services for two months or longer.	1-Apr-98	G. M. Pettigrew, personal communication, July 21, 1997; GUNTAC, 2000
DE	Clinical service management teams using CAFAS for treatment planning and outcome evaluation with all youths receiving Medicaid or state-funded services.	At least since 1999	R. Ray, personal communication, January 31, 2000
FL	Component of state-legislated collection of performance outcome data for all children receiving services funded by the Department of Children and Families	August, 1995	Massey, Kershaw, Armstrong, Shepard, & Wu,
GA	All providers will be mandated to collect CAFAS as component of the Performance Measurement and Evaluation System (PERMES). Will become sole criterion for determining eligibility and level-of-need.	1-Mar-00	GUNTAC, 2000; S. Lindsey, personal communication, 28-Jan-00

Table 2 (Continued)

IL	Piloting the CAFAS as part of a study on the feasibility of implementing MHSIP Consumer Oriented Report Card.	At least since 1999	GUNTAC, 2000
IN	Using miniscale version (with two added subscales: Environment and Reliance) for performance assessment.	At least since 1997	J. Phillips, personal 2000
KY	Currently used in some programs. Recommended for use in KY Managed Care Outcomes Committee. May be integrated statewide evaluation protocol.	July, 1999	GUNTAC, 2000
LA	Sole criterion to establish level-of-need (LON) to receive one of 3Medicaid-funded service packages (high, medium, and low).	December, 1995	Lemoine, Speier, Ellzey, & Pine, 1997; Lemoine & McDermott, 1998
ME	In process of implementing CAFAS along with other measures (CALOCUS, BERS) for performance assessment management, service planning, and outcome evaluation for youths receiving Mental Health case management services.	At least since 1999	S. Amero, personal
MD	Piloting CAFAS via phone interviews with a sample of total youth served as evaluation of first year of managed care reform.	At least since 1998	GUNTAC, 2000
MA	Cut-off score of 80 using six of eight subscales, in conjunction with diagnosable disorder of 1-year duration, to determine eligibility for services funded by the Department of Mental Health.	1-Jul-96	Irvin & Hersch, 1997;
MI	Presently developing guidelines to predict type and intensity of services from CAFAS scores and	No information given	Hodges, et al., 1998

Table 2 (Continued)

	diagnostic/risk information.		
MN	Statewide CAFAS use is encouraged but not mandated as component of measuring client and family outcomes.	At least since 1999	GUNTAC, 2000
MO	Components of preliminary study for child and adolescents receiving public mental health services funded by the Department of Health.	1-Oct-95	Daniels & Clements, 1997
NE	Collected at intake, every 6 months, and while in the Professional Partner Program.	1999	GUNTAC, 2000
NH	Using miniscale Version (see IN) and diagnostic information to determine eligibility for services. Planning to implement full version of the scale beginning July 2000.	At least October, 1993	GUNTAC, 2000; J. Perry, Personal communication, 31-Jan-00
NJ	Piloting CAFAS in Southern Region with long-term goal to use statewide.	Summer, 2000	GUNTAC, 2000
NY	Administered with other battery instruments at intake and every 6 months in the F.R.I.E.N.D.S. program.	At least 1999	GUNTAC, 2000
NC	Primary criterion to authorize levels of care related to six levels of intensity of services for children with mental health and/or substance use problems.	Jan-94	Behar, & Stelle, 1997; S.
ND	Expanding use of CAFAS from 3 to all 8 state regions for outcome assessment and treatment planning.	At least since 1999.	K. Moum, personal

Table 2 (Continued)

OH	Component of pilot study during 1998-99. Switched to Ohio Youth Scale in 2000.	1998	GUNTAC, 2000
OR	Using the CAFAS statewide along with the CGAS for outcome evaluation.	At least since 1999.	GUNTAC, 2000
SC	Currently mandated for use in treatment planning and outcome evaluation in inpatient and outpatient child and adolescent programs. Also in process of developing criterion scores for eligibility determination.	At least since 1999.	D. Mahrer, personal
SD	CAFAS is principal instrument used across inpatient and outpatient settings statewide.	At least since 1999.	GUNTAC, 2000
TN	Component of Children's Plan Outcome Review Team (C-PORT) used in evaluation of service system for all children in state custody.	1994	Heflinger & Simpkins, 1998:
VT	Component of evaluation battery designed by University of VT Evaluation Team to create linkages across multiple state grants.	At least since 2000.	GUNTAC, 2000
VA	Component of performance and outcome measurement system (POMS) being piloted statewide to assess outcomes of child/adolescent public mental health services and used to determine Level of Care for services funded by the Comprehensive Services Act.	Summer, 1997	Koch & Brunk, 1998; Kirkman,
WV	Component of assessment battery required for all children receiving Medicaid-reimbursed behavioral health services.	At least since 1999.	GUNTAC, 2000

Bates (2001) cites three probable causes for this comprehensive use of the Child and Adolescent Functional Assessment Scale (CAFAS), to include: the inclusion of the functional impairment stipulation in the Center for Mental Health Services (CMHS) definition of socially and emotionally disturbed (SED), the requirement of managed care companies for documentation of functional impairment to justify treatment decisions, and the push by the psychology and mental health fields for empirically justified treatment methods.

In consideration of the wide use that the Child and Adolescent Functional Assessment (CAFAS) is experiencing across the nation, as a measure of level of functioning, it is natural to question the technical and practical adequacy of the tool in terms of measuring level of functioning in children and adolescents. Bates (2001) did a comprehensive review of the literature and identified strengths of the tool and areas of focus for future research, to include the technical and practical adequacy of the tool.

In addition, several authors cite in the literature criteria for selecting appropriate measures to assess treatment outcomes. The four broad features, most consistently cited as desirable for outcomes measures are: strong psychometric properties, validity for use with target populations, ease of use and utility (Bates, 2001).

In general, level of functioning measures, according to Bates (2001), show mixed results in the literature in the areas of reliability and validity. Nonetheless, multidimensional levels of functioning measures appear to be better in terms of these reliability and validity issues. Specifically, there are many published reliability and validity studies for the Child and Adolescent Functional Assessment Scale (CAFAS) (Bates, 2001).

Reliability/Validity Issues of Measures

In terms of psychometric properties of the Child and Adolescent Functional Assessment Scale (CAFAS), the literature on this measure reflects the following areas of focus: internal consistency reliability, inter-rater reliability, stability of scores, content and structural validity, concurrent validity, criterion-related validity, and predictive validity.

Internal consistency reliability. As identified by Bates (2001), there is little information in the literature regarding the internal consistency reliability of the Child and Adolescent Functional Assessment Scale (CAFAS), with the exception of information generated by the creator of the tool herself, Kay Hodges. Hodges and Wong (1996) determined the reliability was high for the total score and behaviorally oriented scales of the measure. In the training manual for the CAFAS, Hodges (1997) identifies internal consistency coefficient (Cronbach's alpha) values ranging from 0.63 to 0.68 in the Fort Bragg Demonstration Evaluation Project (FBEP). These ranges support the reliability of the measure and reflect the homogeneity of the scales.

Bates (2001), however, argued that the coefficient alpha values identified by Hodges (1997) are generally considered low and would not be strong evidence for internal consistency of the scales on the Child and Adolescent Functional Assessment Scale (CAFAS). In addition, because the completion of the scale requires the rater to select items only in the most applicable impaired category and then to cease rating for that category, a correlation of zero between items in differing impairment categories is created and estimates of coefficient alpha are greatly attenuated. Taking this into consideration, the internal consistency reliability of the scale does appear to be a

weakness of the scale. One explanation for the potential issues with internal consistency reliability, often cited in the literature, may stem back to the lack of a theoretical base in the development of the tool and the corresponding scales that comprise the measure.

Inter-rater reliability. Individuals seeking to use the Child and Adolescent Functional Assessment Scale (CAFAS) must receive training to become reliable raters. Individuals may undergo training in the measure in three ways. An individual may complete a self-training manual, complete a computerized training course, or undergo training in a group format by a certified trainer (Boydell, Barwick, Ferguson, & Haines, 2005). In either scenario, individuals must demonstrate acceptable reliability on scoring of clinical vignettes to become a reliable rater on the measure.

Hodges and Wong (1996) demonstrated strong inter-rater reliability in a study using twenty clinical training vignettes across four discrete samples with fifty-four undergraduate students in total. Hodges and Wong (1996) assessed inter-rater reliability in two ways, to include Pearson Product moment correlations and intraclass correlations. Initially, a Pearson product moment correlation completed between the rater's score and a criterion score generated a consensus of Hodges and a board-certified child psychiatrist (Hodges & Wong, 1996). The resulting Pearson coefficients for each of the four samples ranged from .74 to .99. Secondly, Hodges and Wong (1996) calculated intraclass correlations based on analysis of variance procedures in order to provide an estimate of rater's agreement amongst them. The resulting intraclass correlations ranged from .63 to .96. Hodges and Wong (1996) study demonstrates good inter-rater reliability across subscales, however, Bates (2001) argues that reliability estimations may be suspect because the reliability coefficients are generated from ratings on subscales, not individual

items. As a result, the raters were showing high agreement on the severity of groups of behaviors not on unique actual behaviors.

Additionally, Rosenblatt and Rosenblatt (2002) indicated inter-rater reliability for the Child and Adolescent Functional Assessment Scale (CAFAS) scores between lay raters, front-line staff, and trainers as consistently high with a Pearson correlation above .92. In the Rosenblatt and Rosenblatt (2002) study, clinicians received training to score the measure against written vignettes reliably with clinicians obtaining a reliability level of .85 or better.

The two studies above indicate strength in terms of inter-rater reliability for the Child and Adolescent Functional Assessment Scale (CAFAS). In addition to the above-cited research, in 1999, the Ontario Ministry of Community and Social Services commissioned a report to identify potential instruments for standardized assessment and system-wide outcome measurement (Boydell, Barwick, Ferguson, & Haines, 2005). The review concluded with the Child and Adolescent Functional Assessment Scale (CAFAS) and identified feedback from respondents who experienced training in the measure. Specifically, respondents to this study indicated that close to 90% were "satisfied" to "very satisfied" with the training and 85% of respondents were "satisfied" to "very satisfied" with the ease of establishing reliability for the measure.

Stability of scores. In examining the test-retest reliability of the Child and Adolescent Functional Assessment Scale (CAFAS), Hodges conducted a study in 1995 that targeted this area. Specifically, two different individual raters, trained graduate students, completed the Child and Adolescent Functional Assessment Scale (CAFAS) scales within one week of each other over the telephone and the interviews targeted

mothers of 56 youths (Hodges, 1995). The results produced included the Pearson product-moment correlation coefficients between the individual raters scores were as follows: Total Score=0.95, Role Performance score=0.84, Behavior toward Self and Others=0.82, Moods/Emotions=0.91, and Thinking= 0.89 (Hodges, 1995). There were no correlations reported for Substance Use, School/Work, Home, Community, and Self-Harmful Behavior (Hodges, 1995), which would make sense for all categories, with the exception of Substance Use, because the other scales were added to the measure following 1995 (Bates, 2001). Furthermore, Hodges (1995) conducted follow-up t-tests that yielded no significant differences between rating 1 and rating 2 on any of the scale scores, to include the total score. This study demonstrated strong evidence of stability of Child and Adolescent Functional Assessment Scale (CAFAS) scores over a one-week period, using the interview protocol (Bates, 2001).

Content and structural validity. Content validity is a weakness of the Child and Adolescent Functional Assessment Scale (CAFAS) with no real available information in the literature or the measures training manual to address the content validity of the scale (Bates, 2001 & Hodges, 1997). Bickman, Heflinger, Pion, & Behar (1992), along with the scale creator Hodges (1997), indicate that the Child and Adolescent Functional Assessment Scale (CAFAS) was developed as an adaptation to the North Carolina Functional Assessment Scale (NCFAS). This scale was another multi-dimensional functional assessment scale adapted from the Colorado Client Assessment Record (CCAR) - the first multidimensional checklist of client functioning (Bates, 2001). Both the North Carolina Functional Assessment Scale (NCFAS) and Colorado Client Assessment Record (CCAR) are for use with adults (Bates, 2001).

The Child and Adolescent Functional Assessment Scale (CAFAS) was the first multidimensional tool developed for use with children and adolescents from age 6 to 17 with severe emotional and behavioral disorders. Additionally, the Child and Adolescent Functional Assessment Scale (CAFAS) originally contained five subscales, to include Role Performance, Moods/Emotions, Behavior Towards Others/Self, Thinking, and Substance Use with the Role Performance subscale later divided into the School/Work, Home, and Community domains (Bates, 2001). The original use of the measure was for the Fort Bragg Evaluation Project (FBEP) (Hodges, Doucette-Gates, & Kim, 2000).

There does not appear to be information available addressing the specific methods used for item selection and revision process in creation of the CAFAS, however, the *Clinical Training Manual of Children and Youth Performance Outcome Program* includes the following information about the CAFAS author:

> Hodges made extensive modifications to the items and scales of the North Carolina Functional Assessment Scale (NCFAS) to render them more appropriate for children, and subsequently sought input from forty experts on three separate occasions after each revision of the developing instrument. Colleagues were selected who could provide input from a variety of perspectives, including child psychopathology, normal development, and special needs of Hispanic and Afro-American children. Suggestions were also obtained from spokespersons from parent advocate groups (Bates. 2001, p. 72).

There is no concrete documentation in the literature to support whether or not the Child and Adolescent Functional Assessment Scale (CAFAS) items and subscales have an origin in empirical or rational methods and according to the Hodges manual (1997) the measure is not based on a particular theory of child psychopathology (Bates, 2001). There is no evidence of the selection process for item inclusion in the scale, what the underlying factor structure of the scale is, and simply whether items actually represent subscales for which they have been assigned (Bates, 2001). This lack of clear theoretical and empirical reasoning to make a meaningful decision in terms of subscale creation and item inclusion in the literature leads to suspect content validity of the measure (Reckase, 1996).

The Child and Adolescent Functional Assessment Scale (CAFAS) suffers the same issues in terms of structural validity. Specifically, there is no available literature in this area for the measure (Bates, 2001). What this means is that if an item rates as severe on the School/Work subscale there is no available data that supports that the item is actually reflective of that severe level of impairment (Bates, 2001). Also noted by Bates (2001), as a potential problem, is the fact that items on the measure comprising the "Minimal or No Impairment" severity level do not contribute to the total score but, in fact, are rated as a "0". Therefore, even though the rater endorses items on the "Minimal or No Impairment" severity level, these items do not factor into the total score and appear to be only descriptive in nature.

Concurrent validity. Concurrent validity is a measure of how well a particular test correlates with a previously validated measure. The literature holds several studies that have looked at the concurrent validity of the Child and Adolescent Functional

Assessment Scale (CAFAS) total score (Bates, 2001). The first study, cited by Hodges (1997) in her Child and Adolescent Functional Assessment Scale (CAFAS) manual, looked at the relationship between total scores on the measure and scores on the Children's Global Assessment Scale (CGAS) utilizing the Fort Bragg Evaluation Project (FBEP) sample. The analysis produced Pearson product-moment correlations between the Child and Adolescent Functional Assessment Scale (CAFAS) and the Children's Global Assessment Scale (CGAS) in a range from –0.72 to –0.91 for three periods of data collection (Hodges, 1997). Additionally, the study yielded significant agreement between the two measures in categorization of youths in one of four levels of impairment ranging from severe impairment to minimal/no impairment (Bates, 2001). This study does support evidence of construct validity in the Child and Adolescent Functional Assessment Scale (CAFAS).

A second study completed by Hodges and Wong (1996), also utilized Fort Bragg Evaluation Project (FBEP) data to run analyses to look at construct validity of the Child and Adolescent Functional Assessment Scale (CAFAS) through investigation of its relationships with global measures of psychopathology and problematic behaviors. The Child and Adolescent Functional Assessment Scale (CAFAS) is compared with the following measures, also collected in the Fort Bragg Evaluation Project (FBEP) study: the Child Assessment Scale (CAS), the Parent Child Assessment Scale (PCAS), the Burden of Care Questionnaire (BCQ), the Child Behavior Checklist (CBCL), the Youth Self- Report (YSR), and the Teacher Report Form (TRF). Results yielded correlations between the Child and Adolescent Functional Assessment Scale (CAFAS) and the other global measures of problematic functioning across four points in time, as follows: the

Parent Child Assessment Scale (PCAS) (0.59, 0.62, 0.58, 0.63), the Child Behavior Checklist (CBCL) (0.42, 0.49, 0.48, 0.47), the Child Assessment Scale (CAS) (0.54, 0.56, 0.55, 0.52), and the Burden of Care Questionnaire (BCQ) (0.36, 0.42, 0.43, 0.42) (Hodges & Wong, 1996). These results support a moderate positive correlation for all measures across all times, which provide evidence of concurrent validity between the Child and Adolescent Functional Assessment Scale (CAFAS) and a constellation of problematic behaviors (Bates, 2001).

Criterion-related validity. To determine the level of association between Child and Adolescent Functional Assessment Scale (CAFAS) total score and individual problematic behaviors in Fort Bragg Evaluation Project (FBEP) study, Hodges and Wong (1996) split the Child and Adolescent Functional Assessment Scale (CAFAS) total scores into two separate categories: presence and absence of pathology. The authors utilized a total Child and Adolescent Functional Assessment Scale (CAFAS) cutoff score of 80 at intake and then a total cutoff score of 50, for the three remaining follow-up periods. The authors then conducted a series of logistic regression analyses using Child and Adolescent Functional Assessment Scale (CAFAS) category as a criterion and the following variable sets as predictors: problems in social relationships, risk behaviors, involvement in juvenile justice, and school-related behaviors (Hodges & Wong, 1996). Results positively indicated each of these above identified variables as highly significant in predicting Child and Adolescent Functional Assessment Scale (CAFAS) category for at least one, sometimes all four, of the periods (Bates, 2001). Hodges and Wong (1996) concluded, due to these results, that there is support for the validity of the Child and

Adolescent Functional Assessment Scale (CAFAS) as a measure of impairment across multiple spheres of functioning.

Predictive validity. In yet another study involving the Fort Bragg Evaluation Project (FBEP), Hodges and Wong (1997) looked at the predictive validity of the Child and Adolescent Functional Assessment Scale (CAFAS) total score. In the study Hodges and Wong (1997) utilized total scores at intake to predict restrictiveness of care levels, cost of services, and number of services at both 6 and 12 months post-intake. Results indicated that the Child and Adolescent Functional Assessment Scale (CAFAS) total scores significantly predicted these indicators of service utilization at both 6 and 12 months post-intake and the Child and Adolescent Functional Assessment Scale (CAFAS) was the single best predictor of service utilization and cost (Hodges & Wong, 1997).

Other areas of consideration. The research also indicates that the Child and Adolescent Functional Assessment Scale (CAFAS) has face validity in that its items appear to cover the breadth and depth of emotional and behavioral problems that children and adolescents with social and emotional disturbance (SED) face (Bates, 2001).

Finally, as is true with most level of functioning measures, the Child and Adolescent Functional Assessment Scale (CAFAS) has clinical utility in that the measure total score appears to provide a meaningful metric by which to compare youths with a variety of emotional and behavioral problems (Bates, 2001).

Now that an exhaustive review of the outcome measure for this research is complete, the next section will review the data analysis undertaken for this research.

Data Analysis

This research utilizes archival data directly from Value Behavioral Health of Pennsylvania, Inc. and does not use live subjects. In order to protect clients' confidentiality, removal of all identifying information occurred and data is coded numerically.

Initial data management, data analysis, and diagnostic statistics completion was through SPSS Statistics 19.0, a computerized database, for this research. I encoded all data items into SPSS by value keys and conducted data analyze using appropriate univariate analysis.

First, I generated frequency distributions and scatterplots to examine the distributions of the independent and dependent variables used in this analysis. Appropriate measures of central tendency, to include means, medians, standard deviations, proportions, and measures of skewness were generated, when possible, and reported as appropriate.

Secondly, paired-samples t-tests were conducted to compare intake and discharge scores on the measure for level of functioning, the Child and Adolescent Functional Assessment Scale. I chose a paired-samples t-test here because I have one group of individuals with collection of data at intake and discharge from treatment. This measure will serve to determine if there is a relationship between intake rating and discharge rating on the Child and Adolescent Functional Assessment Scale (CAFAS).

There are numerous methods for assessing clinical improvement or treatment outcome. There is criticism in the utilization of change scores, due to the belief that this method tends to have low reliability (Lord, 1956). However, the current literature

demonstrates that difference or change scores can be accurate and useful measures of change when individual differences in true change in true change exist and with reliable measures, such as the Child and Adolescent Functional Assessment Scale, to detect these differences (Rogosa & Willett, 1983). The literature reflects that it is more advantageous to have a control/comparison group and several data points to assess true change beyond regression to the mean, however, this research did not have that luxury in the design (Rogosa & Willett, 1983). Therefore, to assess treatment outcome beyond meaningful regression to the mean, change scores on the Child and Adolescent Functional Assessment Scale were assessed for clinical as well as statistical significance.

Finally, I then transferred my data into STATA IC version 10.1 from STATACORP LP of College Station, TX for multivariate analysis. I chose to transfer into STATA in order to have access to the graphics and tools for regression criticism.

Using multiple regression analysis, I initially regressed change in Child and Adolescent Functional Assessment Scale (CAFAS) scores on the following independent variables: pilot provider organization, gender, Children and Youth Services (CYS)/Juvenile Probation Office (JPO) involvement, primary DSM-IV diagnosis category, age, entry level of care, and days in treatment. Secondly, I conducted the same regression with the exception of elimination of the days in treatment as an independent variable.

Third, I regressed days in treatment on the following independent variables: pilot provider organization, gender, Children and Youth Services (CYS)/Juvenile Probation Office (JPO) involvement, primary DSM-IV diagnosis category, entry level of care, age, and initial Child and Adolescent Functional Assessment Scale (CAFAS) score.

Fourth, I regressed exit level of care on the following independent variables: change in Child and Adolescent Functional Assessment Scale (CAFAS) scores, pilot provider organization, gender, Children and Youth Services (CYS)/Juvenile Probation Office (JPO) involvement, primary DSM-IV diagnosis category, age, entry level of care, and days in treatment.

Fifth, I regressed exit level of care on the following independent variables: initial Child and Adolescent Functional Assessment Scale (CAFAS) score, pilot provider organization, gender, Children and Youth Services (CYS)/Juvenile Probation Office (JPO) involvement, primary DSM-IV diagnosis category, age, entry level of care, and days in treatment.

Sixth, I regress exit level of care on the following independent variables: discharge Child and Adolescent Functional Assessment Scale (CAFAS) score, pilot provider organization, gender, Children and Youth Services (CYS)/Juvenile Probation Office (JPO) involvement, primary DSM-IV diagnosis category, age, entry level of care, and days in treatment.

My hypotheses are supported if a statistically significant and substantively important relationship existed between any of the independent variables and the dependent variables. This allows identification of which variables were predictive of the desired treatment outcome and which were not.

CHAPTER FIVE

FINDINGS

Introduction

The purpose of this pre-experimental, one-group pre-posttest evaluation, without a control group, was to determine whether the introduction of a community-based mental health treatment resulted in an increase in level of functioning for individuals treated. Additionally, this study evaluated the relationship between several dependent variables (change in Child and Adolescent Functional Assessment Scale (CAFAS) scores, days in treatment, and exit level of care) and a variety of independent variables (pilot provider organization, gender, age, primary DSM-IV diagnosis, Children and Youth Services (CYS)/Juvenile Probation Office (JPO) involvement, and entry level of care).

I hypothesized that children and adolescents treated in the strengths based mobile therapy treatment program would demonstrate increased level of functioning and referral to a lower/less intensive level of treatment upon discharge. I further anticipated that individuals with Attention Deficit Hyperactivity Disorder would demonstrate greater improvement in level of functioning in comparison to other DSM-IV primary diagnoses types.

This research found that overall there was a statistically significant decrease between the Child and Adolescent Functional Assessment Scale (CAFAS) score at intake (M=78.57, SD=27.97) and the score at discharge (M=48.80, SD 25.76) from strengths based mobile therapy indicating a level of improvement as measured by CAFAS scores. The mean decrease in Child and Adolescent Functional Assessment Scale (CAFAS)

score was 29.771 with a 95% confidence interval ranging between 25.296 to 34.247. Hypotheses one, therefore, is supported.

This chapter provides descriptive statistics for independent variables, control variables, and dependent variables analyzed in this research. Also presented are the results of the multivariate regression analyses, which test the hypotheses outlined in Chapter III.

Part I: Descriptive Statistics Overview

One of the first steps of analysis was to analyze the demographic characteristics of the sample. The results provided a basic idea of the backgrounds and characteristics of the children and adolescents treated in strengths based mobile therapy from January 1, 2007 to December 31, 2008. Table 3 demonstrates some of the descriptive statistics of this sample. The numbers and percentages in each of the variable categories are below.

Table 3

Treatment Pilot Sample Demographics (n=175)

Characteristic	Frequency	%
Gender		
Male	103	59%
Female	72	41%
Age Category		
Under 6	4	2.3%
6 to 12 Years of Age	82	47%
13 to 17 Years of Age	85	49%
18 to 21 Years of Age	4	2.3%
Primary Diagnosis		
Adjustment Disorders	14	8%
Anxiety Disorders	10	6%
Attention Deficit Hyperactivity Disorder	54	31%
Bipolar/Major Depressive Disorders	45	26%
Disruptive Behavior/Impulse Control	33	19%
Organic Mental/Asperger's Disorders	19	11%
Agency Involvement		
Children and Youth/Juvenile Probation-Yes	27	15%
Children and Youth/Juvenile Probation-No	148	85%
Pilot Provider		
Pilot Provider 1	35	20%
Pilot Provider 2	43	25%
Pilot Provider 3	16	9%
Pilot Provider 4	17	10%
Pilot Provider 5	35	20%
Pilot Provider 6	12	7%
Pilot Provider 7	17	10%
Length of Stay in Treatment		
Less Than 225 days	36	21%
225 to 255 days	62	35.4%
Greater than 255 days	77	45%
Entry Treatment Level of Care		
None	66	38%
Case Management	16	9.1%
Outpatient	22	13%
Medication Prescriber	12	7%
Behavioral Health Rehabilitative Services	23	13%
Family Based Mental Health Services	30	17%
Residential Treatment Facility	6	3%
Discharge Level of Treatment		
None	11	6%
Case Management	17	10%
Outpatient	119	68%
Medication Prescriber	9	7%
Behavioral Health Rehabilitative Services	10	6%
Family Based Mental Health Services	5	3%
Unknown	4	2%

Table 3 shows the frequency and percentages of children in the sample by gender and age category. Children in the sample were primarily male (59%).

Child Age

All of the children in the sample were under the age of 20. Groupings into four distinctive age categories did occur, initially, for the purpose of data analysis. The majority of the children in the sample fell into the 6 to 12 years (47%) and 13 to 17 years (49%) age categories. The under six (2.3%) and 18 to 21 (2.3%) made up the remaining percentages. For purposes of the multiple regression analysis, the actual chronological ages in years were used versus these age categories, which were presented here for descriptive purposes.

Primary Diagnosis

For determination of medical necessity to received Strengths Based Mobile Therapy, children and adolescents receive an evaluation to determine DSM-IV diagnosis. The data collection for all children in the sample includes primary DSM-IV diagnosis. The original dataset reflects 25 primary diagnoses across the sample of 175 children. These 25 primary diagnosis categories were later grouped into the following categories for the purpose of data analysis: adjustment and related disorders, anxiety and related disorders, attention-deficit hyperactivity and related disorders, bipolar/major depressive and related disorders, disruptive behavior/impulse control and related disorders, organic mental disorders and Asperger's/autism spectrum disorders. The three primary diagnostic categories in the sample reflect attention-deficit hyperactivity disorders (30.9%), bipolar/major depressive disorders (24.7%), and disruptive behavior/impulse control disorders (18.9%) for a sum total of 74.5% of the sample comprised of these three diagnostic categories. The remaining children in the sample are reflective of Asperger's/autism spectrum disorders (9.1%), adjustment disorders (8.0%), anxiety

disorders (5.7%), and organic mental disorders (1.7%) for a sum total of 25.5% of the sample comprised of these four remaining diagnostic categories. For the purposes of data analysis, due to the small numbers in the categories, Asperger's/autism spectrum disorders and organic mental disorders were combined into one category.

Agency Involvement

For the children in the sample Value Behavioral Health of Pennsylvania, Inc. requested information in the pilot dataset reflective of whether the child receiving treatment was actively involved with either Children and Youth Services or Juvenile Probation Services, due to these children potentially being at higher risk for out-of-home placement. For the 175 children in the sample, only 15% reported involvement with either of these entities during the course of their Strengths Based Mobile Therapy treatment.

Pilot Provider

Value Behavioral Health of Pennsylvania, Inc. was under contract with seven different licensed behavioral health provider organizations during the timeframe of this research. Each of the seven pilot provider organizations submitted data to Value Behavioral Health, which in turn was available for this research. For the purposes of this research, Value Behavioral Health of Pennsylvania coded the dataset alphabetically for each provider organization from 1 to 7, to provide anonymity to the unique provider agencies and respective children treated. The distribution of children by pilot provider organization is reflective in Table 3 with Provider 1 (20%), Provider 2 (25%), and Provider 5 (20%) encompassing 65% of the children in the sample.

Length of Stay **in Treatment**

The children in the sample had varying days in Strengths Based Mobile Therapy treatment. The days in treatment were grouped into three lengths of stay categories for the purpose of analysis. These three categories are reflective of Value Behavioral Health's anticipated lengths of stay in this treatment program. The majority of the children in the sample (44%) were in the long length of stay category, greater than 255 days in treatment. Children in the second lengthiest length of stay category, 225 to 255 days, made up 35 % of the sample and children in the less than 225 days of treatment made up the remaining 21% respectively. For the purposes of the multiple regression analyses, there was utilization of actual days in treatment versus these lengths of stay categories.

Entry Treatment Level of Care

Value Behavioral Health of Pennsylvania required that providers track the current level of treatment that children were receiving upon referral to the Strengths Based Mobile Therapy Treatment Program. Either the majority of the children in the sample (38%) were not receiving treatment services at the time of referral or the provider organization did not verify a current level of treatment at referral in the dataset for the child. Of the remaining children in the sample, 29% were receiving treatment, which is less intensive, according to the Pennsylvania Continuum of Children's Mental Health Treatment Services. Specifically, this breakdown was reflective of 9% of the children receiving case management services, 22% of the children receiving outpatient mental health services, and 7% receiving psychiatric medication management services.

The remaining 33% of the children in the sample were receiving a level of treatment that is more intensive than strengths based mobile therapy, at time of referral. Specifically, 13% of the children in the sample were receiving some form of behavioral health rehabilitative services, 17% were receiving family based mental health services, and 3% were coming out of a residential treatment facility upon referral to strengths based mobile therapy.

Discharge Treatment Level of Care

As was the case with level of treatment at time of referral to the strengths based mobile therapy treatment pilot, providers were required to track referral level of care at time of discharge from treatment. For the majority of children in this sample (68%), referral at discharge was to outpatient mental health services, a less intensive level of treatment. Of the remaining children in the sample, 23% of referral at discharge was to a less intensive level of treatment. Specifically, 6% of the children required no referral for services, 10% required referral to case management services, and 6% required referral to psychiatric medication management services.

Finally, discharge referral level of care, for 9% of the sample, was to a more intensive treatment level, reflective of 6% receiving referral to behavioral health rehabilitative services and referral of 3% of the children to family based mental health services. There is 2% of the sample, which is reflective of four children that the provider failed to document the discharge level of treatment.

Part II: Univariate Analysis

Descriptive statistics of the analytic variables appear in Table 4. The Child and Adolescent Functional Assessment Scale (CAFAS) score distribution at intake or PreCAFAS score has a slight positive skew, with total scores ranging from 10 to 180.

Table 4

Descriptive Statistics for Analytic Variables

	N	Mean	SD	Skewness	Kurtosis
PreCAFAS Score	175	78.57	27.97	.502	.483
PostCAFAS Score	175	48.80	25.76	.683	.391
ChangeCAFAS Score (Pre-Post)	175	-29.77	30.00	.397	-.105
Days in Treatment	175	265.88	74.28	.997	3.350
Age	172	12.01	3.33	-.310	-.495

Participants' mean score on the scale is 78.57 representing a mid-level overall score. The standard deviation of the scale is 27.97. The distribution of scores is a relatively symmetrical distribution, with a few outliers toward the high end.

The Child and Adolescent Functional Assessment Scale (CAFAS) score at discharge from treatment or PostCAFAS score reflects a mild positive skew, with total scores ranging from zero to 120. Participants' mean total score on the scale was 48.80 representing a lower total score in comparison to the total score at intake or pretest. The standard deviation of the posttest total scores is 25.76. The distribution of scores is a normal distribution, with a few outliers toward the high end.

The Child and Adolescent Functional Assessment Scale (CAFAS) score changes, from pretest to posttest or ChangeCAFAS score reflects a negative skew with total change scores ranging from an increase in total Child and Adolescent Functional Assessment Scale (CAFAS) score of 30 points to a decrease in total score of 130 points from intake to discharge. Participants mean change in score from intake to discharge was

-29.77. The standard deviation of the change scores is 30. The distribution of the change scores is a fairly symmetrical distribution.

The days in treatment range from 83 days to 623 days with an average length of stay in treatment being 265.88 days in treatment. The standard deviation for days in treatment is 74.284. The distribution of days in treatment is a positively skewed, normal distribution with a few severe outliers toward the high end.

The range of ages is from 4 years of age to 20 years of age. The standard deviation for age is 3.334. The distribution of age reflects a slight negative skew.

Part III: Bivariate Analysis

As outlined in Chapter IV, the next step in data analysis was completion of a bivariate analysis utilizing a paired-samples t-test to assess significant changes in outcomes.

Child and Adolescent Functional Assessment Scale (CAFAS) Outcomes

Paired-samples t-test values used to test Child and Adolescent Functional Assessment Scale from pretest to posttest administrations appear in Table 5.

Table 5

Child and Adolescent Functional Assessment Scale (CAFAS) Paired T-test Summary

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
PostCAFAS	175	48.8	1.947151	25.75838	44.95693	52.64307
PreCAFAS	175	78.57143	2.114481	27.97195	74.3981	82.74476
Difference	175	-29.77143	2.267721	29.99912	-34.24721	-25.29565

Assessment		Df	t	p
CAFAS	Total Score	174	-13.128	<0.05

A paired-samples t-test analysis serves to evaluate the impact of the introduction of strengths based mobile therapy on the level of functioning of children and adolescents receiving the treatment. The distribution is relatively normally distributed with only a few

outliers. The paired-samples t-test indicates that PreCAFAS scores are significantly different from PostCAFAS scores. There is a significant decrease in Child and Adolescent Functional Assessment Scale total scores from pretest (M=78.57, SD=27.97) and posttest (M=48.80, SD=25.76), t (174) =13.128, p<0.05 (two-tailed). As shown in Table 6, the mean decrease in Child and Adolescent Functional Assessment Scale total scores was 29.771 with a 95% confidence interval ranging from 25.926 to -34.247 to -25.926.

These findings confirm research hypothesis one, which states: Children and adolescents treated in the strength based mobile therapy treatment model will have higher levels of functioning at discharge from treatment on average than they had at intake to treatment.

Part IV: Multivariate Regression Analysis

As further outlined in Chapter IV, I used multivariate regression analysis to investigate my research hypotheses. I describe my analyses in the following section.

The variables I included in my analysis were determined by my hypotheses. These research hypotheses led the decisions about variable combinations.

1. Children and adolescents treated in the strengths based mobile therapy treatment model will have higher levels of functioning on average at discharge from treatment than they had at intake to treatment.
2. Children and adolescents with DSM-IV diagnoses classified as behavioral disorders, such as Attention Deficit Hyperactivity Disorder (ADHD), will have greater improvement in their level of functioning at discharge from treatment than children and adolescents with other DSM-IV diagnoses.

3. Children and adolescents referred for treatment from higher levels of cares will demonstrate a change in level of functioning at discharge from treatment.
4. Children and adolescents with greater length of treatment will demonstrate greater increases in level of functioning.
5. Children and adolescents who experience an increase in level of functioning will receive referral to a lower exit level of care.
6. Children and adolescents with higher level of functioning at entry to treatment will experience a lower exit level of care.

A major objective of my study is to produce an analysis that represents the nuanced effects of the strengths based mobile therapy treatment pilot. The model I tested includes the variables discussed in the hypotheses alone. My goal overall was to produce the most parsimonious model. I conducted a series of multivariate analyses to explore the effect of the independent variables on the dependent variables change in Child and Adolescent Functional Assessment Scale (CAFAS) score, days in treatment, and exit level of care. In the first stage, all of my independent variables were included in the model and I determined which variables had a significant impact on the dependent variables.

Various regression methods were used to examine the effect of predictor variables on the dependent variables. Ordinary Least Squares (OLS) regression, Robust Regression and Regression with Robust Standard Errors were used to test the impact of strengths based mobile therapy on level of functioning of children treated. In Table 6 a list and description of all variables is provided. These variables were used throughout the study in

multivariate analyses and to empirically measure the outcome of strength based mobile therapy.

Table 6

Independent Variables Used in Multivariate Regression Analysis

Variable	Description	Coding
Age	Chronological age at entry to treatment	4 to 20 years of age
Gender	Sex of the individual receiving treatment	0=male; 1=female
Diagnosis	Primary DSM-IV diagnosis category	1= AdjDis=Adjustment and Related Disorders 2=Anxiety=Anxiety and Related Disorders 3=Adhd=Attention-Deficit Hyperactivity and Related 4=Bi-MajorDep=Bipolar/Major Depressive and Related Disorders 5=BehImpCtrl=Disruptive Behavior Impulse Control and Related Disorders 6=Omhdx=Organic Mental Health Disorders 7=Asperger's=Asperger's/Autism Spectrum Disorders
CYS/JPO	Involved Reflection of active involvement with either Children and Youth Services or Juvenile Probation Services	0=No; 1=Yes
Pilot Provider	The pilot provider organization delivering treatment to the individual	Pilot Provider 1 through Pilot Provider 7
Entry Level of Care	The level of treatment the individual is receiving when they are referred to strengths based mobile therapy (SBMT)	1=No Referral Level of Care 2=Case Management 3=Psychiatrist/Medication Prescriber 4=Outpatient Treatment 5=Behavioral Health Rehabilitative Services 6=Family Based Mental Health Services 7=Residential Treatment Facility
Days in Treatment	The number of days the individual participated in strength based mobile therapy (SBMT) treatment	126 to 377 days
PreCAFAS Score	The total score of the administration of the Child and Adolescent Functional Assessment Scale (CAFAS) at entry into strengths based mobile therapy treatment (SBMT)	30 to 130
PostCAFAS Score	The total score of the administration of the Child and Adolescent Functional Assessment Scale (CAFAS) at discharge from strengths based mobile therapy treatment (SBMT)	0 to 120
ChangeCAFAS Score	The score reflective of treatment outcome that is a computation of the postCAFAS total score minus the preCAFAS total score	0 to 110

Initial Multivariate Regression Analysis

In the initial multivariate regression analysis using ChangeCAFAS scores, I first left the days in treatment variable out but then ran with the days of treatment variable in, which is the model I chose to reflect here. I chose to utilize the model including the days

of treatment variable to determine if there is any significant variation between the independent variables and the dependent variable. As the following analysis will suggests, the change from PreCAFAS score to PostCAFAS score holds equally and independently for all youth no matter the location (treatment setting), their sex, the involvement of children and youth services, their diagnosis, their entry level of care, their age, or their number of days in treatment. This model permits argument for generalizability of these findings.

Given the symmetrical distribution for the actual days in treatment, along with a slightly improved model compared to using the categorical transformations of this variable, I chose to use the actual days in treatment as the variable in all regression models calling for the days in treatment variable. Where I observed residual vs. fitted plots that indicated even minor deviation from the assumption of normal i.i.d. errors (normally independently, identically, distributed errors), I ran regressions using robust standard errors. However, this activity generated no differences with respect to significance (see the p-values). Additionally, when I noted outliers, (i.e. leveraging cases) existed, I also employed robust regression using Maximum Likelihood Estimation and involving both Huber and Biweigt iterations. I calculated Psuedo R2 values for the robust regressions.

The STATA output for my initial model is shown in Table 7. Based on the p-value for the F-test, the model is not statistically significant. The adjusted R-square of .008 indicates that less than 1% of the variance in the ChangeCAFAS scores is explained by the model.

Table 7

Initial Multivariate Regression Analysis of ChangeCAFAS Scores

Source	SS	df	MS
Model	15516.448	16	969.777998
Residual	141074.409	158	892.876007
Total	156590.854	174	899.947455

Number of obs	=	175
F(16, 158)	=	1.09
Prob > F	=	0.3725
R-squared	=	0.0991
Adj R-squared	=	0.0079
Root MSE	=	29.881

Change CAFAS	Coef.	Std. Err.	T	P>|t|	[95% Conf. Interval]	
Pilot						
2	2.832355	7.060963	0.40	0.689	-11.1137	16.77841
3	5.187314	9.326337	.56	0.579	-13.23306	23.60769
4	-8.515417	9.145897	-0.93	0.353	-26.57941	9.548571
5	9.813058	7.739609	1.27	0.207	-5.473382	25.0995
6	-1.071124	10.43498	-0.10	0.918	-21.68116	19.53891
7	-12.70444	9.549485	-1.33	0.185	-31.56556	6.156667
2. Gender	3.962451	5.142707	0.77	0.442	-6.19487	14.11977
1. CYSinvolve	6.922105	6.694225	1.03	0.303	-6.299606	20.14382
new_Diagnosis						
Anxiety	-18.094	12.65872	-1.43	0.155	-43.09615	6.908142
Adhd	-6.805861	9.361607	-0.73	0.468	-25.2959	11.68418
Bi-MajorDep	-16.86575	9.774806	-1.73	0.086	-36.17189	2.440392
BehImpCtrl	-14.08397	9.943507	-1.42	0.159	-33.72331	5.555374
Asperger's	-13.45947	11.18523	-1.20	0.231	-35.55134	8.632391
EntryLOC_ord	-.8700827	1.146169	-0.76	0.449	-3.133872	1.393706
Age	.1732154	.7526879	0.23	0.818	-1.313413	1.659843
Daystreatment	.0341627	.0321372	1.06	0.289	-.0293114	.0976367
_cons	-30.27473	14.69338	-2.06	0.041	-59.2955	-1.253949

I performed several regression diagnostics to assess whether the assumptions of the model were met, such as normality, error independence, and homoscedasticity. First I produced a "residuals versus fitted plot" to assess several assumptions (Hamilton, 1992). The plot in Figure 1 indicates minor problems only, with one particular outlier noted.

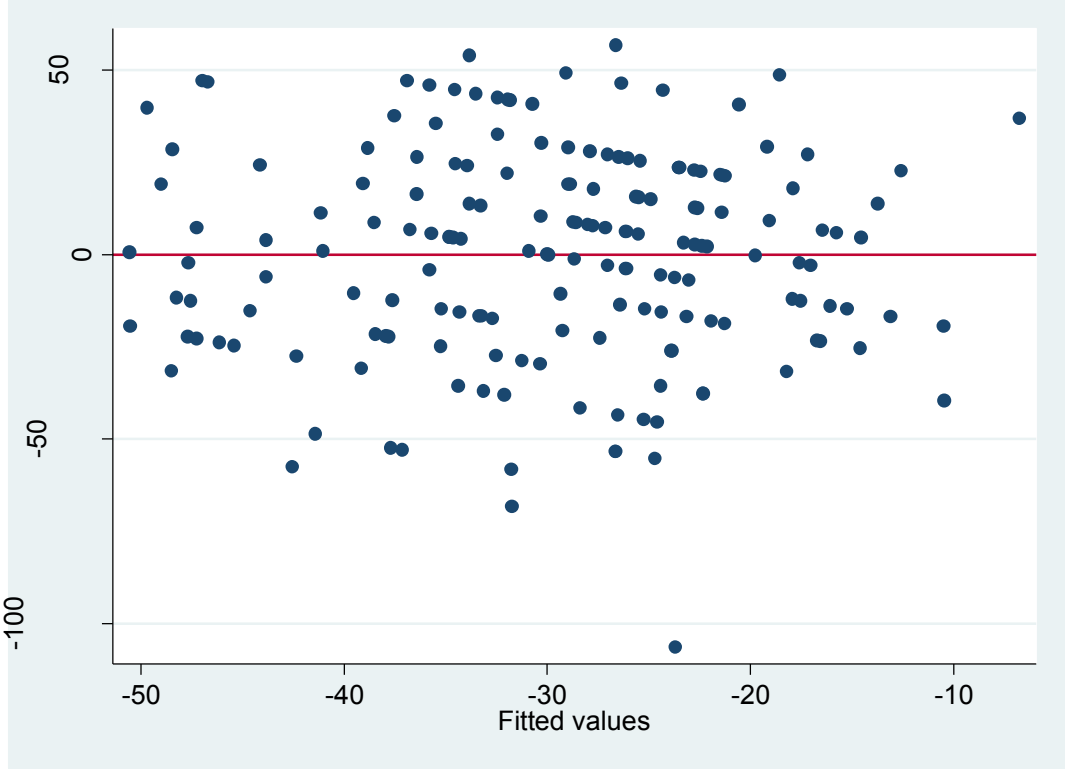

Figure 1. Residuals versus fitted values plot.

I assessed whether any of the observations were leveraging or influencing the model, to make sure that the regression coefficients were not biased.

Cook's D, which measures the influence, indicates that case 15 is exerting the leverage far more than any other cases. Figure 2 reflects the plot for residual vs. predicted values proportional to Cook's D to provide evidence regarding which cases might be influencing the model, negatively affecting the fit of the model.. This plot identifies that case #15 is leveraging the model as a whole, and various cases are leveraging the individual coefficients on numerous variables independent variables. As a result, I determined that a robust regression needed to be completed.

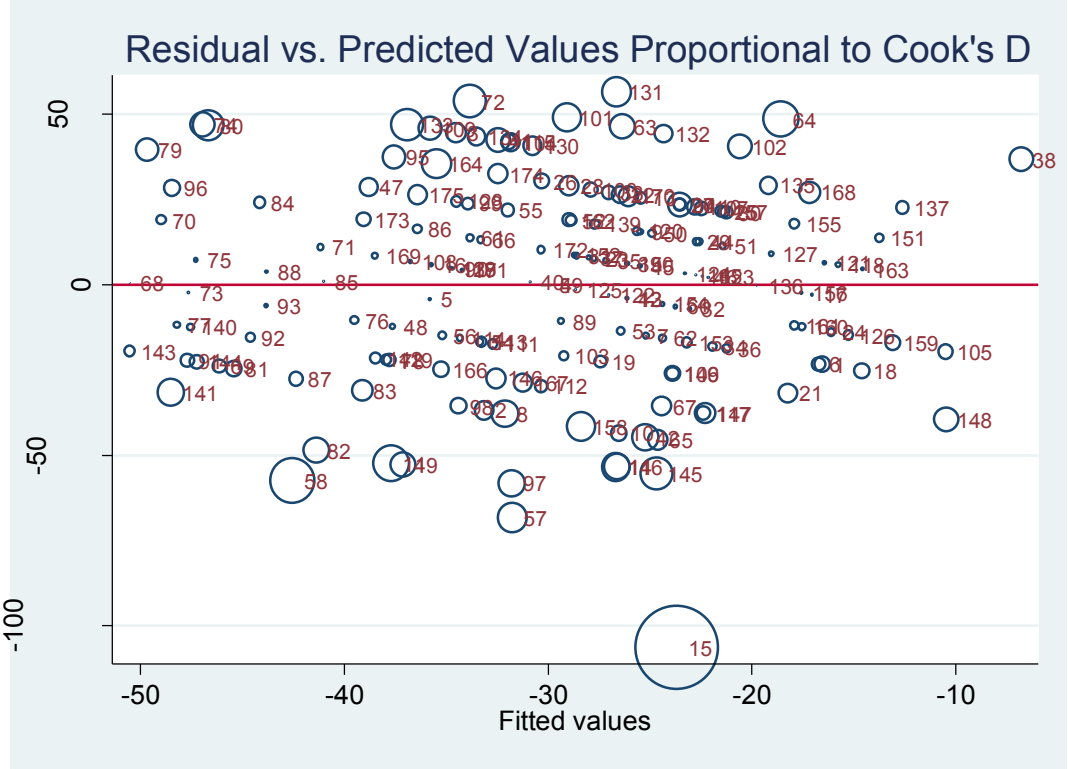

Figure 2. Residual vs. predicted values proportional to Cook's D plot. This plot identifies that case #15 is leveraging the model as a whole, and various cases are leveraging the individual coefficeients on numerous variables.

When conducting multivariate analyses it is important to assess for multicollinearity, which can occur when independent variables are highly correlated with one another. Multicollinearity makes it difficult to assess the unique contributions of each independent variable in a model. I completed and examined the the "Variance Inflation Factor" (VIF) using STATA. As shown in Table 8, the values for VIF ranged from 3.66 to 1.10, with a mean of 1.85. All of the VIF's were within an acceptable range (Hamilton, 1992). The larger values only take place with the indicator variables.

Table 8

Variance Factor Inflation of Independent Variables (Initial Model)

Variable	VIF	1/VIF
Pilot		
Pilot 2	1.81	0.552152
Pilot 3	1.42	0.706139
Pilot 4	1.44	0.695458
Pilot 5	1.88	0.532347
Pilot 6	1.36	0.733631
Pilot 7	1.57	0.637916
Gender	1.26	0.796665
CYSinvolvement	1.15	0.872576
New_Diagnosis		
Anxiety	1.69	0.590970
Adhd	3.66	0.272866
Bi-MajorDep	3.58	0.279548
BehImpCtrl	2.97	0.337247
Asperger's	2.37	0.421367
EntryLOC_ord	1.10	0.910212
Age	1.23	0.814922
Daystreatment	1.19	0.842381
Mean VIF	185	

Variable	VIF	1/VIF
EntryLOC_ord	1.03	0.975168
Daystreatment	1.02	0.980693
Age	1.01	0.994304
Mean VIF	1.02	

The STATA output, also shown in Table 8, for the ordinal and continuous variables indicated that VIF values ranged from 1.01 to 1.03 with a mean of 1.02, all of which are below the critical level of 10 (Regression with STATA). The 1/vif for the ordinal and continuous variables are all >.6, which is ideal. Therefore, when the VIF's were run using the ordinal or continuous variables there was no evidence of multicollinearity.

As was highlighted, the results of the Cook's D plot identified that case #15 is leveraging the model as a whole. Therefore, I determined that a robust regression needed to be completed.

Table 9 shows the actual STATA output from the initial robust regression analysis. It is evident from the p-value of the F-test in the STATA output the model is not statistically significant and there are also no statistically significant coefficients. As this output indicates for the robust regression, this was also the case for the initial regression analysis.

Table 9

First Multivariate Regression Analysis: Robust Regression of Change CAFAS Scores

Number of obs = 175
F(16, 158) = 1.38
Prob > F = 0.1601

Chng_postpre	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Pilot						
2	.2504452	7.276612	0.03	0.973	-14.12153	14.62242
3	3.133536	9.611172	.33	0.745	-15.84941	22.11649
4	-10.83511	9.425222	-1.15	0.252	-29.45079	7.780568
5	9.837598	7.975984	1.23	0.219	-5.915705	25.5909
6	8.592649	10.75367	0.80	0.425	-12.64684	29.83214
7	-13.65223	9.841135	-1.39	0.167	-33.08938	5.784916
2. Gender	2.679988	5.299771	0.51	0.614	-7.787547	13.14752
1. CYSinvolve	13.53765	6.898674	1.96	0.051	-.0878673	27.16316
New_Diagnosis						
Anxiety	-12.90916	13.04533	-.99	0.324	-38.67489	12.85658
Adhd	-2.102863	9.64752	-0.22	0.828	-21.1576	16.95188
Bi-MajorDep	-15.32112	10.07334	-1.52	0.130	-35.21689	4.57465
BehImpCtrl	-12.56486	10.24719	-1.23	0.222	-32.80401	7.674285
Asperger's	-10.55272	11.52684	-0.92	0.361	-33.3193	12.21385
EntryLOC_ord	-.1602274	1.181174	-0.14	0.892	-2.483155	2.1727
Age	.7227047	.7756757	0.93	0.353	-.8093262	2.254736
Daystreatment	.0247112	.0331188	0.75	0.457	-.047014	.0901238
_cons	-38.29841	15.14213	-2.53	0.012	-68.20551	-8.391311

As has been already identified, a significant difference exists between the PreCAFAS and PostCAFAS scores (i.e., it decreases significantly). Also, there is no significant relationship between the independent and dependent variables, in regard to ChangeCAFAS scores, which suggests that this change holds equally and independently for all youth regardless of the location (treatment provider), their sex, the involvement of children and youth services (CYS), their primary diagnosis, their entry level of care, their

age, or their number of days in treatment. Therefore based on these paired t-test and regression analyses there is support for strength based mobile therapy having a desired impact on level of functioning. These analyses indicate some evidence of external validity across settings, persons, and time, due to the fact that the effect does not vary across settings, persons, or time. However, due to the design of this research and the lack of a control group, generalizability to a greater population or to other populations and insights into cause and effect relationships remains difficult at best.

Second Multivariate Regression Analysis

Secondly, I performed another multivariate regression analysis using days in treatment as the dependent variable. The final STATA regression output is in Table 10. It is apparent from the p-value of the F-test in this STATA output that is statistically significant beyond the .05 level. The adjusted R-squared output is 0.0799, which indicates that 8% of the variability in the days in treatment is mathematically represented.

Table 10

Second Multivariate Regression Analysis for Days in Treatment

Source	SS	df	MS
Model	168804.302	16	10550.2689
Residual	857473.607	158	5427.04814
Total	1026277.91	174	5898.148

Number of obs	=	175
F(16, 158)	=	1.94
Prob > F	=	0.0201
R-squared	=	0.1645
Adj R-squared	=	0.07999
Root MSE	=	73.669

Daystreatment	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pilot						
2	-4.916428	17.47067	-0.28	0.779	-39.42262	29.58976
3	9.29089	22.98227	0.40	0.687	-36.10122	54.68299
4	-8.607003	22.70317	-0.38	0.705	-53.44786	36.23385
5	-23.00066	19.00628	-1.21	0.228	-60.5398	14.53849
6	33.73218	25.59416	1.32	0.189	-16.81865	84.28301
7	60.56316	23.048	2.63	0.009	15.04124	106.0851
2.Gender	10.54091	12.70301	0.83	0.408	-14.54871	35.63053
1.CYSinvolve	2.898419	16.50966	0.18	0.861	-29.70967	35.50651
new_Diagnosis						
Anxiety	32.40971	31.25672	1.04	0.301	-29.32518	94.1446
Adhd	43.92077	23.10372	1.90	0.059	-1.711214	89.55275
Bi-MajorDep	45.69266	24.37525	1.87	0.063	-2.450703	93.83603
BehImpCtrl	31.76947	24.82216	1.28	0.202	-17.25657	80.79552
Asperger's	51.33194	27.37149	1.88	0.063	-2.72927	105.3931
EntryLOC_ord	3.344813	2.822711	1.18	0.238	-2.230301	8.919927
Age	1.00117	1.853962	0.54	0.590	-2.660575	4.662916
PreCAFAS	.2406103	.2111992	1.14	0.256	-.1765275	.6577481
_cons	177.4097	35.37317	5.02	0.000	107.5444	247.2749

Pilot provider #7 and primary diagnosis categories attention-deficit hyperactivity and related disorders, bipolar/major depressive and related disorders, and Asperger's disorders resulted in a statistically significant positive influence on days in treatment.

I performed several regression diagnostics to assess whether the assumptions of the model were met, such as normality, error independence, and homoscedasticity. First I produced a "residuals versus fitted plot" to assess several assumptions (Hamilton, 1992). The plot in Figure 3 indicates minor problems only, with one particular outlier noted.

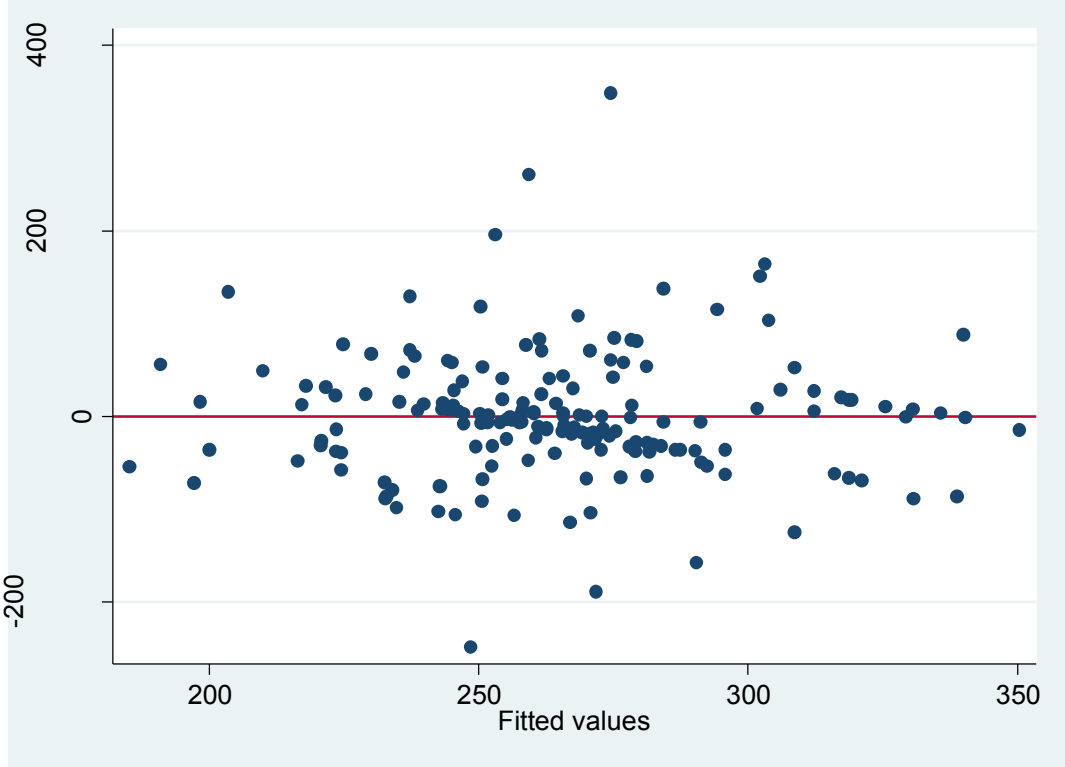

Figure 3. A residual versus fitted values. This plot indicates minor problems.

As highlighted earlier, when conducting multivariate analyses it is important to assess for multicollinearity. I assessed whether any of the observations were leveraging or influencing the model, to make sure that the regression coefficents were not biased. I computed and examined the "Variance Inflation Factor" (VIF) using STATA. As shown in Table 11, the values for VIF ranged from 1.10 to 3.67, with a mean of 1.85. All of the VIF's were within an acceptable range. As typical, the smaller tolerances only take place with the indicator values, but given the mean VIF this does not pose a significant problem.

Table 11

Variance Factor Inflation of Independent Variables (Second Model)

Variable	VIF	1/VIF
pilot		
2	1.82	0.548201
3	1.41	0.706803
4	1.46	0.685998
5	1.86	0.536552
6	1.35	0.741227
7	1.50	0.665624
2.Gender	1.26	0.793631
1.CYSinvolve	1.15	0.871967
new_Diagnosis		
Anxiety	1.70	0.589157
Adhd	3.67	0.272307
Bi-MajorDep	3.66	0.273242
BehImpCtrl	3.04	0.328943
Asperger's	2.34	0.427688
EntryLOC_ord	1.10	0.912178
Age	1.22	0.816415
PreCAFAS	1.12	0.893685
Mean VIF	1.85	

The second set of STATA output, also shown in Table 11, for the ordinal or continuous variables indicates VIF values ranging from 1.00 to 1.01 and a mean of 1.00, all of which are also below the critical level of 10 (Regression with STATA). The 1/vif are all >.6, which is ideal. Therefore, when the VIF's were run using the ordinal or continuous variables there was no evidence of multicollinearity.

The results of Cook's D, which is a general measure of influence (Regression with STATA), matched the graphical representation in Figure 4 indicating that cases 118, 159, 156, 170, 78, 168, 146, 158, 175, 169, 15, and 79 generated the most influence on the model, but the influence was minimal.

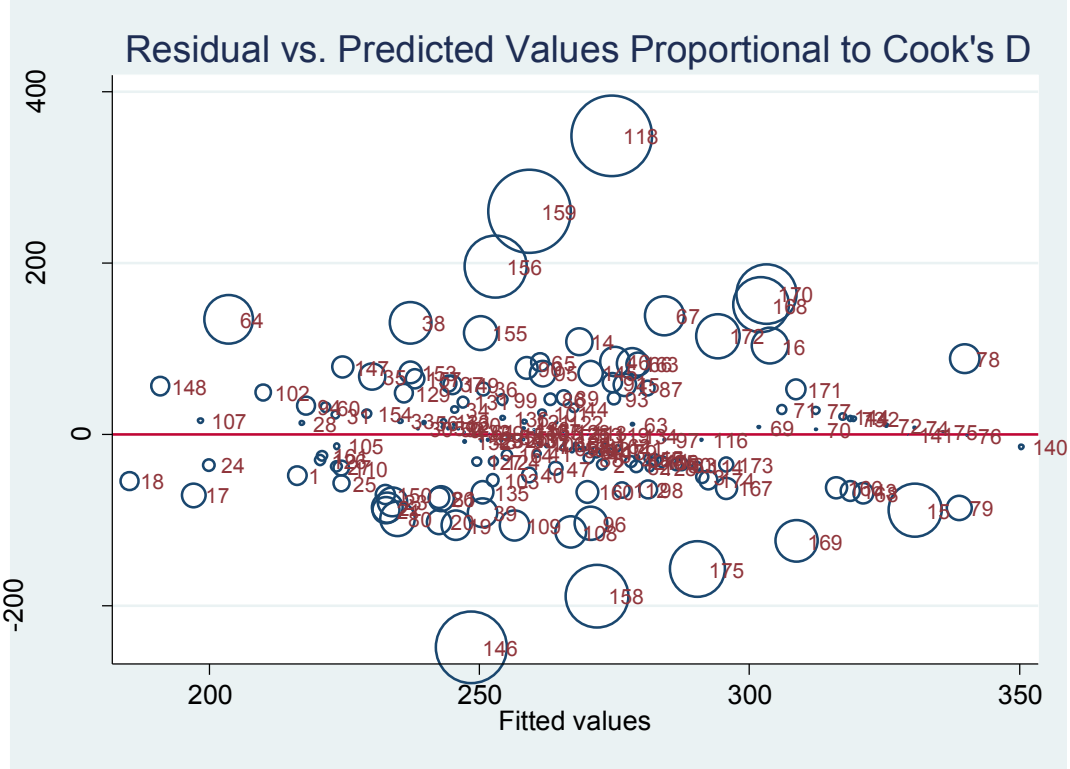

Figure 4. Residuals vs. predicted values proportional to Cook's D plot. This plot indicates that several cases are leveraging the model as a whole, and various cases are leveraging the individual coefficients on numerous variables.

Due to numerous cases leveraging the model as a whole, and various cases leveraging the individual coefficients on numerous variables as tested using DFBETAs, a robust regression was run.

Next I ran a robust regression analysis to determine if problematic data may not have impacted my model. As shown in Table 12, no concerns were identified from this analysis, thus strengthening the initial model.

Table 12

Second Multivariate Regression Analysis: Robust Regression

Number of obs	=	175	
F(16, 158)	=	3.58	
Prob > F	=	0.0000	
R-squared	=	.1832	

Daystreatment	Coef.	Std. Err.	T	P>|t|	[95% Conf.	Interval]
pilot						
2	-9.111088	12.74426	-0.71	0.476	-34.28217	16.05999
3	1.643755	16.76478	0.10	0.922	-31.46823	34.75574
4	9.942481	16.56119	0.60	0.549	-22.76739	42.65235
5	-16.47725	13.86443	-1.19	0.236	-43.86076	10.90627
6	-34.95045	18.67006	-1.87	0.063	-71.82555	1.924642
7	65.24657	16.81272	3.88	0.000	32.03989	98.45325
2.Gender	1.550492	9.266412	0.17	0.867	-16.75153	19.85251
1.CYSinvolve	-2.051831	12.04323	-0.17	0.865	-25.83832	21.73465
new_Diagnosis						
Anxiety	43.85874	22.8007	1.92	0.056	1.174742	88.89222
Adhd	47.59951	16.85337	2.82	0.005	14.31255	80.88648
Bi-MajorDep	56.6667	17.78091	3.19	0.002	21.54776	91.78563
BehImpCtrl	30.02274	18.10691	1.66	0.099	-5.740074	65.78556
Asperger's	48.56621	19.96656	2.43	0.016	9.130418	88.00201
EntryLOC_ord	2.231404	2.059071	1.08	0.280	-1.83545	6.298259
Age	-1.063132	1.352402	-0.79	0.433	-3.73425	1.607985
PreCAFAS	.1722875	.1540625	1.12	0.265	-.1320002	.4765752
_cons	205.5801	25.80352	7.97	0.000	154.6158	256.5444

Table 12 shows the results for a robust regression analysis. The overall model is statistically significant at the .10 level. The R-squared of .18 shows that around 18% of the variance in days in treatment is explained by the model. The robust regression analysis indicates that pilot provider #7 and primary diagnosis categories attention-deficit hyperactivity and related disorders and bipolar/major depressive and related disorders resulted in a statistically significant impact on days in treatment.

According to Rossi, Freeman, & Lipsey (2004) and Judd & Kenney (1981), when evaluating social programs and testing for significance, you should consider using the .10 level (90% confidence level) versus the .05 (95% confidence level). We do this because

the idea is to avoid a Type-II error and in social programs a lot of "noise" exists. If an effect exist choosing a higher alpha level assists in detecting it, versus claiming it is not there when in truth it exists. Following this method, Diagnosis is significant in the second multivariate regression analyses models for both the regression and the robust regression analyses and the second robust regression analysis.

Next I proceeded to test the marginal effects using Fisher's LSD (Least Significant Difference) test. This required that I first validate significance for the Joint effect (also known as the simple effect) of the pilot providers. If significance did exist, I then proceed to look at the individual differences between groups. I will specifically compare every group to every group to demonstrate the differences. Additionally, I will plot the groups using confidence intervals that reflect simple standard errors of the mean. Table 13 shows the STATA output comparing pilot groups.

Table 13

OLS Margins: Contrast of Predictive Margins for Second Model

	Df	chi2	P>chi2
pilot			
(2 vs 1)	1	0.08	0.7784
(3 vs 1)	1	0.16	0.6860
(4 vs 1)	1	0.14	0.7046
(5 vs 1)	1	1.46	0.2262
(6 vs 1)	1	1.74	0.1875
(7 vs 1)	1	6.90	0.0086
Joint	6	16.29	0.0123

The joint effect was significant and I therefore computed the margins as shown in Table 14, which highlights the mean differences (i.e., the contrasts) between the pilot groups based on the second OLS regression model.

Table 14

Pairwise Comparisons of Predictive Margins for Second Model

	Contrast	Delta-method Std. Err.	Unadjusted z	Unadjusted P>|z|	Unadjusted [95% Conf. Interval]	
pilot						
2 vs 1	-4.916428	17.47067	-0.28	0.778	-39.15832	29.32546
3 vs 1	9.29089	22.98227	0.40	0.686	-35.75354	54.33532
4 vs 1	-8.607003	22.70317	-0.38	0.705	-53.1044	35.8904
5 vs 1	-23.00066	19.00628	-1.21	0.226	-60.25227	14.25096
6 vs 1	33.73218	25.59416	1.32	0.188	-16.43146	83.89582
7 vs 1	60.56316	23.048	2.63	0.009	15.38991	105.7364
3 vs 2	14.20732	23.10446	0.61	0.539	-31.07659	59.49122
4 vs 2	-3.690575	21.91334	-0.17	0.866	-46.63994	39.25879
5 vs 2	-18.08423	18.32736	-0.99	0.324	-54.0052	17.83674
6 vs 2	38.6486	24.74363	1.56	0.118	-9.848028	87.14524
7 vs 2	65.47959	22.27741	2.94	0.003	21.81667	109.1425
4 vs 3	-17.89789	27.43387	-0.65	0.514	-71.6673	35.87151
5 vs 3	-32.29155	23.83948	-1.35	0.176	-79.01607	14.43298
6 vs 3	24.44129	29.70597	0.82	0.411	-33.78134	82.66392
7 vs 3	51.27227	27.26067	1.88	0.060	-2.157667	104.7022
5 vs 4	-14.39365	23.36249	-0.62	0.538	-60.18329	31.39598
6 vs 4	42.33918	28.5125	1.48	0.138	-13.54429	98.22265
7 vs 4	69.17016	26.59969	2.60	0.009	17.03572	121.3046
6 vs 5	56.73283	25.35299	2.24	0.025	7.041896	106.4238
7 vs 5	83.56382	23.47671	3.56	0.000	37.5503	129.5773
7 vs 6	26.83098	29.22395	0.92	0.359	-30.44691	84.10887

This analysis indicates that cases treated by pilot provider #7 received significantly more days in treatment than cases treated in pilot providers #1, #2, #3, #4, or #5. Additionally, cases treated by pilot provider #6 received significantly more days in treatment than pilot provider #5.

Finally, I calculated the mean days of treatment for each pilot provider. The STATA output for this analysis appears in Table 15. As Table 15 reflects pilot group #7 has an average length of days in treatment of 322 days, higher than any other pilot provider group.

Table 15

Table of Mean Days in Treatment for Second Model under Robust Regression

Predictive margins

Model VCE : OLS

Number of Observations: 175

Expression : Linear prediction, predict()

	Margin	Delta-method Std. Err.	z	P>|z|	[95% Conf.	Interval]
pilot						
1	262.3538	12.90128	20.34	0.000	237.0677	287.6398
2	257.4632	11.74895	21.91	0.000	234.4356	280.4907
3	271.5761	19.54147	13.90	0.000	233.2756	309.8767
4	253.7146	18.67881	13.58	0.000	217.1048	290.3244
5	239.6685	13.53148	17.71	0.000	213.1473	266.1898
6	295.6181	21.93505	13.48	0.000	252.6262	338.61
7	322.4423	19.01475	16.96	0.000	285.174	359.7105

I then graphed the predictive margins of the pilot groups with 95% confidence intervals.

The STATA output for this graph appears in Figure 5.

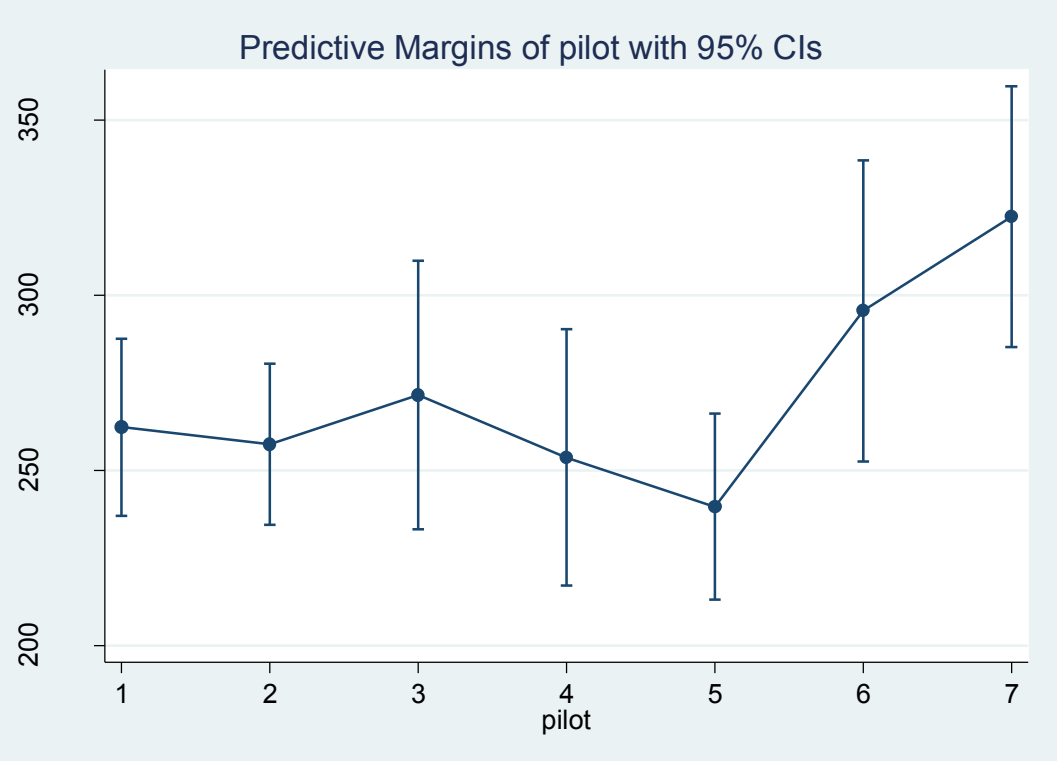

Figure 5. Graph of predictive margins for days in treatment for pilot providers.

The above graph shows the pilot providers means in a visual manner. Pilot provider #7 has a higher mean the the other pilot providers. However, the mean for pilot provider #7 is not significantly higher than the mean treatment days for pilot provider #6. This could be reflective of pilot provider groups either having unique populations of children and adolescents, which could lead to longer stays in treatment. Also, these differences could be reflective of judgement of decision makers in the pilot provider organization resulting in variations in the length of treatment days. More research in this area, in the form of a qualitative investigation in the future could help in this area.

Next I proceeded to continue to test the marginal effects using Fisher's LSD (Least Significant Difference) test. I first validated the significance for Joint effect (also known as the simple effect) for the primary diagnosis under this model. Table 16 shows the STATA output for this analysis.

Table 16

OLS Margins: Contrast of Predictive Margins for Primary Diagnosis Under Second Regression Model

	df	chi2	P>chi2
new_Diagnosis			
(2 vs 1)	1	1.08	0.2998
(3 vs 1)	1	3.61	0.0573
(4 vs 1)	1	3.51	0.0609
(5 vs 1)	1	1.64	0.2006
(7 vs 1)	1	3.52	0.0607
Joint	5	4.95	0.4225

The STATA output in Table 16 shows that the Joint effect is not significant for the primary diagnosis groups; therefore, comparison of the groups is not possible. Essentially, there is no significant difference between the mean of treatment days for the primary diagnosis categories when controlling for other variables under this model.

I first validated the significance for Joint effect (also known as the simple effect) for the pilot provider under the robust regression model. Table 17 shows the STATA output.

Table 17

Robust Regression Margins: Contrast of Predictive Margins for Pilot Providers Second Regression Model

	df	chi2	P>chi2
pilot			
(2 vs 1)	1	0.51	0.4747
(3 vs 1)	1	0.01	0.9219
(4 vs 1)	1	0.36	0.5483
(5 vs 1)	1	1.41	0.2347
(6 vs 1)	1	3.50	0.0612
(7 vs 1)	1	15.06	0.0001
Joint	6	30.80	0.0000

As was the case under the OLS regression model, the Joint effect for the pilot providers is significant, therefore group comparison can occur because there is a difference between the pilot providers and the mean treatment days when controlling for other variables.

Because of the significance, I next conducted pairwise comparisons of predictive margins. The STATA output appears in Table 18.

Table 18

Pairwise Comparison of Predictive Margins for Second Model

	Contrast	Delta-method Std. Err.	Unadjusted z	P>|z|	Unadjusted [95% Conf. Interval]	
pilot						
2 vs 1	-9.111088	12.74426	-0.71	0.475	-34.08937	15.8672
3 vs 1	1.643755	16.76478	0.10	0.922	-31.21461	34.50212
4 vs 1	9.942481	16.56119	0.60	0.548	-22.51685	42.40181
5 vs 1	-16.47725	13.86443	-1.19	0.235	-43.65102	10.69653
6 vs 1	-34.95045	18.67006	-1.87	0.061	-71.54311	1.642199
7 vs 1	65.24657	16.81272	3.88	0.000	32.29423	98.1989
3 vs 2	10.75484	16.85391	0.64	0.523	-22.27821	43.7879
4 vs 2	19.05357	15.98503	1.19	0.233	-12.27652	50.38366
5 vs 2	-7.36616	13.36918	-0.55	0.582	-33.56927	18.83695
6 vs 2	-25.83937	18.04963	-1.43	0.152	-61.21599	9.537262
7 vs 2	74.35765	16.25061	4.58	0.000	42.50705	106.2083
4 vs 3	8.298725	20.01207	0.41	0.678	-30.92421	47.52166
5 vs 3	-18.121	17.39008	-1.04	0.297	-52.20494	15.96294
6 vs 3	-36.59421	21.66949	-1.69	0.091	-79.06562	5.877201
7 vs 3	63.60281	19.88572	3.20	0.001	24.62751	102.5781
5 vs 4	-26.41973	17.04213	-1.55	0.121	-59.82169	6.982235
6 vs 4	-44.89293	20.79889	-2.16	0.031	-85.65801	-4.127863
7 vs 4	55.30409	19.40356	2.85	0.004	17.2738	93.33437
6 vs 5	-18.47321	18.49413	-1.00	0.318	-54.72104	17.77463
7 vs 5	81.72381	17.12546	4.77	0.000	48.15854	115.2891
7 vs 6	100.197	21.31787	4.70	0.000	58.41477	141.9793

This analysis indicates that cases treated by pilot provider #6 received significantly less days in treatment than cases treated in pilot providers #1, # 3, #4, and #7, while pilot provider #7 has significantly more treatment days than pilot providers #1, #2, #3, #4, #5 and #6 irrespective of the other variables. The robust regression results more accurately reflect the results, since the differences between the OLS and regression results are due to the leveraging cases, which the robust regression addresses. Both OLS and robust regression do indicate variation among pilot groups relative to days in treatment. As a result, further inquiry in this area through qualitative investigation, to determine the differences between the pilot providers needs to occur in future research.

Finally, I calculated the mean days of treatment for each pilot provider under the robust regression model. The STATA output for this analysis appears in Table 19. Again,

the results reflect pilot provider #7 having the highest days in treatment with an average of 322 days.

Table 19

Table of Mean Days in Treatment for Pilot Provider under Robust Regression Model

Predictive margins
Number of Observations: 175
Expression : Fitted values, predict()

	Margin	Delta-method Std. Err.	z	P>|z|	[95% Conf.	Interval]
pilot						
1	256.3687	9.383617	27.32	0.000	237.9771	274.7602
2	247.2576	8.54487	28.94	0.000	230.5099	264.0052
3	258.0124	14.21289	18.15	0.000	230.1556	285.8692
4	266.3111	13.58596	19.60	0.000	239.6831	292.9391
5	239.8914	9.806496	24.46	0.000	220.671	259.1118
6	221.4182	15.91453	13.91	0.000	190.2263	252.6101
7	321.6152	13.78289	23.33	0.000	294.6012	348.6292

Figure 6 is the graph below, which is a visualization of the variations among the pilot provider means based on the robust regression model.

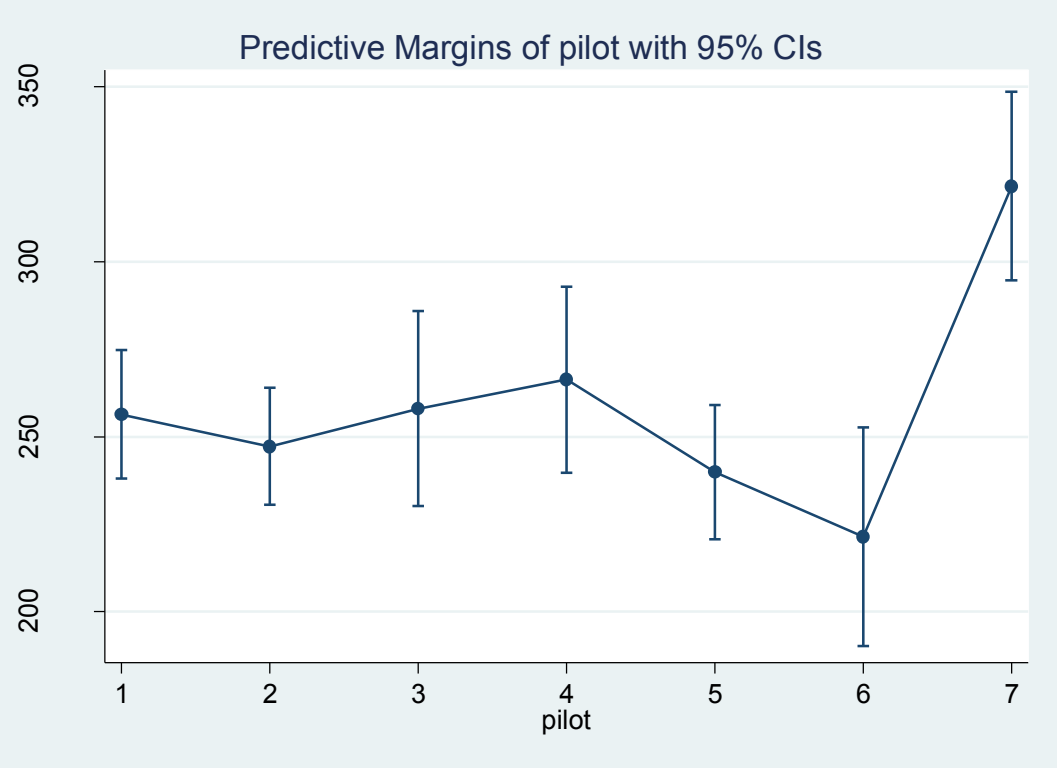

Figure 6. Predictive margins graph of pilot providers.

Next I validated the significance for Joint effect (also known as the simple effect) for the primary diagnosis categories using this robust regression model. Table 20 shows the STATA output.

Table 20

Robust Regression Margins: Contrast of Predictive Margins for Primary Diagnosis

	df	chi2	P>chi2
new_Diagnosis			
(2 vs 1)	1	3.70	0.0544
(3 vs 1)	1	7.98	0.0047
(4 vs 1)	1	10.16	0.0014
(5 vs 1)	1	2.75	0.0973
(7 vs 1)	1	5.92	0.0150
Joint	5	12.65	0.0269

The STATA output in Table 20 shows that the Joint effect for the primary diagnosis is significant, therefore comparison between the groups can occur because there is a difference between the primary diagnosis and the days in treatment category when controlling for other variables.

Because of the significance, I next conducted pairwise comparisons of predictive margins under this robust regression model. The STATA output appears in Table 21. I did this to compare every pilot provider to every pilot provider to more easily pick out differences in days in treatment.

Table 21

Pairwise Comparisons of Predictive Margins for Treatment Days by Primary Diagnosis

	Contrast	Delta-method Std. Err.	Unadjusted z	Unadjusted P>|z|	Unadjusted [95% Conf. Interval]	
new_Diagnosis						
2 vs 1	43.85874	22.8007	1.92	0.054	-.8298109	88.54729
3 vs 1	47.59951	16.85337	2.82	0.005	14.56751	80.63152
4 vs 1	56.6667	17.78091	3.19	0.001	21.81676	91.51664
5 vs 1	30.02274	18.10691	1.66	0.097	-5.466151	65.51164
7 vs 1	48.56621	19.96656	2.43	0.015	9.432474	87.69995
3 vs 2	3.740773	19.18511	0.19	0.845	-33.86135	41.34289
4 vs 2	12.80796	19.6856	0.65	0.515	-25.77511	51.39102
5 vs 2	-13.836	20.17786	-0.69	0.493	-53.38388	25.71188
7 vs 2	4.707472	21.55428	0.22	0.827	-37.53815	46.95309
4 vs 3	9.067183	12.28224	0.74	0.460	-15.00557	33.13994
5 vs 3	-17.57677	12.51822	-1.40	0.160	-42.11204	6.958495
7 vs 3	.9666995	15.33958	0.06	0.950	-29.09833	31.03173
5 vs 4	-26.64395	13.68444	-1.95	0.052	-53.46496	.1770553
7 vs 4	-8.100483	16.71255	-0.48	0.628	-40.85647	24.65551
7 vs 5	18.54347	16.89974	1.10	0.273	-14.5794	51.66634

This analysis indicates that primary diagnostic categories anxiety and related disorders, attention-deficit hyperactivity and related disorders, bipolar/major depressive and related disorders, disruptive behavior/impulse control and related disorders, and Asperger's/autism spectrum disorders have significantly higher treatment days than primary diagnostic category adjustment and related disorders irrespective of the other variables. Similarly, primary diagnostic category bipolar/major depressive and related disorders has higher treatment days than primary diagnostic category disruptive behavior/impulse control and related disorders irrespective of the other variables.

Finally, I calculated the mean days of treatment for each primary diagnostic category under the robust regression model. The STATA output for this analysis appears in Table 22. This indicates that primary diagnostic category #4, the bipolar/major depression category, has the highest length of days in treatment with an average of 270 days.

Table 22

Table of Mean Days in Treatment for Primary Diagnosis under Robust Regression for the Second Regression Model

	Margin	Delta-method Std. Err.	z	P>|z|	[95% Conf.	Interval]
new_Diagnosis						
AdjDis	213.1924	14.99367	14.22	0.000	183.8054	242.5795
Anxiety	257.0511	17.40924	14.77	0.000	222.9297	291.1726
Adhd	260.7919	7.661225	34.04	0.000	245.7762	275.8076
Bi-MajorDep	269.8591	8.981893	30.04	0.000	252.2549	287.4633
BehImpCtrl	243.2151	9.902608	24.56	0.000	223.8064	262.6239
Asperger's	261.7586	13.33334	19.63	0.000	235.6258	287.8915

Figure 7 below is a graph that serves as a visualization of the variations in treatment days by diagnostic category based on the robust regression model.

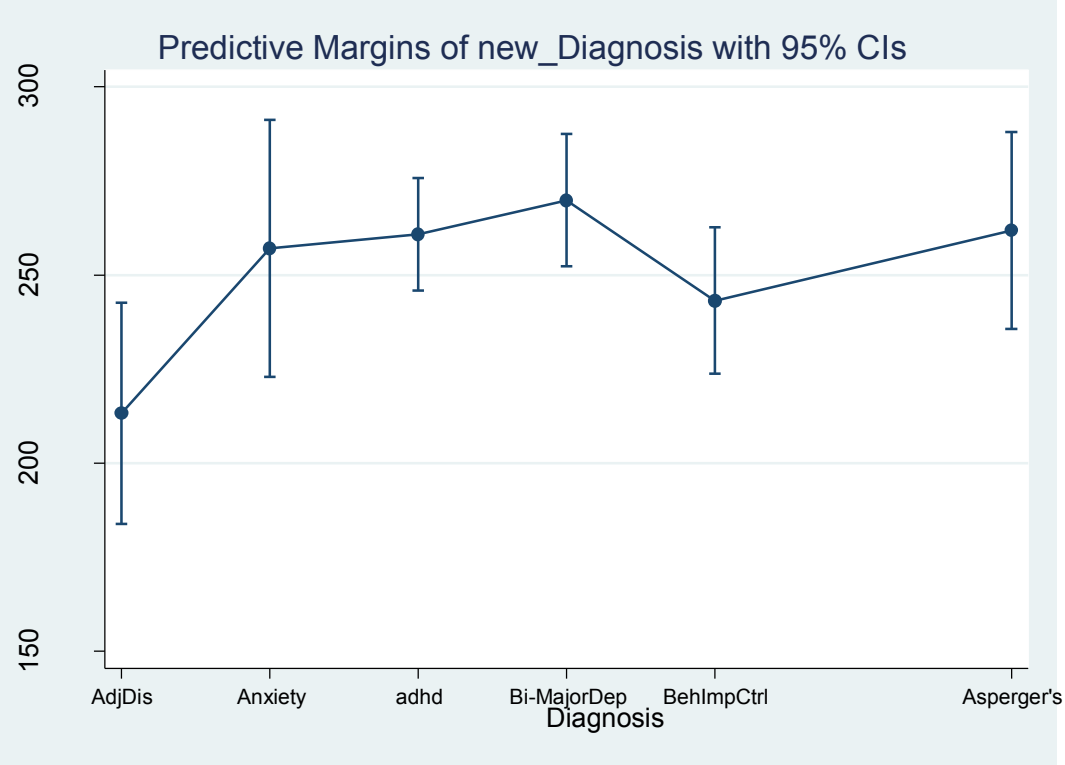

Figure 7. Graph of variations in treatment days by diagnostic category.

When addressing the outliers with the robust regression model, there is indication of differences in treatment days by primary diagnosis category. As a result, there is merit

for further inquiry in this area through qualitative investigation in future research to explore these differences.

Final Multivariate Regression Analysis

In the final regression model, I used Ordinary Least Squares regression and Regression with Robust Standard Errors and regressed exit level of care on the independent and control variables. First, I ran this regression model including ChangeCAFAS Scores, along with all other independent and control variables. Second, I ran this final regression model including PreCAFAS Scores, along with all other independent and control variables. Finally, I ran this final regression model including PostCAFAS Scores, along with all other independent and control variables.

Final multivariate regression with ChangeCAFAS scores. Table 23 shows the actual STATA output for the initial final multivariate regression analysis, including ChangeCAFAS scores. It is apparent from the p-value of the F-Test in the STATA output that the model is statistically significant beyond the .05 level. The adjusted R-squared output is 0.1389, which indicates almost 14% of the variability in exit level of care is mathematically represented.

Table 23

Final Multivariate Regression Analysis for Exit Level of Care- Including ChangeCAFAS Scores

Source	SS	df	MS
Model	34.8491844	17	2.04995202
Residual	120.004617	153	.784343901
Total	154.853801	170	.910904713

Number of obs	=	171
F(17, 153)	=	2.61
Prob > F	=	0.0010
R-squared	=	0.2250
Adj R-squared	=	0.1389
Root MSE	=	.88563

ExitLOC_ord	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pilot						
2	-.1900003	.2094806	-0.91	0.366	-.6038481	.2238474
3	-.1456424	.3035077	-0.48	0.632	-.7452492	.4539644
4	-.4838833	.2718891	-1.78	0.077	-1.021025	.0532581
5	.4324873	.2309544	1.87	0.063	-.023784	.8887585
6	-.093388	.3096095	-0.30	0.763	-.7050494	.5182734
7	-.3543771	.2847378	-1.24	0.215	-.9169023	.2081482
2.Gender	-.080522	.1528687	-0.53	0.599	-.3825279	.2214839
1.CYSinvolve	-.0860276	.204515	-0.42	0.675	-.4900654	.3180101
new_Diagnosis						
Anxiety	-.2951592	.3776568	-0.78	0.436	-1.041254	.4509358
Adhd	-.2752717	.2784874	-0.99	0.324	-.8254487	.2749054
BiMajorDep	.0637686	.2927164	0.22	0.828	-.5145192	.6420564
BehImpCtrl	-.1888202	.2989681	-0.63	0.529	-.7794586	.4018181
Asperger's	-.6117293	.3330559	-1.84	0.068	-1.269711	.0462526
EntryLOC_ord	.0513789	.0342004	1.50	0.135	-.0161871	.1189448
Age	-.0303996	.0225236	-1.35	0.179	-.074897	.0140977
Daystreatment	.0039919	.0009575	4.17	0.000	.0021004	.0058834
chng_postpre	.0058268	.0023784	2.45	0.015	.001128	.0105255
_cons	2.642126	.4431019	5.96	0.000	1.766738	3.517513

As is reflected in the STATA output in Table 23, days of treatment and ChangeCAFAS score resulted in statistically significant positive influence on exit level of care. As days of treatment increase, exit level of care increases irrespective of other variables. Similarly, as the ChangeCAFAS score increases, exit level of care, also increases controlling for other variables.

I performed several regression diagnostics to assess whether the assumptions of the model were met, such as normality, error independence, and homoscedasticity. First I produced a "residuals versus fitted plot" to assess several assumptions (Hamilton, 1992).

The plot in Figure 8 indicates heteroscedasticity in the model.minor problems only, with one particular outlier noted.

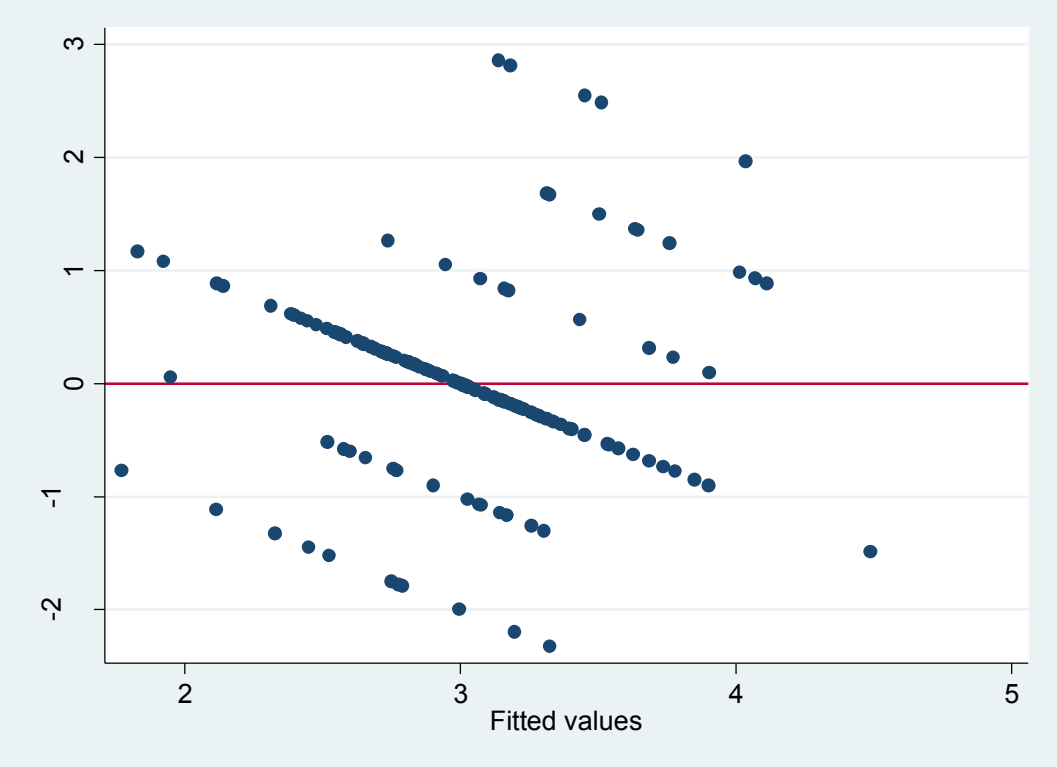

Figure 8. A residuals versus fitted values plot. The plot depicts lack of normal i.d.d. errors.

To address the issue of heteroskedasticity and thereby obtain a "more credible estimate of standard errors and confidence intervals" (Hamilton, 2006, p.258), the Huber and White, sandwich estimator of variance was used in the next regression model. Regression with robust standard errors is a less conservative method of estimating sample to sample variation. By using this method we cannot assume that the estimates reflect the true parameters of the population. Using this approach assumes if the data collection were repeated on other children sampled the same way as the original sample and the model was refitted, 90% of the time, we would expect the estimated coefficient of exit level of care to be in the same range. Robust standard errors do not require normal i.d.d. errors

and are appropriate when conducting a regression in the presence of heteroskedastic errors (STATA Manual: (U) 2006, p. 301).

The STATA output for this linear regression appears in Table 24. It is apparent from the p-value of the F-test in this STATA output that the model is statistically significant beyond the .05 level. The adjusted R-squared output is 0.2250, which indicates that almost 23% of the variability in exit level of care in this model is mathematically represented.

Table 24

Linear Regression Analysis: Regression with Robust Standard Errors Exit Level of Care-Including ChangeCAFAS Scores

Number of obs	= 171
F(17, 153)	= 2.15
Prob > F	= 0.0076
R-squared	= 0.2250
Root MSE	= .88563

ExitLOC_ord	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
pilot						
2	-.1900003	.2102481	-0.90	0.368	-.6053644	.2253638
3	-.1456424	.2226342	-0.65	0.514	-.5854764	.2941917
4	-.4838833	.255243	-1.90	0.060	-.9881388	.0203722
5	.4324873	.2386662	1.81	0.072	-.0390195	.903994
6	-.093388	.2401059	-0.39	0.698	-.5677389	.3809629
7	-.3543771	.2731691	-1.30	0.196	-.8940472	.1852931
2.Gender	-.080522	.1408241	-0.57	0.568	-.3587328	.1976888
1.CYSinvolve	-.0860276	.2029185	-0.42	0.672	-.4869115	.3148562
new_Diagnosis						
Anxiety	-.2951592	.2289687	-1.29	0.199	-.7475075	.157189
Adhd	-.2752717	.2589706	-1.06	0.289	-.7868914	.2363481
Bi-MajorDep	.0637686	.2480776	0.26	0.797	-.4263312	.5538684
BehImpCtrl	-.1888202	.2910565	-0.65	0.517	-.7638285	.3861881
Asperger's	-.6117293	.3310643	-1.85	0.067	-1.265777	.042318
EntryLOC_ord	.0513789	.0345857	1.49	0.139	-.0169483	.1197061
Age	-.0303996	.0225027	-1.35	0.179	-.0748558	.0140565
Daystreatment	.0039919	.0011693	3.41	0.001	.0016819	.0063019
chng_postpre	.0058268	.0029015	2.01	0.046	.0000947	.0115589
_cons	2.642126	.4804494	5.50	0.000	1.692954	3.591297

In this robust standard errors regression model, as days in treatment increase, exit level of care increases irrespective of the other variables. Similarly, as the ChangeCAFAS score increases, exit level of care increases controlling for other variables.

Next I addressed multicollinearity in the final regression analysis. Because some diagnostics cannot be run using a model with robust standard errors, I used the OLS model and calculated and examined the "Variance Inflation Factor" (VIF) using STATA. As shown in Table 25, the values for VIF ranged from 1.10 to 1.22, with a mean VIF of 1.80. All VIF's were within an acceptable range (Hamilton, 1992).

Table 25

Variance Inflation Factor Results of Independent Variables of Final Regression Model-Including ChangeCAFAS Scores

Variable	VIF	1/VIF
pilot		
2	1.80	0.555312
3	1.31	0.763106
4	1.44	0.693026
5	1.89	0.528254
6	1.36	0.733324
7	1.58	0.631892
2.Gender	1.24	0.805189
1.CYSinvolve	1.14	0.878536
new_Diagnosis		
Anxiety	1.71	0.584093
Adhd	3.62	0.276525
Bi-MajorDep	3.62	0.276074
BehImpCtrl	2.82	0.354742
Asperger's	2.39	0.418669
EntryLOC_ord	1.10	0.905403
Age	1.22	0.817041
Daystreatment	1.19	0.837322
chng_postpre	1.11	0.896977
Mean VIF	1.80	

Next, I assessed whether any of the cases were leveraging or influencing the model to make sure that the regression coefficients were not biased.Figure 9 reflects the plot for "leverage versus normal residual squared plot", which reflects cases that may be "leveraging" or "influencing" the model.

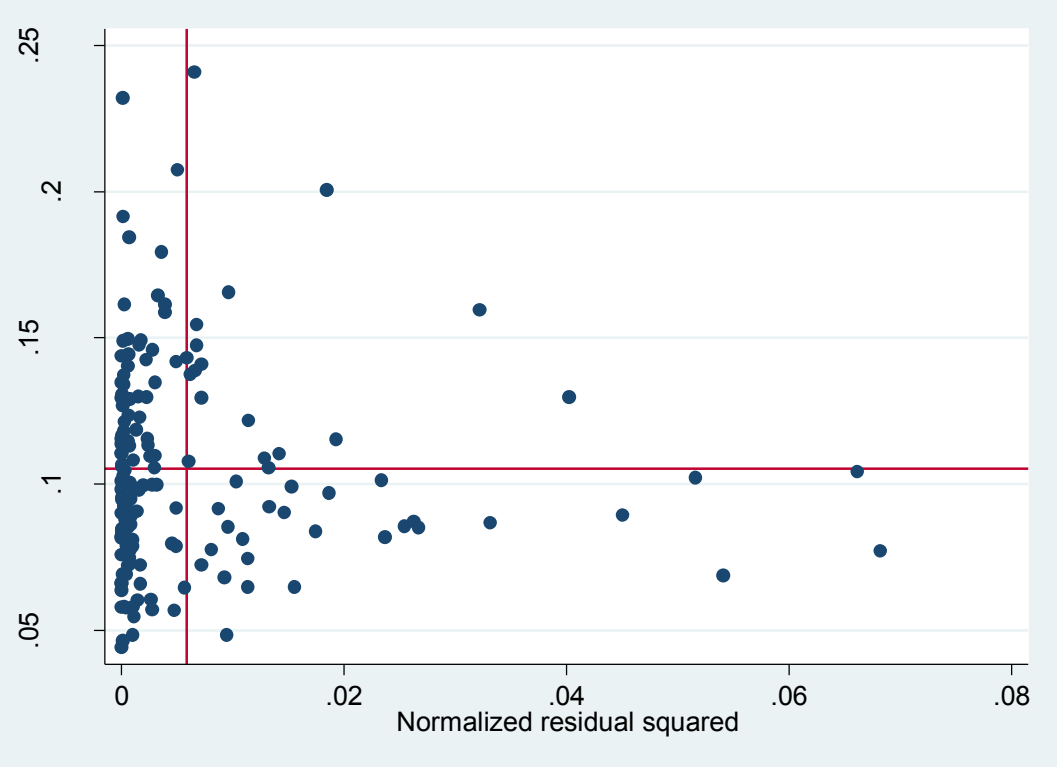

Figure 9. A leverage versus residuals squared plot.

Next I proceeded to test the marginal effects using Fisher's LSD (Least Significant Difference) test. This required that I first validate significance for Joint effect (also known as the simple effect) for the pilot providers. Table 26 shows the STATA output for the pilot providers under this model.

Table 26

OLS Margins: Contrast of Predictive Margins for Pilot Providers

	df	chi2	P>chi2
pilot			
(2 vs 1)	1	0.82	0.3662
(3 vs 1)	1	0.43	0.5130
(4 vs 1)	1	3.59	0.0580
(5 vs 1)	1	3.28	0.0700
(6 vs 1)	1	0.15	0.6973
(7 vs 1)	1	1.68	0.1945
Joint	6	12.51	0.0516

The STATA output shows the Joint effect is significant; therefore, comparison between the pilot provider groups can occur because there is a difference in the mean of the exit level of care scores between the pilot providers. Therefore, I proceeded to compare every pilot provider to every pilot provider to more easily pick out the differences. The margins in Table 27 show the mean differences (the contrasts) between the pilot groups based on the OLS model concerning exit level of care.

Table 27

Pairwise Comparison of Predictive Margins for Change CAFAS Scores by Pilot Providers

	Contrast	Delta-method Std. Err.	Unadjusted z	P>|z|	Unadjusted [95% Conf.	Interval]
pilot						
2 vs 1	-.1900003	.2102481	-0.90	0.366	-.602079	.2220784
3 vs 1	-.1456424	.2226342	-0.65	0.513	-.5819975	.2907127
4 vs 1	-.4838833	.255243	-1.90	0.058	-.9841503	.0163837
5 vs 1	.4324873	.2386662	1.81	0.070	-.03529	.9002645
6 vs 1	-.093388	.2401059	-0.39	0.697	-.5639869	.3772109
7 vs 1	-.3543771	.2731691	-1.30	0.195	-.8897786	.1810244
3 vs 2	.044358	.2354146	0.19	0.851	-.4170462	.5057621
4 vs 2	-.293883	.2530115	-1.16	0.245	-.7897763	.2020104
5 vs 2	.6224876	.2521948	2.47	0.014	.1281948	1.11678
6 vs 2	.0966123	.2350625	0.41	0.681	-.3641016	.5573263
7 vs 2	-.1643767	.2932111	-0.56	0.575	-.7390598	.4103064
4 vs 3	-.3382409	.2809858	-1.20	0.229	-.8889629	.212481
5 vs 3	.5781296	.246108	2.35	0.019	.0957668	1.060493
6 vs 3	.0522544	.253999	0.21	0.837	-.4455744	.5500832
7 vs 3	-.2087347	.2912468	-0.72	0.474	-.7795679	.3620985
5 vs 4	.9163706	.2915853	3.14	0.002	.3448739	1.487867
6 vs 4	.3904953	.2707228	1.44	0.149	-.1401116	.9211022
7 vs 4	.1295062	.3024229	0.43	0.668	-.4632317	.7222442
6 vs 5	-.5258752	.267407	-1.97	0.049	-1.049983	-.0017671
7 vs 5	-.7868643	.3049621	-2.58	0.010	-1.384579	-.1891497
7 vs 6	-.2609891	.3049085	-0.86	0.392	-.8585988	.3366207

This analysis indicates that cases treated by pilot provider #4 had a significantly lower exit level of care than pilot provider #1. Cases treated by pilot provider #5 had a significantly higher exit level of care than cases treated by pilot provider #1, #2, #3, and #4. Cases treated by pilot provider #6 had significantly lower exit level of care than pilot provider #5. Finally, pilot provider #7 also had significantly lower exit level of care than pilot provider #5.

Next, I calculated the mean exit level of care for each pilot provider. The STATA output for this analysis appears in Table 28. As Table 28 reflects, pilot group #5 has an average exit level of care of 3.52, higher than any other pilot provider group.

Table 28

Table of Means ChangeCAFAS Scores for Pilot Providers

	Margin	Delta-method Std. Err.	z	P>|z|	[95% Conf.	Interval]
pilot						
1	3.088607	.1481916	20.84	0.000	2.798157	3.379057
2	2.898606	.1528498	18.96	0.000	2.599026	3.198186
3	2.942964	.1666628	17.66	0.000	2.616311	3.269617
4	2.604723	.2088372	12.47	0.000	2.19541	3.014037
5	3.521094	.1890291	18.63	0.000	3.150604	3.891584
6	2.995219	.1804746	16.60	0.000	2.641495	3.348942
7	2.73423	.2330182	11.73	0.000	2.277522	3.190937

Figure 10 is a graphic visualization of the mean differences among pilot provider groups based on this regression model reflective of 95% confidence intervals.

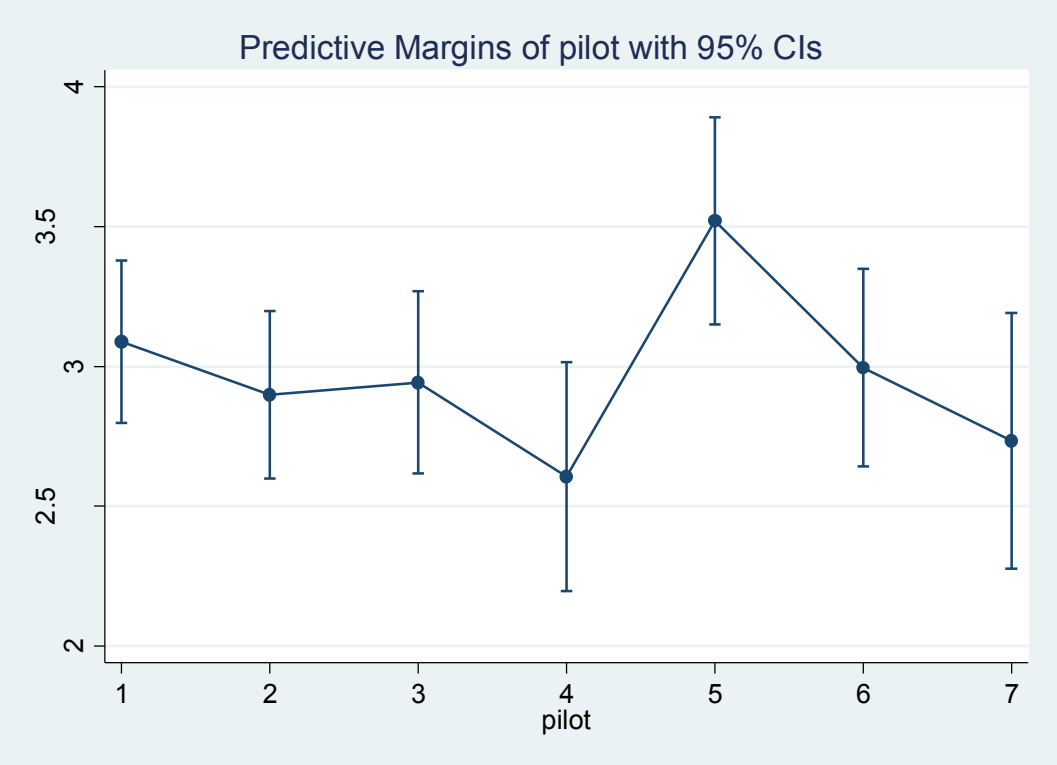

Figure 10. Graph of predictive margins for exit level of care for pilot providers.

The above graph shows the pilot provider means in a visual manner. Pilot provider # 5 has a higher mean exit level of care compared to the other pilot providers.

I next proceed to continue to test the marginal effects among diagnostic categories using the Fisher's LSD (Least Significant Difference) test. I first validate the significance for Joint effect (also known as the simple effect) for the primary diagnosis under this model.

Table 29

OLS Margins: Contrast of Predictive Margins for Primary Diagnosis

	df	chi2	P>chi2
new_Diagnosis			
(2 vs 1)	1	.66	0.1974
(3 vs 1)	1	1.13	0.2878
(4 vs 1)	1	0.07	0.7971
(5 vs 1)	1	0.42	0.5165
(7 vs 1)	1	3.41	0.0646
Joint	5	8.30	0.1406

The STATA output in Table 29 shows that the Joint effect is not significant for the primary diagnosis groups; therefore, comparison of the groups is not possible. Essentially, there is no significant difference between the mean of the exit level of care when controlling for other variables between the pilot providers.

Final multivariate regression analysis including PreCAFAS scores**.** Second, I performed the same multivariate regression analysis using exit level of care as the dependent variable and including PreCAFAS scores in the model in place of the ChangeCAFAS score variable that was included in the first regression model for this dependent variable. Table 30 shows results for this model. The overall model is statistically significant at the .05 level, with 12% of the variance being explained..

Table 30

Final Multivariate Regression Analysis for Exit Level of Care- Including PreCAFAS Scores

Source	SS	df	MS
Model	32.5351614	17	1.91383302
Residual	122.31864	153	.799468234
Total	154.853801	170	.910904713

Number of obs	=	171
F(17, 153)	=	2.39
Prob > F	=	0.0026
R-squared	=	0.2101
Adj R-squared	=	0.1223
Root MSE	=	.89413

ExitLOC_ord	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pilot						
2	-.1411326	.2121355	-0.67	0.507	-.5602253	.2779602
3	-.1144957	.305957	-0.37	0.709	-.7189414	.48995
4	-.4747087	.2758238	-1.72	0.087	-1.019623	.070206
5	.4759034	.2320659	2.05	0.042	.0174364	.9343705
6	-.1128642	.3127217	-0.36	0.719	-.7306742	.5049458
7	-.4196672	.285919	-1.47	0.144	-.9845259	.1451916
2.Gender	-.0817323	.1546504	-0.53	0.598	-.3872581	.2237934
1.CYSinvolve	-.0499693	.2055834	-0.24	0.808	-.4561178	.3561793
new_Diagnosis						
Anxiety	-.3334306	.3807666	-0.88	0.383	-1.085669	.4188082
Adhd	-.2384404	.2842914	-0.84	0.403	-.8000839	.323203
Bi-MajorDep	.0749306	.2994225	0.25	0.803	-.5166056	.6664667
BehImpCtrl	-.1731068	.3047317	-0.57	0.571	-.7751317	.4289181
Asperger's	-.6405336	.3359146	-1.91	0.058	-1.304163	.023096
EntryLOC_ord	.0418321	.0346152	1.21	0.229	-.0265533	.1102175
Age	-.029471	.0227351	-1.30	0.197	-.0743862	.0154443
Daystreatment	.0043477	.0009683	4.49	0.000	.0024347	.0062607
PreCAFAS	-.0045243	.0026148	-1.73	0.086	-.00969	.0006415
_cons	2.714739	.464805	5.84	0.000	1.796474	3.633003

In this model, as treatment days increase there is an increase in exit level of care, irrespective of the other variables. Similarly, as the PreCAFAS score increases exit level of care decreases, controlling for other variables.

I performed several regression diagnostics to assess whether the assumptions of the model were met, such as normality, error independence, and homoscedasticity. First I produced a "residuals versus fitted plot" to assess several assumptions (Hamilton, 1992). I completed and examined the "Variance Inflation Factor" (VIF) using STATA. As

shown in Table 31, the values for VIF ranged from 1.11 to 1.22, with a mean of 1.81. All of the VIF's were within an acceptable range (Hamilton, 1992).,

Table 31

Variance Inflation Factor Results Days in Treatment- Including PreCAFAS Scores

Variable	VIF	1/VIF
pilot		
2	1.81	0.551941
3	1.31	0.765417
4	1.46	0.686380
5	1.88	0.533295
6	1.36	0.732661
7	1.57	0.638766
2.Gender	1.25	0.801914
1.CYSinvolve	1.13	0.886193
new_Diagnosis		
Anxiety	1.71	0.585671
Adhd	3.70	0.270465
Bi-MajorDep	3.72	0.268934
BehImpCtrl	2.87	0.348034
Asperger's	2.38	0.419510
EntryLOC_ord	1.11	0.900878
Age	1.22	0.817369
Daystreatment	1.20	0.834426
PreCAFAS	1.13	0.883573
Mean VIF	1.81	

I then generated a residuals versus fitted plot to check for heteroskedasticity and normal i.d.d. pattern among residuals. The STATA output for this plot appears in Figure 11 and demonstrates evidence of heteroskedasticity. This means that errors in the data are not normal independent identically distributed.

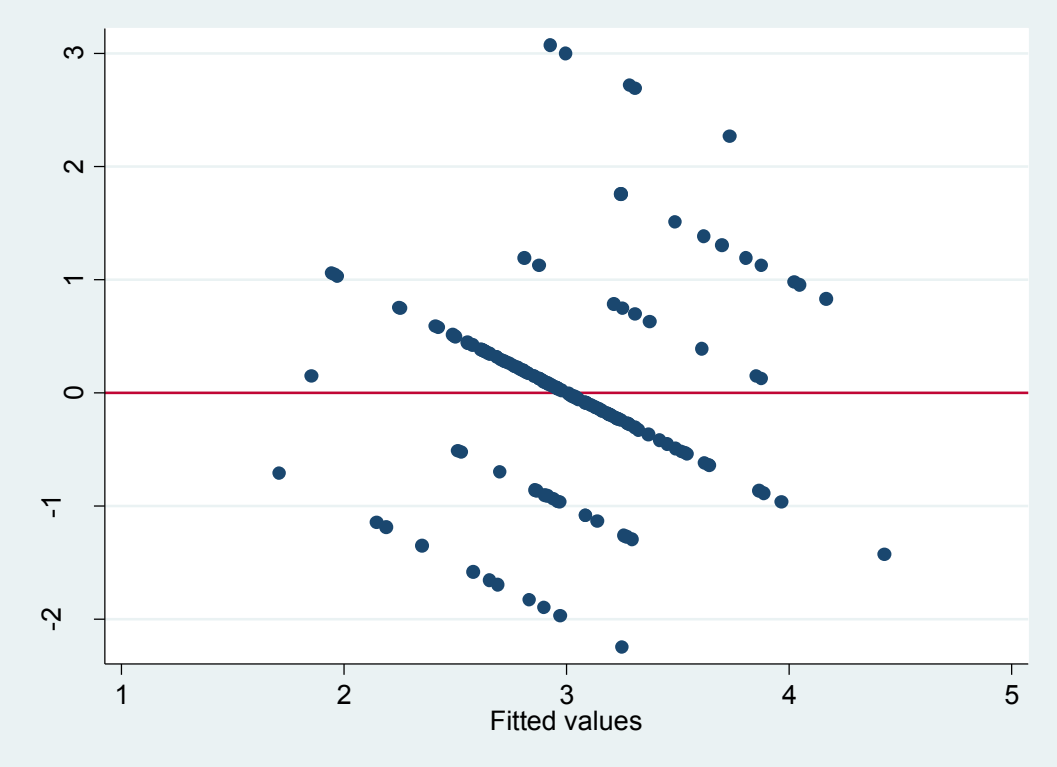

Figure 11. A residuals versus fitted plot.

I assessed whether any of the observations were leveraging or influencing the model to make sure that the regression coefficients were not biased. The plot shown in Figure 11 indicates minor problems only and a "reatively good fit".

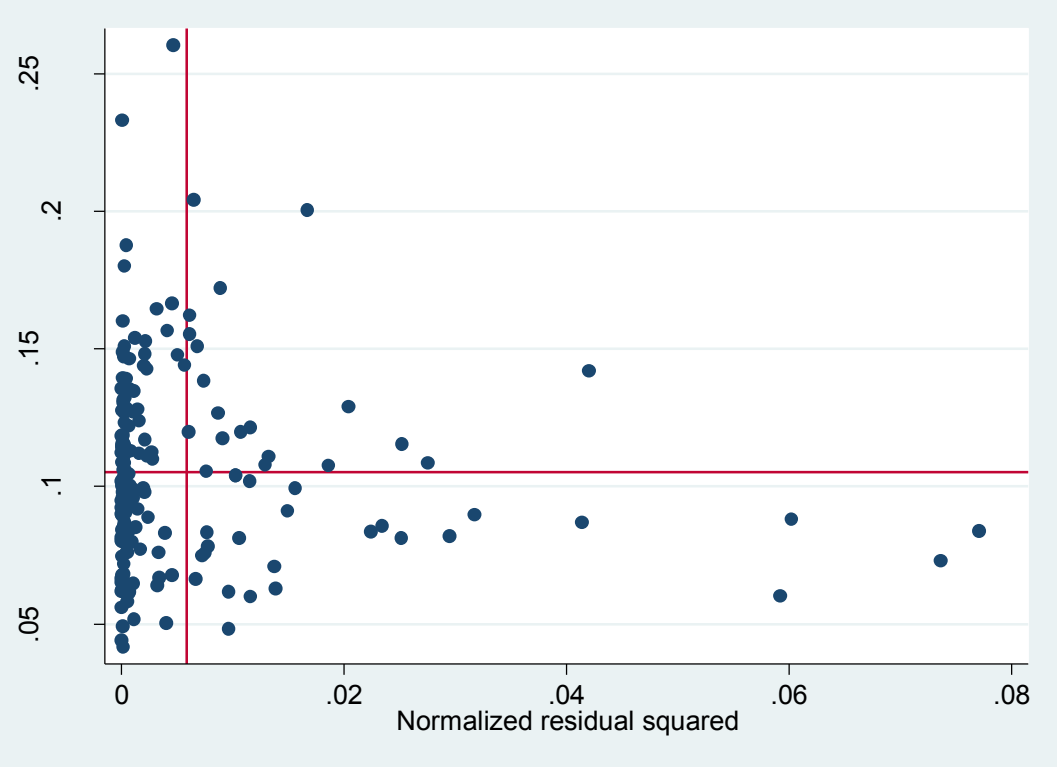

Figure 12. A leverage versus normalized residual squared plot. This plot identifies no observations that have both poor fit and high leverage.

To address the issues of heteroskedasticity and thereby obtain a "more credible estimate of standard errors and confidence intervals" (Hamilton, 2006, p. 258), the Huber and White, sandwich estimator of variance was used in the next regression model. Regression with robust standard errors is a less conservative method of estimating sample to sample variation. By using this method we cannot assume if the data collection were repeated on other children sampled the same way as the original sample and the model was refitted, 90% of the time, we would expect the estimated coefficient of "exit level of care" to be in the same range. Robust standard errors do not require normal i.d.d. errors and are appropriate when conducting a regression in the presence of heteroskedastic errors (STATA Manual: (U) 2006, p. 301). I chose to proceed and run this regression model with robust standard errors, due to the fact the residual versus fitted plot indicates

that I do not have normal i.d.d. errors, to allow for identification of any differences in the margins. The STATA output for this linear regression appears in Table 32.

Table 32

Linear Regression Analysis: Regression with Robust Standard Errors of Exit Level of Care- Including PreCAFAS Scores

Number of obs	=	171
F(17, 153)	=	2.19
Prob > F	=	0.0064
R-squared	=	0.2101
Root MSE	=	.89413

ExitLOC_ord	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
pilot						
2	-.1411326	.2248289	-0.63	0.531	-.5853024	.3030372
3	-.1144957	.2223151	-0.52	0.607	-.5536993	.3247079
4	-.4747087	.2507964	-1.89	0.060	-.9701797	.0207622
5	.4759034	.2475325	1.92	0.056	-.0131193	.9649262
6	-.1128642	.2349125	-0.48	0.632	-.576955	.3512267
7	-.4196672	.2623097	-1.60	0.112	-.9378837	.0985494
2.Gender	-.0817323	.1418039	-0.58	0.565	-.3618788	.1984142
1.CYSinvolve	-.0499693	.2087706	-0.24	0.811	-.4624143	.3624758
new_Diagnosis						
Anxiety	-.3334306	.2549512	-1.31	0.193	-.8371097	.1702485
Adhd	-.2384404	.2715127	-0.88	0.381	-.7748382	.2979573
Bi-MajorDep	.0749306	.2631448	0.28	0.776	-.4449358	.5947969
BehImpCtrl	-.1731068	.3108615	-0.56	0.578	-.7872419	.4410283
Asperger's	-.6405336	.3447785	-1.86	0.065	-1.321675	.0406075
EntryLOC_ord	.0418321	.0351255	1.19	0.236	-.0275616	.1112258
Age	-.029471	.0228869	-1.29	0.200	-.0746861	.0157442
Daystreatment	.0043477	.0011768	3.69	0.000	.0020228	.0066726
PreCAFAS	-.0045243	.0025372	-1.78	0.077	-.0095367	.0004882
_cons	2.714739	.4976994	5.45	0.000	1.731488	3.697989

As is reflected in the STATA output in Table 32, it is apparent from the p-value of the F-test that the model is significant beyond the .05 level. The adjusted R-squared output is 0.2101, which indicates that 21% of the variability of the exit level of care in this model is mathematically represented.

In this regression model, as days in treatment increase, exit level of care increases irrespective of the other variables. Similarly, as the PreCAFAS score increases, exit level of care decreases controlling for other variables.

Next, I proceeded to test the marginal effects using Fisher's LSD (Least Significant Difference) test. This required that I first validate for Joint effect (also known as simple effect) for the pilot providers under this model. Table 33 shows the STATA output for this analysis.

Table 33

OLS Margins: Contrast of Predictive Margins for Pilot Providers

	df	chi2	P>chi2
pilot			
(2 vs 1)	1	0.39	0.5302
(3 vs 1)	1	0.27	0.6065
(4 vs 1)	1	3.58	0.0584
(5 vs 1)	1	3.70	0.0545
(6 vs 1)	1	0.23	0.6309
(7 vs 1)	1	2.56	0.1096
Joint	6	14.53	0.0242

Since the Joint effect is significant, there is a difference in the exit level of care between the pilot providers. Therefore, I proceeded to compare every pilot provider to every pilot provider to more easily pick out the differences. The margins in Table 34 show the mean differences (the contrasts) between the pilot provider groups based on the OLS regression model of exit level of care and including PreCAFAS scores.

Table 34

Pairwise Comparison of Predictive Margins for Pilot Providers

	Contrast	Delta-method Std. Err.	Unadjusted z	P>|z|	Unadjusted [95% Conf. Interval]	
pilot						
2 vs 1	-.1411326	.2248289	-0.63	0.530	-.5817891	.299524
3 vs 1	-.1144957	.2223151	-0.52	0.607	-.5502253	.321234
4 vs 1	-.4747087	.2507964	-1.89	0.058	-.9662607	.0168432
5 vs 1	.4759034	.2475325	1.92	0.055	-.0092513	.9610581
6 vs 1	-.1128642	.2349125	-0.48	0.631	-.5732842	.3475558
7 vs 1	-.4196672	.2623097	-1.60	0.110	-.9337848	.0944505
3 vs 2	.0266369	.240081	0.11	0.912	-.4439132	.497187
4 vs 2	-.3335762	.2480162	-1.34	0.179	-.819679	.1525267
5 vs 2	.617036	.2603307	2.37	0.018	.1067973	1.127275
6 vs 2	.0282684	.2345034	0.12	0.904	-.4313499	.4878867
7 vs 2	-.2785346	.2897607	-0.96	0.336	-.8464551	.2893859
4 vs 3	-.360213	.265555	-1.36	0.175	-.8806914	.1602653
5 vs 3	.5903991	.2520068	2.34	0.019	.0964748	1.084323
6 vs 3	.0016315	.2415242	0.01	0.995	-.4717473	.4750103
7 vs 3	-.3051715	.2649877	-1.15	0.249	-.8245379	.2141949
5 vs 4	.9506121	.2848123	3.34	0.001	.3923903	1.508834
6 vs 4	.3618446	.2484408	1.46	0.145	-.1250904	.8487796
7 vs 4	.0550416	.2888879	0.19	0.849	-.5111684	.6212515
6 vs 5	-.5887676	.2669247	-2.21	0.027	-1.11193	-.0656048
7 vs 5	-.8955706	.2885859	-3.10	0.002	-1.461189	-.3299525
7 vs 6	-.306803	.2819581	-1.09	0.277	-.8594308	.2458248

The STATA output in Table 34 indicates that cases treated by pilot provider #1 had a significantly higher exit level of care than cases treated by pilot provider # 4. Additionally, cases treated by pilot provider #5 had significantly higher exit level of care than pilot providers #1, #2, #3, #4, #6, and #7.

Next, I calculated the mean "exit level of care" for each pilot provider under this multivariate regression model. The STATA output for this analysis appears in Table 35. As Table 35 reflects, pilot provider #5 has an average exit level of care of 3.55, higher than any other pilot provider does.

Table 35

Table of Predictive Margins Exit Level of Care for Pilot Providers

	Margin	Delta-method Std. Err.	z	P>|z|	[95% Conf. Interval]	
pilot						
1	3.072192	.1557578	19.72	0.000	2.766912	3.377472
2	2.931059	.1617782	18.12	0.000	2.61398	3.248139
3	2.957696	.1648657	17.94	0.000	2.634565	3.280827
4	2.597483	.1929232	13.46	0.000	2.219361	2.975605
5	3.548095	.1966523	18.04	0.000	3.162664	3.933527
6	2.959328	.1680954	17.61	0.000	2.629867	3.288789
7	2.652525	.2114731	12.54	0.000	2.238045	3.067004

Figure 13 is a graphic visualization of the mean differences among pilot providers based on this regression model.

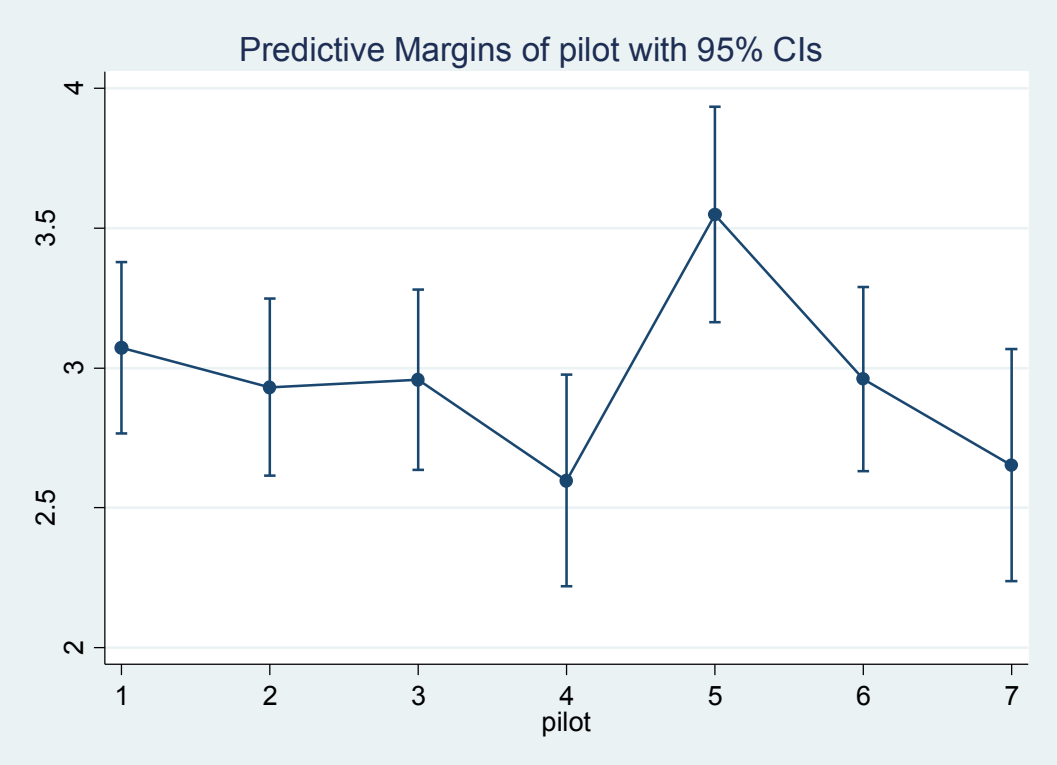

Figure 13. Graph of predictive margins for exit level of care for pilot providers.

The above graph show the pilot providers means in a visual manner. Pilot provider #5 has a higher exit level of care than the other pilot providers.

Next, I proceeded to continue to test the marginal effects using Fisher's LSD (Least Significant Difference) test. I first validated the significance for Joint effect (also known as simple effect) for the exit level of care under this model. Table 36 shows the STATA output for this analysis.

Table 36

OLS Margins: Contrast of Predictive Margins of Exit Level of Care by Primary Diagnosis Category

	df	chi2	P>chi2
new_Diagnosis			
(2 vs 1)	1	1.71	0.1909
(3 vs 1)	1	0.77	0.3798
(4 vs 1)	1	0.08	0.7758
(5 vs 1)	1	0.31	0.5776
(7 vs 1)	3	.45	0.0632
Joint	5	8.82	0.1164

The STATA output in Table 36 reflects that the Joint effect for the primary diagnosis categories is not significant; therefore, group comparison cannot occur because there is essentially no significant difference in exit level of care between primary diagnoses categories when controlling for other variables under this model.

Final multivariate regression analysis including PostCAFAS scores. Finally, I performed the same multivariate regression analysis using exit level of care as the dependent variable and including PostCAFAS score in the model in place of ChangeCAFAS score that was included in the first regression model and PreCAFAS score that was included in the second regression model, for this dependent variable. Table 37 shows the actual STATA output for this multivariate regression analysis. It is apparent from the p-value of the F-Test in the STATA output that the model is statistically significant beyond the .05 level. The adjusted R-squared output is 0.1109, which

indicates that slightly more than 11% of the variability in "exit level of care" in this model is mathematically represented.

Table 37

Final Multivariate Regression Analysis for Exit Level of Care- Including PostCAFAS Scores

Source	SS	df	MS
Model	30.934999	17	1.81970582
Residual	123.918802	153	.809926812
Total	154.853801	170	.910904713

Number of obs	= 171
F(17, 153)	= 2.25
Prob > F	= 0.0050
R-squared	= 0.1998
Adj R-squared	= 0.1109
Root MSE	= .89996

ExitLOC_ord	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pilot						
2	-.2006179	.2146499	-0.93	0.351	-.624678	.2234423
3	-.1131905	.3081241	-0.37	0.714	-.7219175	.4955366
4	-.5458942	.275828	-1.98	0.050	-1.090817	-.000971
5	.4729425	.2341776	2.02	0.045	.0103035	.9355816
6	-.0846302	.3148421	-0.27	0.788	-.7066292	.5373687
7	-.3968287	.28942	-1.37	0.172	-.968604	.1749465
2.Gender	-.0547359	.1551236	-0.35	0.725	-.3611965	.2517247
1.CYSinvolve	-.0503407	.2073278	-0.24	0.808	-.4599356	.3592541
new_Diagnosis						
Anxiety	-.3900027	.3814407	-1.02	0.308	-1.143573	.3635679
Adhd	-.3461749	.2839795	-1.22	0.225	-.9072022	.2148523
Bi-MajorDep	-.0541392	.2954454	-0.18	0.855	-.6378183	.5295399
BehImpCtrl	-.2830198	.3029462	-0.93	0.352	-.8815173	.3154777
Asperger's	-.6822672	.3369831	-2.02	0.045	-1.348008	-.0165266
EntryLOC_ord	.0524617	.0351333	1.49	0.137	-.0169472	.1218706
Age	-.0296743	.022887	-1.30	0.197	-.0748896	.015541
Daystreatment	.0039837	.00099	4.02	0.000	.0020278	.0059396
PostCAFAS	.0028445	.0028742	0.99	0.324	-.0028337	.0085228
_cons	2.390055	.4497418	5.31	0.000	1.50155	3.278561

As the STATA output reflects in Table 37, as days in treatment increases, exit level of care also increases, irrespective of the other variables.

To address the concern of "multicollinearity" I completed and examined the "Variance Influence Factor" (VIF) using STATA. As shown in in Table 37, the values for VIF values ranged from 3.57 to 1.13, with a mean of 1.80 (Hamilton, 1992). All of the VIF's were within an acceptable range.

Table 38

Variance Factor Inflation Results Exit Level of Care Including PostCAFAS Scores

Variable	VIF	1/VIF
pilot		
2	1.83	0.546138
3	1.31	0.764561
4	1.44	0.695337
5	1.88	0.530572
6	1.37	0.732281
7	1.58	0.631561
2.Gender	1.24	0.807456
1.CYSinvolve	1.13	0.882742
new_Diagnosis		
Anxiety	1.69	0.591237
Adhd	3.64	0.274606
Bi-MajorDep	3.57	0.279836
BehImpCtrl	2.80	0.356755
Asperger's	2.37	0.422307
EntryLOC_ord	1.13	0.885945
Age	1.22	0.817110
Daystreatment	1.24	0.808669
PostCAFAS	1.16	0.858993
Mean VIF	1.80	

To further ensure confidence in these results, I first generated a residuals versus fitted plot to check for heteroskedasticity and normal i.d.d. pattern among residuals. The STATA output for this plot appears in Figure 14. I then generated a leverage versus normalized residual squared plot to check to see if any cases were leveraging or influencing the model. The STATA output for this plot appears in Figure 14. There was no evidence of influential cases.

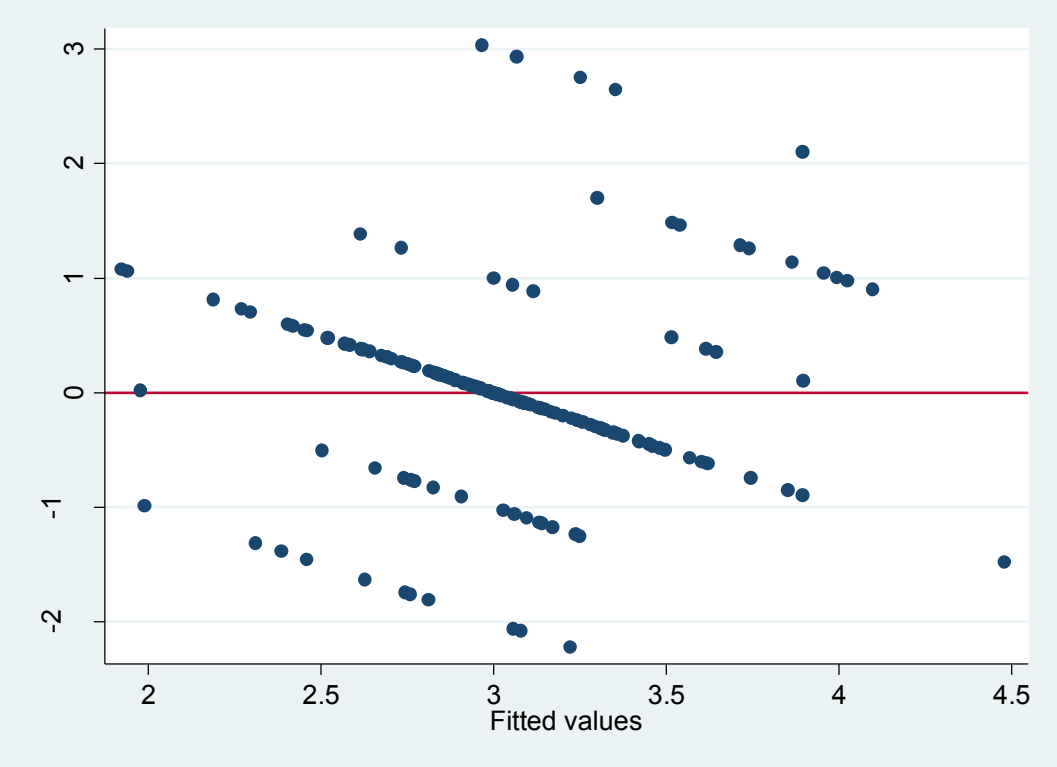

Figure 14. A residuals versus fitted values plot. The plot depicts that assumptions of normal i.d.d. are not met.

The plot in Figure 14 does not meet the assumptions of normal i.d.d. and demonstrates evidence of heteroskedasticity. This means that errors in the data are not normally independent identically distributed. I then assessed whether any of the observations were "leveraging or influencing" the model to make sure the regression coefficients were not biased. Figure 15 reflects the plot which demonstrates evidence of a relatively "good fit".

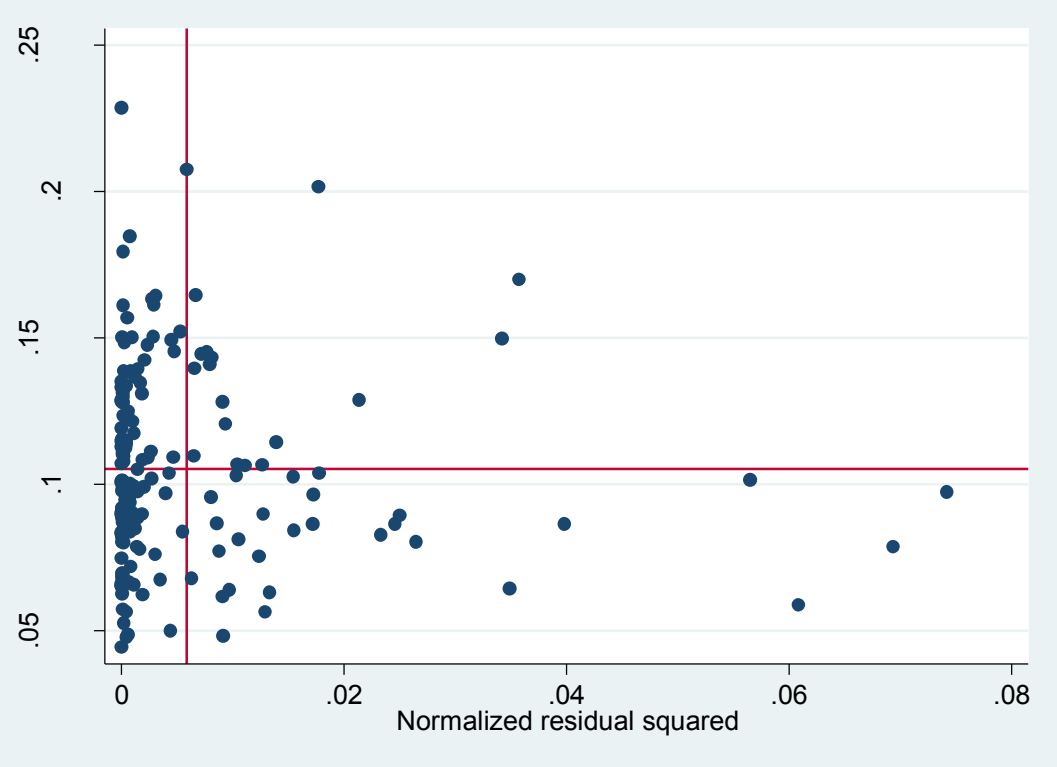

Figure 15. Leverage versus normalized residual squared plot. The plot identifies no influential cases.

To address the issue of heteroskedasticity and thereby obtain a "more credible estimate of the standard errors and confidence intervals" (Hamilton, 2006, p. 258), the Huber and White, sandwich estimator of variance was used in the regression model. Regression with robust standard errors is a less conservative method of estimating sample to sample variation. By using this method we cannot assume that the estimates reflect the true parameters of the population. Using this approach assumes if data collection were repeated on other children sampled the same way as the original sample and the model was refitted, 90% of the time, we would expect the estimated coefficient of "exit level of care" to be in the same range. Robust standard errors do not require normal i.d.d. errors and are appropriate when conducting a regression in the presence of heteroskedastic errors (STATA Manual: (U) 2006, p. 301).

I chose to proceed and run the regression model with robust standard errors, even though there are no apparent differences, to allow for identification of any differences in the margins. The STATA output for this linear regression analysis appears in Table 39. It is apparent from the p-value of the F-test in this STATA output that the model is statistically significant beyond the .05 level. The adjusted R-squared output is 0.1198, which indicates that almost 12% of the variability in exit level of care in this model is mathematically represented.

Table 39

Linear Regression Analysis: Regression with Robust Standard Errors for Exit Level of Care- Including PostCAFAS Scores

				Number of obs	=	171
				F(17, 153)	=	1.94
				Prob > F	=	0.0186
				R-squared	=	0.1998
				Root MSE	=	.89996

ExitLOC_ord	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
pilot						
2	-.2006179	.2239433	-0.90	0.372	-.6430381	.2418024
3	-.1131905	.2186047	-0.52	0.605	-.5450638	.3186829
4	-.5458942	.2692088	-2.03	0.044	-1.07774	-.014048
5	.4729425	.2464781	1.92	0.057	-.0139972	.9598823
6	-.0846302	.2247696	-0.38	0.707	-.5286829	.3594224
7	-.3968287	.2679812	-1.48	0.141	-.9262498	.1325923
2.Gender	-.0547359	.14535	-0.38	0.707	-.3418879	.2324161
1.CYSinvolve	-.0503407	.203136	-0.25	0.805	-.4516543	.3509728
new_Diagnosis						
Anxiety	-.3900027	.2473046	-1.58	0.117	-.8785752	.0985698
Adhd	-.3461749	.2696194	-1.28	0.201	-.8788325	.1864826
Bi-MajorDep	-.0541392	.2612621	-0.21	0.836	-.5702861	.4620077
BehImpCtrl	-.2830198	.2966483	-0.95	0.342	-.8690753	.3030358
Asperger's	-.6822672	.3361568	-2.03	0.044	-1.346375	-.0181591
EntryLOC_ord	.0524617	.0345461	1.52	0.131	-.0157872	.1207106
Age	-.0296743	.0223091	-1.33	0.185	-.073748	.0143994
Daystreatment	.0039837	.0011715	3.40	0.001	.0016694	.006298
PostCAFAS	.0028445	.003466	0.82	0.413	-.0040028	.0096918
_cons	2.390055	.4638051	5.15	0.000	1.473766	3.306344

In this robust standard errors regression model, as days in treatment increase exit level of care increases irrespective of other variables.

Next, I proceeded to test the marginal effects using Fisher's LSD (Least Significant Differences) test. This required that I first validate significance for Joint effect (also known as simple effect) for the pilot providers under the current multivariate regression model. Table 40 shows the STATA output for this analysis.

Table 40

OLS Margins: Contrast of Predictive Margins for Exit Level of Care for Pilot Providers

	df	chi2	P>chi2
pilot			
(2 vs 1)	1	0.80	0.3703
(3 vs 1)	1	0.27	0.6046
(4 vs 1)	1	4.11	0.0426
(5 vs 1)	1	3.68	0.0550
(6 vs 1)	1	0.14	0.7065
(7 vs 1)	1	2.19	0.1387
Joint	6	14.77	0.0222

Since the Joint effect is significant, there is a difference in the mean of the exit level of care category between the pilot providers. Therefore, I proceeded to compare every pilot provider to every pilot provider to more easily pick out the difference under the current multivariate regression model. The margins in Table 41 show the differences (the contrasts) between the pilot provider groups based on the OLS model concerning exit level of care.

Table 41

Pairwise Comparison of Predictive Margins for Pilot Providers

	Contrast	Delta-method Std. Err.	Unadjusted z	Unadjusted P>|z|	Unadjusted [95% Conf. Interval]	
pilot						
2 vs 1	-.2006179	.2239433	-0.90	0.370	-.6395387	.238303
3 vs 1	-.1131905	.2186047	-0.52	0.605	-.5416478	.3152669
4 vs 1	-.5458942	.2692088	-2.03	0.043	-1.073534	-.0182548
5 vs 1	.4729425	.2464781	1.92	0.055	-.0101457	.9560307
6 vs 1	-.0846302	.2247696	-0.38	0.707	-.5251706	.3559101
7 vs 1	-.3968287	.2679812	-1.48	0.139	-.9220622	.1284048
3 vs 2	.0874274	.2270004	0.39	0.700	-.3574853	.5323401
4 vs 2	-.3452764	.2729209	-1.27	0.206	-.8801915	.1896388
5 vs 2	.6735604	.2556143	2.64	0.008	.1725655	1.174555
6 vs 2	.1159876	.2188513	0.53	0.596	-.312953	.5449282
7 vs 2	-.1962109	.299808	-0.65	0.513	-.7838239	.3914021
4 vs 3	-.4327038	.2781224	-1.56	0.120	-.9778137	.1124061
5 vs 3	.586133	.2403729	2.44	0.015	.1150108	1.057255
6 vs 3	.0285602	.2293651	0.12	0.901	-.420987	.4781075
7 vs 3	-.2836383	.2795166	-1.01	0.310	-.8314807	.2642042
5 vs 4	1.018837	.3031781	3.36	0.001	.4246186	1.613055
6 vs 4	.461264	.2570874	1.79	0.073	-.042618	.965146
7 vs 4	.1490655	.3030685	0.49	0.623	-.4449379	.7430689
6 vs 5	-.5575728	.2539213	-2.20	0.028	-1.055249	-.0598962
7 vs 5	-.8697713	.2992564	-2.91	0.004	-1.456303	-.2832395
7 vs 6	-.3121985	.2791621	-1.12	0.263	-.8593462	.2349492

The STATA output in Table 41 reflects that cases treated by pilot provider #1 had higher exit level of care than cases treated by pilot provider #4. Additionally, cases treated by pilot provider #5 had higher exit level of care than cases treated by pilot providers #1, #2, #3, #4, #6, and #7.

Next, I calculated the mean exit level of care for each pilot provider under this multivariate regression model. The STATA output for this analysis appears in Table 42. As the STATA output in Table 42 reflects, pilot provider group #5 has an average exit level of care of 3.54, higher than other pilot provider groups.

Table 42

Table of Means Exit Level of Care for Pilot Providers

Predictive margins
Model VCE : Robust
Expression : Linear prediction, predict()

Number of obs = 171

	Margin	Delta-method Std. Err.	z	P>|z|	[95% Conf.	Interval]
pilot						
1	3.09049	.1586219	19.48	0.000	2.779596	3.401383
2	2.889872	.1584139	18.24	0.000	2.579386	3.200357
3	2.977299	.1556607	19.13	0.000	2.67221	3.282388
4	2.544595	.2173669	11.71	0.000	2.118564	2.970627
5	3.563432	.190731	18.68	0.000	3.189606	3.937258
6	3.005859	.1564998	19.21	0.000	2.699125	3.312593
7	2.693661	.2269329	11.87	0.000	2.248881	3.138441

Figure 16 below is the STATA output the graph that serves as a visualization of the variations in exit level of care by pilot provider groups based on the current multivariate regression model.

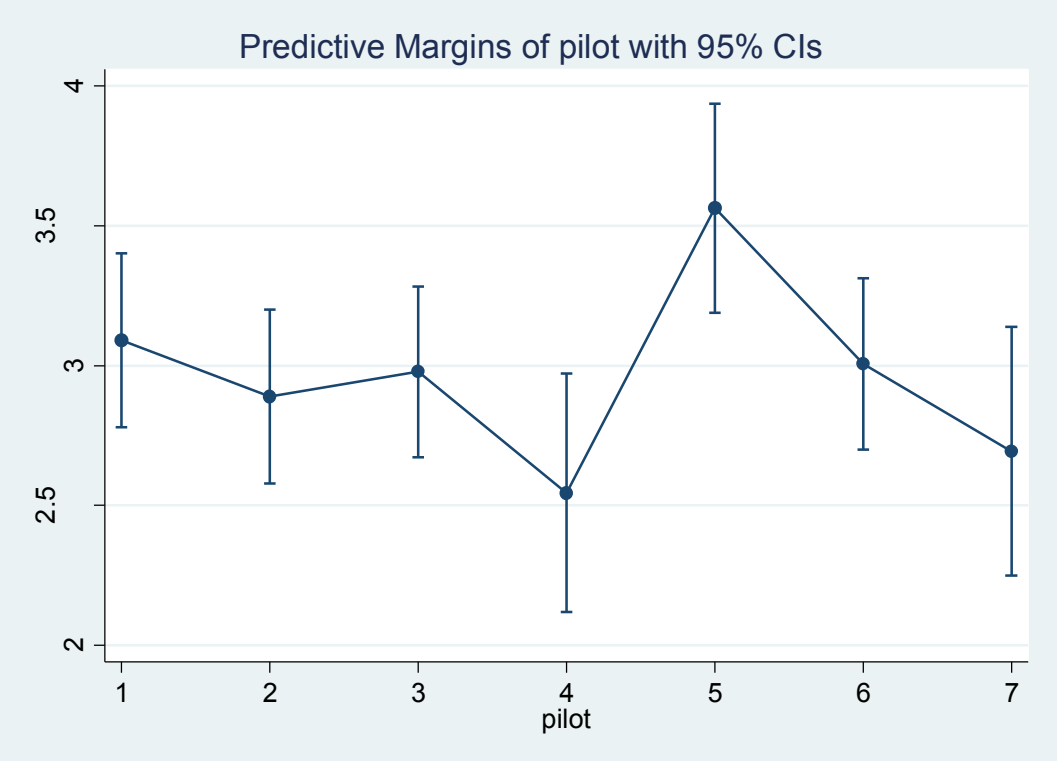

Figure 16. Graph of variation in exit level of care by pilot provider.

Figure 16 shows the pilot providers means in a visual manner. Pilot provider #5 has a higher mean then other pilot providers. However, the mean for pilot provider #5 is not significantly higher than the mean exit level of care for the other pilot providers.

Finally, I proceeded to test the marginal effects using Fisher's LSD (Least Square Difference) test for primary diagnosis under the current multivariate regression model. Table 43 reflects the STATA output for this analysis which shows the the Joint effect is not significant for the primary diagnosis groups; therefore, the comparison of the primary diagnosis groups is not possible. Essentially, there is no significant difference in the exit level of care between primary diagnosis categories when controlling for all other variables in the current multivariate regression model.

Table 43

OLS Margins: Contrast of Predictive Margins for Exit Level of Care and Primary Diagnosis

	df	chi2	P>chi2
new_Diagnosis			
(2 vs 1)	1	2.49	0.1148
(3 vs 1)	1	1.65	0.1992
(4 vs 1)	1	0.04	0.8358
(5 vs 1)	1	0.91	0.3401
(7 vs 1)	1	4.12	0.0424
Joint	5	7.92	0.1605

Summary

This research found that overall there was a statistically significant decrease between the Child and Adolescent Functional Assessment Scale total score at intake (M=78.57, SD=27.97) in comparison to the CAFAS total score at discharge (M=48.80, SD=25.76) from strengths based mobile therapy. This decrease in overall total score following a course of strengths based mobile therapy indicates an improvement in level of functioning as measured by the Child and Adolescent Functional Assessment Scale.

The mean decrease in CAFAS total score was 29.771 with a 95% confidence interval ranging between 25.296 to 34.247. These findings provided support for hypothesis number one.

The following chapter will provide an overview of all study findings, which will include the impact of the individual variables on treatment outcome. This chapter will also discuss the connection of this research to theory and practice. Finally, this chapter will discuss the limitations of this study and suggestions for future research.

CHAPTER SIX

DISCUSSION

The focus of this research was on the evaluation of a specific children's community-based mental health treatment model, strengths based mobile therapy treatment, and the impact of this treatment on the level of functioning of children and adolescents treated in the pilot project. The sample for this research was comprised of all children and adolescents served through a pilot project, sponsored by Value Behavioral Health of Pennsylvania, Inc. from January 1, 2007 to December 30, 2008. This research provides an examination of a unique children's mental health intervention and may potentially influence the ongoing funding structure and availability of the treatment intervention to socially and emotionally disturbed (SED) children and adolescents in Pennsylvania. Furthermore, this research adds to the limited available research on children's mental health interventions and serves to begin to bridge the lag that exists between practice in the field of children's mental health treatment and research (Rugs & Kutash, 1994).

This chapter will serve as a discussion of the findings of this study. Specifically, this chapter will encompass a review of significant outcomes, limitations of this research, recommendations for future research, and conclusions.

The following research questions guided this evaluation of the impact of the introduction of a children's community-based mental health treatment, strengths based mobile therapy (SBMT), on the level of daily functioning of individuals receiving the treatment.

1. Does the introduction of an intensive children's community-based mental health treatment, strengths based mobile therapy (SBMT), influence the level of functioning for children and adolescents treated?
2. Is there a relationship between a child's primary DSM-IV diagnosis and the outcome of treatment?
3. Is there a relationship between entry level of care/treatment and the outcome of treatment?
4. Is there a relationship between length of stay in treatment and exit level of care?
5. Is there a relationship between change in level of functioning and exit level of care?
6. Is there a relationship between entry level of functioning and outcome of treatment?

These research questions led to the development of six hypotheses, which relate to the impact of treatment on level of functioning of children and adolescents treated. The hypotheses are as follows:

1. Children and adolescents treated in the strengths based mobile therapy treatment model will have higher levels of functioning on average at discharge from treatment than they had at intake to treatment.
2. Children and adolescents with DSM-IV diagnoses classified as behavioral disorders, such as Attention Deficit Hyperactivity Disorder (ADHD), will have greater improvement in their level of functioning at discharge from treatment than children and adolescents with other DSM-IV diagnoses.

3. Children and adolescents referred for treatment from higher levels of cares will demonstrate a greater change in level of functioning at discharge from treatment.
4. Children and adolescents with greater length of treatment will demonstrate greater increases in level of functioning.
5. Children and adolescents who experience an increase in level of functioning will receive referral to a lower exit level of care.
6. Children and adolescents with higher level of functioning at entry to treatment will experience a lower exit level of care.

The initial section will summarize the results for the preceding hypotheses. First I used a paired samples t-test to compare intake and discharge scores on Child and Adolescent Functional Assessment Score (CAFAS), the measure of level of functioning, for the purposes of determining outcome of treatment. Then, several multiple regression models were utilized to analyze the data, which allowed me to assess the effects of each independent variable, net of the control variables. My research examined how each independent variable impacted treatment outcome (change in level of functioning), length of treatment, and exit level of care. The variables are shown in Table 44.

Table 44

Independent Variables Used in Multivariate Regression Analysis

Variable	Description
Age	Chronological age at entry to treatment
Gender	Sex of the individual receiving treatment
Diagnosis	Primary DSM-IV diagnosis category
CYS/JPO Involved	Reflection of active involvement with either Children and Youth Services or Juvenile Probation Services
Pilot Provider	The pilot provider organization delivering treatment to the individual
Entry Level of Care	The level of treatment the individual is receiving when they are referred to strengths based mobile therapy (SBMT)
Length of Treatment	The number of days the individual participated in strength based mobile therapy (SBMT) treatment
PreCAFAS	The total score of the administration of the Child and Adolescent Functional Assessment Scale (CAFAS) at entry into strengths based mobile therapy treatment (SBMT)
PostCAFAS	The total score of the administration of the Child and Adolescent Functional Assessment Scale (CAFAS) at discharge from strengths based mobile therapy treatment (SBMT)
ChangeCAFAS	The score reflective of treatment outcome that is a computation of the postCAFAS total score minus the preCAFAS total score

Factors Influencing Level of Functioning

Treatment Outcome

The definition of treatment outcome in this study is change in level of functioning as measured by change in total score on the Child and Adolescent Functional Assessment Scale (CAFAS) rating from intake to discharge from strengths based mobile therapy (SBMT) treatment. A decrease in CAFAS total score from rating at intake to rating at discharge demonstrates an increase in level of functioning.

Null Hypothesis #1: Introduction of strengths based mobile therapy treatment does not increase or decrease level of functioning of children treated.

The results of the paired sample t-test provide evidence of a statistically significant decrease between the rating at intake (M=78.57, SD=27.97) of the Child and Adolescent Functional Assessment Scale (CAFAS) total score and the rating at discharge (M=48.80, SD 25.76) from strengths based mobile therapy (SBMT). Therefore, there is support to confidently reject the null hypothesis. Specifically, children and adolescents receiving strengths based mobile therapy treatment (SBMT) did demonstrate a decrease in scores on the Child and Adolescent Functional Assessment Scale (CAFAS), a measure of level of functioning, following a course of treatment. The mean decrease in Child and Adolescent Functional Assessment Scale (CAFAS) total score is 29.771.

Although these findings provide support strengths based mobile therapy treatment, one must be cautious about these findings based on the structure of the Child and Adolescent Functional Assessment Scale. Specifically, the outcome measure design and scoring is structured in a way that every 10-point change in CAFAS score can be contributed to a degree of change in level of functioning. Therefore, for this study the mean decrease in total score equates to almost a three degree increase in level of functioning. This increase is statistically significant; however, the real world strength of that increase in the level of functioning may not be powerful.

Hodges (1997) does summarize the "levels of overall dysfunction based on the youth's total score" for the Child and Adolescent Functional Assessment Scale (CAFAS) and this summary on the outcome measure is applicable to this discussion. Specifically, the mean of the CAFAS total scores at intake of 78.57 falls in the functioning range scale between a total score of 50 and 90, which Hodges (1997) categorizes as youth who may need additional services beyond outpatient care. Strengths based mobile therapy

treatment is categorized as a service that is beyond outpatient care and the mean of total CAFAS scores at intake falls into this category.

Furthermore, the mean of the Child and Adolescent Functional Assessment Scale (CAFAS) total scores at discharge of 48.80 falls in the functioning range scale between a total score of 20 and 40, which Hodges (1997) categorizes as youth who likely can be treated on an outpatient basis, if risk behaviors are not present. In the case of individuals in this study, a majority of the children discharged to outpatient or lower level of care, which again is in keeping with the calibration of the outcome measure.

Therefore, as a result of intake total score means and discharge total scores means falling into respective categories corresponding to referred level of treatment stronger support for these findings can be assigned to this statistically significant decrease in Child and Adolescent Functional Assessment Scale (CAFAS) score from intake to discharge from strengths based mobile therapy.

Primary DSM-IV Diagnosis

DSM-IV Codes are the classification found in the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision, also known as DSM-IV-TR, a manual published by the American Psychiatric Association (APA) that includes all currently recognized mental health disorders. Mental health professionals use the DSM-IV Codes to describe the features of a given mental disorder and indicate how the disorder is distinguished from another (Schacter, Gilbert & Wegner, 2011). Axis I diagnoses are the first diagnosis in this multi-axial system of diagnosis. Axis I represents symptoms that are acute and in need of immediate treatment and are most widely

recognized and utilized by insurance funders to qualify payment for the delivery of mental health treatment services.

Null Hypothesis #2: The child's DSM-IV primary diagnosis category does not increase or decrease the level of functioning of children treated.

The initial multivariate regression model did not reveal significant results in terms of the DSM-IV primary diagnosis variable and therefore did not offer support for rejecting the null hypothesis. I found this result surprising, however, this result lends preliminary support for the efficacy of the strengths based treatment model for treatment of children and adolescents across DSM-IV primary diagnosis examined in this study. Further investigation through future research is warranted based on these preliminary findings.

Furthermore, in the area of primary DSM-IV diagnosis, in the second regression model analysis under OLS regression analysis, the joint effect for primary DSM-IV diagnosis category was not significant. Therefore, these different diagnosis categories could not be compared and essentially, there was no difference between the mean of the treatment days for the DSM-IV primary diagnosis categories when controlling for all other variables.

Under further investigation of the second model with robust regression analysis, the joint effect was determined to be significant in terms of days in treatment. Specifically, children and adolescents with DSM-IV primary diagnoses of anxiety disorders, attention-deficit hyperactivity disorders, bipolar/major depressive disorders, disruptive behavior/impulse control disorders, and Asperger's disorders all have significantly higher days in treatment than adjustment disorders. Again, these results, as

reflected in Figure 7, call for some further investigation, potentially through future qualitative inquiry, to conclusively support any differences that may exist concerning the impact of primary DSM-IV diagnosis on length of treatment.

Entry Level of Care

Null Hypothesis #3: The entry level of care the child is at upon referral to strengths based mobile therapy treatment does not increase or decrease level of functioning.

There was no support for rejecting the null hypothesis in the final regression analysis. Specifically, the level of care that a child or adolescent was in prior to the entry into strengths based mobile therapy did not have a significant impact on the change in level of functioning at discharge from the pilot.

Length of Treatment

Null Hypothesis #4: Length of stay in strength based mobile therapy does not result in an increase or decrease in level of functioning.

There is evidence in the analyses to reject the null hypothesis. Specifically, the second regression analyses indicates that days in treatment was a significant ($p \leq 0.05$) predictor of exit level of care, for both the OLS and robust regression analysis. In both these regression analyses, as days in treatment increase there is a corresponding increase in exit level of care, irrespective of the other variables.

These findings are important because they potentially indicate that there is maximum effective treatment dose in terms of optimum number of days in treatment. Excess unwarranted treatment can lead to frustration due to lack of improvement by children and families receiving treatment and increase unnecessary costs to Value Behavioral Health of Pennsylvania, Inc. due to payment for ineffective treatment. The

optimal dose of strengths based mobile therapy treatment is not an area this study initially set out to explore; however, due to these significant findings, further research in this area is warranted to determine the optimal length of treatment or treatment dose.

Factors Influencing Exit Level of Care

Level of Functioning Change

In chapter three, there was an in-depth examination of the funding and service delivery system for the children's mental health treatment services in Pennsylvania. In creation of the strengths based mobile therapy treatment model design, Value Behavioral Health of Pennsylvania, Inc. identified a desire to develop a treatment model to target the barriers/challenges of the existing treatment services and to so in as cost effective manner as possible. As the level of treatment delivery increases and becomes more restrictive, there is a corresponding increase in the cost of the treatment service. Therefore, a desired treatment outcome is to a less restrictive and more cost effective level of care.

Null Hypothesis #5: Children and adolescents who experience a change in CAFAS score do not experience an increase or decrease in exit level of care following strengths based mobile therapy treatment.

There is evidence to reject the null hypothesis. Specifically, for the final regression model, regression results indicate change in CAFAS score was a significant predictor of exit level of care, with an increase in the CAFAS score resulting in an increase in exit level of care while controlling for other variables in the model. I found this surprising. This result may reflect that children enter strengths based mobile therapy treatment with more severe conditions will also reflect higher initial CAFAS scores, therefore, will logically exit treatment with a greater change in CAFAS score as it may

regress toward the mean. Further, it is reasonable that children with more severe mental illness will require more intensive treatment. Therefore, these results may be logical. These preliminary findings warrant future research in this area.

Furthermore, in the final regression model that included a change in the CAFAS score, results indicate that pilot providers produced significantly different exit levels of care. Analysis indicates that children treated by pilot provider #4 experienced a significantly smaller change in exit level of care than pilot provider #1. Children treated by pilot provider #5 experienced a significantly greater change in exit level of care than children treated by pilot providers #1, #2, # 3, and #4. Children treated by pilot provider #6 experienced a significantly smaller change in exit level of care than children treated by pilot provider #5. Finally, children treated by pilot provider #7 experienced a smaller change in exit level of care than children treated by pilot provider #5. Therefore, although pilot provider was not significant in the final regression analysis, further investigation seems to indicate that there is variability occurring the in the exit level of care between the pilot provider groups. These results indicate need for further research in this area.

Entry Level of Functioning

The Child and Adolescent Functional Assessment Scale (CAFAS) is the outcome tool utilized by Value Behavioral Health of Pennsylvania, Inc. in the strengths based mobile therapy treatment pilot to measure level of functioning.

Null Hypothesis #6: The level of functioning at entry into strengths based mobile therapy treatment does not increase or decrease the exit level of care.

In the final regression model analysis, including PreCAFAS score as a variable, there was evidence to reject the null hypothesis. In this regression analysis, PreCAFAS

score was a significant ($p \leq 0.05$) predictor of exit level of care. Specifically, regression results indicate that as the PreCAFAS score increases the exit level of care decreases, controlling for other variables. This relationship indicates that the children demonstrating the greatest need for improvement in their level of functioning at entry to strengths based mobile therapy are able to leave treatment and exit to a less restrictive level of care. Further research is necessary to determine why this effect is occurring.

Implications for Community-Based Children's Mental Health Treatment

A review of the literature clearly shows human nature possesses an innate need to care for those unable to care for themselves. Care for children in need of treatment has progressed historically from institutionalization, in the form of undifferentiated almshouses, to today's modern community-based services for children and adolescents with social and emotional needs. Specifically, in the 1980s, wraparound services emerged as an alternative to out-of-home placement for children and adolescents with high levels of mental illness and related needs (Burchard & Clarke, 1990).

For intensive, community-based mental health treatment programs, reflective of the tenets of these wraparound services, a treatment goal is the improvement of the level of functioning of the individuals receiving treatment. The strengths based mobile therapy treatment model seeks to provide intensive, affordable, community-based, mental health treatment to socially and emotionally disturbed (SED) children and adolescents with a target treatment outcome being to increase the child's ability to function effectively. This study did uncover evidence that children and adolescents treated in the strengths based mobile therapy pilot demonstrated increases in their level of functioning, as demonstrated

by statistically significant decreases in scores on the CAFAS from intake to discharge from treatment.

Although the research design is weak due to the lack of a comparison group, this study suggests that the introduction of strengths based mobile therapy significantly improves the level of functioning of children and adolescents with emotional and behavioral problems. These findings are congruent with the findings reported by Mosier et al. (2001) in their large multi-state study utilizing the Youth Outcome Questionnaire. Specifically, in this evaluation, at end of a course of strengths based mobile therapy treatment, children and adolescent's average total scores on the discharge Child and Adolescent Functional Assessment Scale reflect functioning levels similar to children and adolescents receiving outpatient treatment services. These outcomes further support Pavkov et al.'s (1997) premise that intensive community-based treatment programs reduce behavioral and emotional problems in children and adolescents.

As is prevalent throughout the research literature in the field of children's mental health treatment, definition of success can be difficult when evaluating real world treatment programs. Research that supports the effectiveness of intensive in-home mental health treatment services is often subject to criticism due to the lack of use of reliable and valid outcome measures. This evaluation, with the statistical significance of the findings, using an outcome measure with significant documentation in the literature of its documented reliability and validity, has taken a step to counteract those criticisms that are plentiful in the literature.

The design of the strengths based mobile therapy treatment model incorporates many of the key elements of the Homebuilder Model to include services that are short-

term, intensive, flexible, and home/community-based. As has been highlighted by Wells (1994), examining the effectiveness of programs like Homebuilders can be quite difficult due to the complex nature of the service delivery system. Wells (1994) argues that this challenge is further compounded by the complex and individualized nature of each family, which in turn requires individualization of interventions to target unique needs. However, while the present study lacks a control group, it does serve to provide further support for the effectiveness of Homebuilder-like programs.

Additionally, this study did uncover evidence that indicates variability occurring in the referral exit level of care between the individual pilot provider organizations. Specifically, this study demonstrated significant variability in the child's discharge exit level of care dependent upon the individual provider agency who had provided the treatment.

In the multiple regression models including change in CAFAS score and then PreCAFAS scores, pilot provider organization was not significant but further analyses did indicate significant variability in referral exit level of care based on the individual provider organization providing the treatment. This variation indicates a potential area of concern in regard to this study.

The results in this area suggest there may be variability within the individual organizations providing the treatment that is impacting the decision making process in the referral to exit level of care. This variability could be a result of many things within the individual provider organizations, such as individual clinician preference, availability of certain exit levels of care within the individual provider organization or geographical are of the child, and/or the presence of some of the challenges to accessing clinic-based

services. Further research in this area utilizing a comparison group would serve to address this area of concern.

Limitations of this Research

This study merely scratched the surface in its exploration of the impact of one community-based children's mental health treatment program on the very specific treatment outcome of level of functioning. Because this study focused on a specific sample of children in a particular region (Southwest Pennsylvania), generalizability is limited to that population and statements cannot be made beyond the program and sampling frame under this study. The purposive sample included children and adolescents served by seven pilot provider agencies in Southwestern Pennsylvania treated in the strengths based mobile therapy treatment pilot, funded through Value Behavioral Health of Pennsylvania, Inc., between January 1, 2007 and December 31, 2008. The children served in the pilot program live in the six counties surrounding Allegheny County where the pilot provider organizations are located. Most of the agencies are located in rural areas. The demographic characteristics of the study sample could be different from other parts of the state or even nationally. Without a random sample, generalizing the results of this study to other communities or community-based mental health treatment models can only serve the purpose of creating additional research questions. Nonetheless, this study that no variables were significantly predictive of the treatment outcome, increase in level of functioning. Therefore, because the effect is general across all independent variables, there is limited support for the effectiveness of the strengths based mobile therapy treatment model in terms of positive impact on the level of functioning of children

treated. More rigorous future treatment is needed to further explore this area and allow for generalizability of the findings.

Another limitation comes as part of the study design, in that because this was a pre-experimental pretest-posttest design, it lacked a control group against which to measure treatment outcome. This study is outcome assessment rather than true outcome research because there is no randomization and lack of a control group. However, the nature of mental health treatment in general makes it impractical and sometimes unethical to randomly assign clients to treatment groups and to withhold treatment to provide a control group (Dwyer, 2005). Furthermore, this study did not compare outcome rates for this pilot program against other similar community-based children's mental health treatment programs. Therefore, a true causal relationship cannot be established from the results of this study.

When looking at limitations, threats to internal validity are paramount with this study. First, the threat of history occurs when children and adolescents participating in this study could have experienced an event or maturational change, independent of strengths based mobile therapy treatment, which could result in the documented change in their Child and Adolescent Functional Assessment Scale (CAFAS) score. Without the availability of a control group, who may experience the same event or maturational change in the absence of treatment, the study design does present with limitations in the ability to claim the effectiveness of strengths based mobile therapy in improving the level of daily functioning of children and adolescents treated. Having data for the entire population of study participants treated, as well as the ability to at two separate years of data, across seven individual pilot provider organizations does seek to minimize the

threat to internal validity posed by history. Nonetheless, history is a very real threat to internal validity of this study.

Finally, maturation of the study participants is a threat to internal validity of this study that must be considered. It is possible that over the course of treatment that children participating in treatment could have naturally matured and therefore demonstrate higher levels of functioning as a result of that maturity. There was no significant findings in regard to age within this study, however, this threat is still viable.

In summary, the limitations in this study need careful consideration. To generalize from a unique population to other populations the selection for the study cannot be so limited. The closer the study approximates an experimental design, the more likely the results can be generalized outside the study sample. The ways in which future research can reduce or eliminate the limitations and improve on the study design will follow in the recommendations for future research.

Recommendations for Future Research

In many respects, this study has been exploratory in nature, warranting further examination of the findings. For better understanding of the factors that lead to an effective community-based children's mental health treatment program, in order to meet the needs of an ever-increasing population of children and adolescents with social and emotional disturbances (SED), some opportunities for future research are warranted.

This study suggests the efficacy of strengths based mobile therapy treatment if cautiously interpreted. Cautious interpretation requires acknowledging the inability to firmly establish causality in the absence of a controlled trial, as well as, acknowledging the other limitations of this study.

There has been little research focused on treatment effectiveness of community-based children's mental health treatment services. Some of this study's limitations are also areas that suggest further research. Completing a study that examines more than one community-based children's mental health treatment model or taking a random sample of youth in various agencies, may give a broader perspective on factors influencing outcomes. By examining like programs from different areas, data could be aggregated and have greater generalizability as a whole.

Several individual findings of the current study also warrant future research. For example, the relationship between the change in Child and Adolescent Functional Assessment Scale (CAFAS) score from intake to discharge and the exit level of care warrants future research to determine if a correlation exists between functioning level of children who may derive maximum benefit from the treatment program. Tentative results of this study indicate a correlation between higher change in CAFAS scores and higher exit level of care. This indicates that potentially children experiencing significant issues in the area of level of functioning may not gain the maximum benefit from the strengths based mobile therapy treatment model. This area warrants further investigation.

How length of treatment increases exit level of care also warrants further research. The results of this study indicate the more days a child is in strengths based mobile therapy treatment the higher the exit level of care the child is referred to. Again, these results tentatively indicate that there may be an optimal length of treatment for strengths based mobile therapy treatment. Almost no research could be found on this phenomenon, which warrants further scrutiny.

One final recommendation is to improve the quality of the study design. This one-group, pretest-posttest, pre-experimental design served its purpose in this dissertation research. Future studies, however, should look to improve upon and attempt to approximate a stronger experimental design. Such a study could be used to enrich the body of literature on children's mental health treatment outcomes and identify optimal program components and lengths of treatment in children's community-based mental health treatment.

The relationship between client variables and treatment outcomes is a complex one and the current study sought to investigate a small part of it. Additional research is warranted to ensure that the results of this study are not unique to this particular population. When the number of potential variables affecting treatment outcomes is combined with the number of community-based children's mental health treatment programs, the potential for future research is vast.

Summary

This study did uncover evidence that children and adolescents treated in the strengths based mobile therapy pilot demonstrated increases in their level of functioning, as demonstrated by statistically significant decreases in scores on the CAFAS from intake to discharge from treatment. Change in CAFAS score was a significant predictor of exit level of care with higher changes in CAFAS score predicting higher exit levels of care. Additionally, the analyses demonstrate evidence to support that length of treatment was a significant predictor of exit level of care with increases in days in treatment corresponding with increases in exit level of care. Finally, CAFAS score at intake was also a significant predictor of exit level of care with increases in the CAFAS

score at intake resulting in corresponding decreases in exit level of care. Each of these findings supports the need for further research in this area. Specifically, these preliminary findings suggest that this treatment model may have a maximum effective length or "dose" of treatment to obtain optimal results.

This study answers a few questions about the impact of a community-based children's mental health treatment on the level of functioning of a population of children and adolescents in Southwestern Pennsylvania. It uncovered some unexpected outcomes related to optimal length of treatment and characteristics of children that may garner maximum benefit from the treatment program. The study raises further questions that provide direction for future research. More studies that focus on the outcome of community-based children's mental health treatment models, in ways that can be measured using quantitative methodology would strengthen the preliminary results yielded from this study and substantiate its applicability in the area of treatment outcomes research.

As has been identified by Value Behavioral Health of Pennsylvania and this researcher, there is very little available research on children's behavioral health services and treatment outcomes. This research sought to investigate the strengths based mobile therapy treatment model, a pilot community-based children's mental health treatment project in the state of Pennsylvania, seeking to move from pilot status to "in-plan" status for medical assistance insurance coverage. This research not only seeks to bridge that gap that exists in children's mental health treatment outcome literature, but may have real world application within the state of Pennsylvania as a potential vehicle to effect change in the children's behavioral health service delivery system. Specifically, the finalization

of this research presents statistically significant support for the state of Pennsylvania to consider and for Value Behavioral Health of Pennsylvania, Inc. to argue that the strengths based mobile therapy treatment model is demonstrating a positive impact with one of Pennsylvania's neediest populations. It is this and other research like it that can truly impact the lives of children and adolescents in need.

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APPENDICES

Appendix A- Child and Adolescent Functional Assessment (CAFAS) Scale

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# __/__/__/__/__/__/__/__/__/__

TIME PERIOD RATED FOR CAFAS:
☐ Last Month ☐ Last 3 Months ☐ Other_____ Rater Name (print) _____

YOUTH'S PLACEMENT:
☐ Family/Relative Home ☐ Foster Home ☐ Therapeutic Foster ☐ Detention/Jail ☐ Other Residential

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_____

Rater Signature: My signature certifies that I have endorsed specific CAFAS items which describe this child's behavior and which support the scores for each of the CAFAS subscales. This CAFAS form with endorsements is being retained in the case file.
Rater Signature:_____ Date:_____

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). You may circle as many strengths and goals as you like to assist in developing a treatment plan (see last two pages). These items are separate from the CAFAS and do not affect the scoring of the CAFAS. The rater should sign this form (see above).

CAFAS SCORING SUMMARY

SCALE SCORES FOR YOUTH'S FUNCTIONING

SCHOOL/WORK ROLE PERFORMANCE	_____
HOME ROLE PERFORMANCE	_____
COMMUNITY ROLE PERFORMANCE	_____
BEHAVIOR TOWARD OTHERS	_____
MOODS/EMOTIONS	_____
SELF-HARMFUL BEHAVIOR	_____
SUBSTANCE USE	_____
THINKING	_____
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)
    - ☐ at Home (43)
    - ☐ in the Community (68)
    - ☐ 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:_____

SAMPLE

LEVELS OF OVERALL DYSFUNCTION BASED ON YOUTH'S TOTAL SCORE

8 Scale Sum	*Description*
0-10	Youth exhibits no noteworthy impairment
20-40	Youth likely can be treated on an outpatient basis, provided that risk behaviors are not present
50-90	Youth may need additional services beyond outpatient care
100-130	Youth likely needs care which is more intensive than outpatient and/or which includes multiple sources of supportive care
140 & 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 Performance	Home Role Performance	Community Role Performance	Behavior Toward Others	Moods/ Emotions	Self-Harmful Behavior	Substance Use	Thinking
SEVERE 30	○ 1 2 3 4 5 6 7 8 9 10 11	○ 41 42 43 44 45 46 47 48 49 50	○ 66 67 68 69 70 71 72	○ 88 89 90 91 92	○ 116 117 118 119 120	○ 142 143 144 145	○ 154 155 156 157 158 159 160 161 162 163 164	○ 182 183 184 185 186
MODERATE 20	○ 12 13 14 15 16 17 18 19 20 21	○ 51 52 53 54 55 56	○ 73 74 75 76 77 78 79	○ 93 94 95 96 97 98 99 100 101 102	○ 121 122 123 124 125 126 127	○ 146 147 148	○ 165 166 167 168 169 170 171	○ 187 188 189 190 191 192
MILD 10	○ 22 23 24 25 26 27	○ 57 58 59 60 61	○ 80 81 82 83	○ 103 104 105 106 107 108 109 110	○ 128 129 130 131 132 133 134 135	○ 149 150	○ 172 173 174 175	○ 193 194 195 196 197
MINIMAL/NO 0	○ 28 29 30 31 32 33 34 35 36 37 38 39	○ 62 63 64	○ 84 85 86	○ 111 112 113 114	○ 136 137 138 139 140	○ 151 152	○ 176 177 178 179 180	○ 198 199
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 school or job due to behavior that occurred at school or on job during the rating period (e.g., asked to leave or refuses to attend). 002 Expelled or equivalent from school due to behavior (e.g., multiple suspensions, removed from community school, placed in an alternative 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 specialized classroom or regular classroom with specialized services in public school or equivalent) without special accommodations. 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, including 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 Disruptive behavior, including 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, including behaviors 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	02[illegible] EXCEPTION	0[illegible] EXCEPTION
	Explanation:			COULD NOT SCORE: 099

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 Likes going to school
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 Good behavior in classroom (not a problem)
S11 G11 Good behavior on the school bus
S12 G12 Gets along okay with teachers
S13 G13 Enjoys praise from teachers
S14 G14 Easily follows adult guidance
S15 G15 Benefits from assistance when problems arise
S16 G16 Completes schoolwork
S17 G17 School grades are average or above
S18 G18 Feels good about school work
S19 G19 Appreciates importance of learning academic skills
S20 G20 Likes to read
S21 G21 Can transition from one activity to another
S22 G22 Stays on task (appropriate to age)
S23 G23 Participates in after-school activities, clubs, or sports
S24 G24 Is enthusiastic about favorite activities
S25 G25 Graduated or received GED
S26 G26 Maintains steady employment
S27 G27 Satisfactory performance in job/vocation
S28 G28 For teenage parent, is continuing education
S29 G29 Other_____
S30 G30 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 (Home=place of residence; see Scoring Instructions.) ☐	041 Not in the home due to behavior that occurred in the home during the rating period. 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 (OR, if youth is not in the home, youth fails to comply with rules and expectations unless close monitoring/supervision is maintained). 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)

S31	G31	Behavior at home is devoid of aggressive acts or threats
S32	G32	Good behavior on home visits
S33	G33	Reacts non-impulsively over disagreements
S34	G34	Does not use profanity toward others in home
S35	G35	Respectful of property in the home
S36	G36	Can be managed in the home with assistance
S37	G37	Can be managed in the home without assistance
S38	G38	Safe behavior even without close supervision
S39	G39	Acknowledges the need for parental supervision
S40	G40	Seeks help from caregiver when needed
S41	G41	Willing to take help offered by caregiver
S42	G42	Accepts direction from caregiver
S43	G43	Can be soothed and calmed when difficulties arise
S44	G44	Accepts consequences for undesirable behavior
S45	G45	Informs parents of activities ahead of time
S46	G46	Obeys curfew
S47	G47	Obeys rules routinely
S48	G48	Night time routine (getting ready for bed) goes well
S49	G49	Manages changes and transitions satisfactorily
S50	G50	Will help do household "chores" when asked
S51	G51	Shares responsibilities within the home (e.g., care for younger children, grandparents)
S52	G52	Participates in family-oriented activities (gatherings, vacation, traditions)
S53	G53	Takes pride in being able to do some activities independently
S54	G54	Other_____
S55	G55	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, prostitution) 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, prostitution). 068 Involvement with the legal system or diversion to mental *health or social services (for* purpose of avoiding legal system) because of physically assaultive behavior or threatening with a weapon. 069 Involvement with the legal system or diversion to mental health or social services (for purpose of avoiding legal system) 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 (and child is aware of the dangers).	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)

S56	G56	No new arrests
S57	G57	No new illegal activity
S58	G58	No sexually inappropriate behavior
S59	G59	No incidents of firesetting
S60	G60	Doesn't carry weapons
S61	G61	Avoids gang activities
S62	G62	Is trying to disengage from friends who get into trouble
S63	G63	Keeps out of trouble (i.e., is "street smart").
S64	G64	Is motivated to stay out of trouble
S65	G65	Is not known in community for troublesome behaviors
S66	G66	Fulfills responsibilities related to juvenile justice, court, etc.
S67	G67	Accepts responsibility for misbehavior
S68	G68	Follows established laws, rules
S69	G69	Genuinely acknowledges how own behavior has hurt or negatively impacted others
S70	G70	Shows respect to others
S71	G71	Has supportive relationships (outside of family)
S72	G72	Hangs out with prosocial peers
S73	G73	Is a member of a prosocial club
S74	G74	Has leisure activities which are alternatives to antisocial behavior
S75	G75	Volunteers
S76	G76	Respectful of own cultural heritage/elders
S77	G77	Positively identifies with own cultural heritage
S78	G78	Participates in activities related to own cultural heritage
S79	G79	Participates in religious/spiritual activities (e.g., attends church)
S80	G80	Other_____
S81	G81	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, more than other youths. 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)

S82	G82	*Actively* uses coping strategies to deal with difficult situations
S83	G83	Is able to control impulses
S84	G84	Expresses anger through appropriate verbalizations or healthy physical outlets
S85	G85	Can quickly "get back to normal" after difficulties have been "smoothed over"
S86	G86	Asserts self in healthy ways
S87	G87	Is aware of problems related to social skills and is working on improving them
S88	G88	Is motivated to have more/better friends
S89	G89	Has good/close peer friendships which are age appropriate
S90	G90	Is friendly and outgoing
S91	G91	Can be fun to be with (e.g., jokes, witty, sense of *humor*)
S92	G92	Plays well with other children
S93	G93	Can play independently
S94	G94	Shares well with others
S95	G95	Participates in positive peer activities (e.g., sports
S96	G96	Belongs to community clubs (e.g., scouts, *drill* or musical or dance groups, church fellowship)
S97	G97	Behaves appropriately in public places
S98	G98	Is respectful to others
S99	G99	Shows empathy towards others
S100	G100	Is gentle and caring with animals
S101	G101	Has a good relationship with at least one caregiver
S102	G102	Feels loved by at least one adult caregiver/parent figure (e.g. grandmother, aunt)
S103	G103	Has a good relationship with at least one sibling
S104	G104	Views home as nurturant/supportive
S105	G105	For teenage parents, has responsible parenting behavior
S106	G106	Responsible sexual behavior (e.g., abstains or is monogamous)
S107	G107	Other_____
S108	G108	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 "on edge." 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 accommodations 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)

S109	G109	No suicidal wish or intent
S110	G110	Has self-awareness of emotional state/emotions
S111	G111	Shows a range of emotions (e.g., not flat affect)
S112	G112	Can express strong emotions appropriately
S113	G113	Emotional reactions are consistent with "provoking" circumstances
S114	G114	Is able to express emotional needs appropriately
S115	G115	Has healthy outlets for emotional feelings (consistent with culture)
S116	G116	Talks about concerns to determine if they are warranted
S117	G117	Talks with an adult or others to help keep emotional reactions reasonable
S118	G118	Uses "self-talk" to manage mood/anxiety
S119	G119	Uses distraction to manage mood anxiety
S120	G120	Has an appropriate understanding of "blame"; does not blame self too much
S121	G121	Feels good about self
S122	G122	Has a positive self-perception
S123	G123	Self-nurturing
S124	G124	Has a good/pleasant temperament
S125	G125	Has fun, enjoys self
S126	G126	Attends school despite feelings
S127	G127	Participates in peer activities despite feelings
S128	G128	Shows interest in friends and activities
S129	G129	Can be away from caregivers without undue distress
S130	G130	Easily separates from caregiver when taken to school/daycare
S131	G131	Sleeps well at night
S132	G132	No somatic complaints
S133	G133	Other_____
S134	G134	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 genuine desire 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)

S135	G135	No self-destructive actions
S136	G136	No self-destructive talk
S137	G137	No suspicious "accidents"
S138	G138	Does not knowingly engage in dangerous behavior
S139	G139	Seeks help if experiences self-destructive urges
S140	G140	Uses coping strategies other than self-harm (e.g., "tuning out")
S141	G141	Uses appropriate outlets (e.g., walks)
S142	G142	Respects his/her body (e.g., not cutting)
S143	G143	Resists being abused
S144	G144	Avoids being sexually exploited
S145	G145	Practices safe sex (e.g., uses condom) or abstinence
S146	G146	Eats at regular intervals; intakes at least minimum daily calories
S147	G147	Maintains adequate weight without supervision
S148	G148	Other_____
S149	G149	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 is associated with serious negative consequences (e.g., injured, in accident, 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 Getting into trouble as related to usage (e.g., argues, fights with family or friends, trouble with teachers, trouble with police, breaks rules, misses curfew). 167 Behavior potentially endangering self or others is related to usage (e.g., vulnerable to injury or date rape). 168 Friendships change to mostly substance users. 169 High or intoxicated once or twice 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)

S150	G150	Acknowledges substance use
S151	G151	Acknowledges the negative effects of substance use on own behavior
S152	G152	Acknowledges that own substance use impacts others negatively
S153	G153	Has strategies for coping with factors that trigger use
S154	G154	Is participating in treatment for substance use
S155	G155	Complies with requests for drug tests
S156	G156	Occasional use without excess
S157	G157	No use of substances
S158	G158	*Perceives no need to use*
S159	G159	Is trying to disengage from friends who use (to develop non-using social network)
S160	G160	Friends don't use
S161	G161	Intentionally selects friends who are non-users
S162	G162	Is involved in alternative pro-social activities
S163	G163	Parents don't use and do educate youth about drugs
S164	G164	Other_____
S165	G165	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)

S166	G166	Despite communication difficulties, tries to relate to others
S167	G167	Can communicate needs to others
S168	G168	Can express self adequately and clearly
S169	G169	Talks to others at an age-appropriate level
S170	G170	Tries to control inappropriate thoughts, feelings, and impulses
S171	G171	No hallucinations or delusions
S172	G172	Fantasies are "within normal limits" for age
S173	G173	Understands that thoughts cannot directly cause events to happen
S174	G174	Has good understanding of personal circumstances
S175	G175	Good problem solving ability
S176	G176	Thinks logically
S177	G177	Can envision long-term goals
S178	G178	Behavior related to hygiene is age-appropriate
S179	G179	Has age-appropriate self-care behaviors
S180	G180	Understands the need for medication
S181	G181	Other_____
S182	G182	Other_____

Appendix T: State developed medical necessity criteria for both adult and child and adolescent services. The purpose of Appendix T is to provide decision-making criteria for the admission, continuing stay, and discharge of children and adolescents in various treatment environments under regulation by the State Medicaid and mental health agencies.

At-risk children and adolescents: Term typically used to identify children and adolescents, typically with Serious Emotional Disorders (SED) that are demonstrating behaviors which are placing them at higher risk of being placed in an out-of-home placement which could include inpatient psychiatric hospitalization, residential treatment facility (RTF), or foster care placement.

Children's Health Insurance Program (CHIP): is a state and federally funded children's health insurance program. CHIP provides free or low cost health insurance to children who fall within CHIP income guidelines and are not eligible for MA (Medicaid) or covered by private insurance

Fee-for-service MA coverage: As defined by the Pennsylvania Department of PublicWelfare, "If a child is eligible for services under the Fee-For-Service program, he/she will receive a list of MA behavioral health providers within their county. Once he/she finds a provider, he/she can make an appointment if the provider is seeing new clients. If there are problems with making an appointment, your local county caseworker in the County Assistance Office, or your caseworker from the county Mental Health/Mental Retardation office will assist" ("Fee-for-Service," n.d.)

Health Choices Managed Care: As defined by the Pennsylvania Department of Public Welfare, "Mental health and drug and alcohol services provided via the Health Choices program differ from the physical health component of the Health Choices program. For mental health and drug and alcohol services, each county contracts with a Managed Care Organization (MCO). Once you enroll with the MCO, you continue to have choices as to who provides your services. The MCO will send you a handbook outlining how to access services and outlining the benefits available to you. If a practitioner is a Health Choices participating provider, and is accepting new clients, you have the right to see that doctor" ("HealthChoices Managed Care," n.d.)

In-plan Services: As defined by the University of Pittsburgh, "Mandatory medical services that as a condition of receiving federal matching funds, states are statutorily required to provide these services that are classified as mandatory: early and periodic screening, diagnostic and treatment (EPSDT) services for children under age 21; family planning services and supplies; home health care for persons eligible; inpatient hospital services; laboratory and x-ray services; medical and surgical dental services; nurse midwife services; nursing facility services; outpatient hospital services; nurse practitioner services; physician services; and rural health clinic and federally qualified health clinic services offered by these entities" ("Medically Necessary," n.d.).

Level of Care: The intensity of behavioral health services prescribed based on the consumer demonstrated behavioral health needs. Concerning outpatient behavioral health services, outpatient mental health therapy is the lowest level of care for children and adolescents and child and adolescent partial hospitalization is the highest level of outpatient behavioral health services.

Medicaid (MA): also referred to sometimes as Medicaid, provides payment for health care services on behalf of eligible low-income individuals with limited income and high medical expenses. The MA Program is a joint state/federal program that pays for health care services for about 1.9 million Pennsylvania residents. In Pennsylvania, the Department of Public Welfare (DPW) administers MA and county assistance offices conduct eligibility determination and recertification.

Medical necessity criteria: is a United States legal doctrine, related to activities that may be justified as reasonable, necessary, and/or appropriate, based on evidenced-based clinical standards of care.

Medically Necessary: As defined by the University of Pittsburgh, "Medically necessary is a service or benefit that is reasonably expected to prevent the onset of an illness, condition or disability; reduce or ameliorate the physical, mental or developmental affects of an illness, condition, injury, or disability; assist the recipient to achieve or maintain maximum functional capacity in performing daily activities, taking into account both the functional capacity of the recipient and those functional capacities that are appropriate for members of the same age" ("Medically Necessary, n.d.).

Out-of-home placement: Term used to identify the risk children and adolescents may experience based on their behaviors and other risk factors that may lead to placement outside of the home, to include foster care, therapeutic foster care, inpatient psychiatric hospitalization, and residential treatment facility.

Prescriber: an individual, typically psychiatrist or psychologist, that establishes a members condition meet the criteria established for medical necessity for a level of care and then documents a written prescription for behavioral health services to be justified.

Serious Emotional Disturbance (SED): "a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree, which adversely affects educational performance: An inability to learn which cannot be explained by intellectual, sensory, or health factors; an inability to build or maintain satisfactory interpersonal relationships with peers and teachers; inappropriate types of behavior or feelings under normal circumstances; a general pervasive mood of unhappiness or depression, and a tendency to develop physical symptoms or fears associated with personal or school problems (Council for Exceptional Children, 2011)."