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Theoretically Guided Examination of Caregiver Strain and its Relationship with School-Based Mental Health Services Utilization and Parent Engagement in Services

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Theoretically Guided Examination of Caregiver Strain and its Relationship with School-Based
Mental Health Services Utilization and Parent Engagement in Services

by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
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Dedication

I told my parents very early on that I wanted to be a doctor one day. I did not know then of the winding and unpredictable path that would eventually lead me to the realization of this goal. Like many others, my journey was not straightforward, and included many unanticipated detours and stops along the way. In looking back, the path I took to this point was certainly not the simplest or the fastest, but had I gotten here any other way, I would not have had the privilege and the blessing of all of those who have joined me along the way. It is to these individuals that I dedicate this dissertation.

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To my parents, Delores and Jeff. What can I say? It is because of you that I have made it to this point. For as long as I can remember, you instilled in me a love for learning and a desire to be and do my very best. My reaching this milestone is a testament to you as parents – I can only hope to do the same for my own children. You sacrificed much along the way to ensure that I had every opportunity to fulfill my dreams, and you made them yours as well. And to my

Mom, words cannot express how grateful I am for your support and encouragement. You are my biggest cheerleader and I am thankful to be able to make you proud.

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Abstract

Broadly, the purpose of this study was to address the gaps in the knowledge base of caregiver strain through an examination of this and other theoretically related constructs in a sample of parents of high-risk youth. In the last two decades, a growing body of research has pointed to the significance of strain that can result from this caregiving experience, particularly as it relates to patterns of mental health services utilization. Despite the fact that the majority of children who receive mental health receive them from the school, few studies have examined caregiver strain in the context of school-based mental health services or with caregivers of youth in special education for Emotional Disturbance (ED). Additionally, while the Modified Double ABCX Model of family stress and coping has been identified as a useful model to understand caregiver strain and its related constructs, questions remain about how all of the components of this model work together to influence caregiver strain and the mechanism by which caregiver strain influences youth mental health service use and parent engagement in services. The specific aims of this study were to: (1) explore the construct of caregiver strain and its relationship with theoretically related constructs in caregivers of youth in special education for ED, and (2) examine the factors, including caregiver strain, that predict school-based mental health services utilization and parent engagement in services.

Secondary analyses were conducted using data collected as part of a randomized controlled trial of a parent support intervention for caregivers of youth in special education for ED. Participants included 112 caregivers and you their youth recruited from 22 schools and special education centers. Data were provided by caregivers and school-based mental health service providers. Caregivers completed phone interviews conducted upon entry into the study and again approximately nine months later. These semi-structured interviews included measures of youth functioning, caregiver strain, and caregivers' perceptions related to their child's problems and engagement in services. School-based mental health service providers supplied data related to the amount of school-based mental health counseling services received by youth and whether caregivers consulted with service providers during the study period. Data were analyzed using a variety of quantitative methods, including descriptive statistics, dependent samples t-tests, one-way ANOVA, Structural Equation Modeling (SEM), multiple linear regression, and multiple logistic regression.

Results revealed that caregivers reported the highest levels of subjective-internalizing strain, and that the level of three types of caregiver strain decreased from time 1 to time 2. Additionally, caregivers of males tended to report higher levels of strain than caregivers of females, and parents tended to report higher levels of strain than other caregivers. Consistent with previous studies, non-Hispanic Black caregivers tended to report the lowest levels of caregiver strain compared to all other racial/ethnic groups. Findings from SEM analyses revealed that following slight modifications to the originally hypothesized model, the model tested fit the data well and all of the paths included in the model (other than those related to race/ethnicity) had statistically significant parameter estimates. Findings from the multiple linear regression analyses revealed that collectively the predictors included in the model accounted for only a

small percentage of the variance in the outcome (11.9%), and none of the predictors included in the regression model significantly predicted the amount of school-based counseling received by students. Results from the multiple logistic regression analyses revealed that only youth gender and youth conduct problems were significant predictors of the outcome; caregivers of male youth and caregivers of youth with more conduct problems were less likely than caregivers of female youth and caregivers of youth with fewer conduct problems, respectively, to have consulted with their child's school-based mental health services provider during the school year.

Collectively, findings from this study demonstrate that caregivers of youth in special education for ED experience caregiver strain to a similar degree as caregivers of youth receiving services through mental health systems. Further, findings provide evidence for the usefulness of the Modified Double ABCX Model in studying and understanding caregiver strain in this population. While findings from this study provide support for the relationships among the constructs of this model, findings from this study also suggest that this model may not hold up in terms of predicting the amount of school-based services received by youth or the likelihood of parent engagement with their child's school-based mental health service provider. Additional research is needed that includes a more complete representation of the constructs of this model to determine if this model holds for school-based service use and engagement.

Chapter One

Introduction

The 1999 Surgeon General's Report on mental health emphasized the value of a population-based public health approach to mental health and mental illness (USDHHS, 1999). In the years following this report, a multitude of efforts have been undertaken in public health and behavioral health to integrate these systems in order to address the overall health of individuals in the population. The most recent national objectives for improving health in the United States provide evidence for these efforts. Of the more than 40 topic areas included in Healthy People 2020, mental health and substance abuse are two of only twelve Leading Health Indicators selected to "communicate high-priority health issues" (HealthyPeople.gov). The inclusion of behavioral health programming in the Centers for Disease Control and Prevention Division of Population Health, and the public health focus evident in the mission statement for the Substance Abuse and Mental Health Services Administration provide further evidence for these efforts.

Public health is generally understood as a population-based approach to health that emphasizes health promotion and prevention of disease (Levin, Hanson, Hennessy, & Petril, 2010). More specifically, public health has been defined as "the science and art of preventing disease, prolonging life, and promoting physical health and efficiency through organized community efforts...which will ensure to every individual in the community a standard of living

adequate for the maintenance of health...to enable every citizen to realize his [and her] birthright of health and longevity” (Winslow, 1920, pp. 6-7). As defined by the Institute of Medicine’s (IOM) Committee for the Future of Public Health, the mission of public health is the “fulfillment of society’s interest in assuring conditions in which people can be healthy” (IOM, 1988, p.40), and the substance of public health is “organized community efforts aimed at the prevention of disease and promotion of health” (IOM, 1988, p. 41).

Although there is no single agreed upon definition for behavioral health, the term is generally understood to collectively refer to mental health/mental illness and alcohol/drug abuse (Power, 2010). Part of behavioral health, mental health has been defined “a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community” (WHO, 2001). Mental illness refers to “mental disorders characterized by alterations in thinking, mood, or behavior, associated with distress or impaired functioning” (Primm, et al., 2010, p.2). When conceptualized as field of study, behavioral health has also been defined as the study of alcohol, drug abuse, and mental disorders from a public health perspective (Bettinger, Levin, & Hanson, 2008).

Epidemiology of Behavioral Health Problems

Worldwide, nearly 450 million people suffer from mental disorders, including alcohol and drug use disorders (WHO, 2001), and it is estimated that one fourth of the world’s population will develop a mental disorder at some point in their lives (Murray & Lopez, 1996). Behavioral health problems are also widespread in the United States. In 2012, nearly 20% of the adult population reported having any mental illness in the last year, and 4% reported having a serious mental illness in the last year (Substance Abuse and Mental Health Services

Administration, 2013). Among the U.S. adult population, the estimated lifetime prevalence of mental disorders is 29% for anxiety disorders, 25% for impulse-control disorders, 21% for mood disorders, and 15% for substance use disorders (Kessler, et al., 2005). The estimated lifetime prevalence of co-occurring mental and addictive disorders of approximately 50% (Kessler, et al., 1996).

In terms of global disease burden, four of the top ten causes of disability worldwide are mental illnesses, and the World Health Organization estimates that by 2020 depression will produce the second largest disease burden worldwide. In the United States, more than \$100 billion is spent per year on mental health care, and untreated or inadequately treated mental illness results in even greater economic burden (Mark, Levit, Buck, Coffey, & Vandevort-Warren, 2007).

Behavioral health problems have been shown to be associated with several health risk behaviors. Individuals with mental disorders are twice as likely as individuals in the general population to use tobacco (Lasser, et al., 2000), and youth receiving psychiatric care are more likely to engage in risky sexual behaviors (Donenberg & Pao, 2005). Additionally, the rate of intentional and unintentional injuries for people with mental illness is two to six times higher than in the general population (Wan, Morabito, Khaw, Knudson, & Dicker, 2006). There is extensive evidence for associations between mental illness and multiple chronic diseases, including cardiovascular disease, diabetes, obesity, asthma, epilepsy, and cancer (CDC, 2011). The life expectancy for individuals with serious mental illness that is up to 25 years less than the general population, and a large percentage of this disparity can be attributed to heart and circulatory disorders, diabetes and other chronic diseases (Manderschneid, 2010).

Children's Mental Health

Evidence suggests that nearly half of all lifetime cases of mental illness begin by mid-adolescence (Kessler, et al., 2005). Further, approximately one half of youth in the United States experience a diagnosable mental disorder at some time in their lives and roughly one quarter experience a diagnosable disorder with severe functional impairment (Merikangas et al, 2010). Mental health problems increase the likelihood of academic underachievement, impact negatively on the quality of a child's life (Rothi & Leavey, 2006) and have lifelong effects that include psychosocial and economic costs for youth, their families, their schools, and their communities (National Academy of Sciences, 2009). Further, epidemiologic data support a "pervasive comorbidity" between mental disorders and clinically diagnosed physical conditions in youth (Merikangas, et al., 2015, p. e933).

Despite the high number of youth with mental health needs, very few receive mental health services. Estimates suggest that as many as 70% of youth with mental disorders do not receive treatment (Greenberg, et al., 2003; Merikangas, et al., 2011). Receipt of services often varies by disorder type, with higher service rates for youth who present with externalizing disorders compared to youth who present with internalizing disorders (Merikangas, et al., 2011). Variations in child mental health service use by race/ethnicity have also been demonstrated (Merikangas, et al., 2011). Numerous barriers can impede youth with mental health problems from receiving services. Families may face structural barriers such as lack of transportation to attend appointments, prohibitive costs of treatment, or barriers related to perceptions of mental health problems and services, such as thinking mental health problems are not serious or not expecting treatment will help (Owens, et al., 2002).

As the need for children’s mental health services continues to grow at a rapid pace, resources available to meet these needs are limited. Funding is a considerable challenge in children’s mental health. Not only are the multiple funding streams complex and difficult for providers and families to navigate, but very few states report consistent support and funding for children’s mental health (Green-Hennessy, 2010). Additionally, acute workforce shortages present a significant challenge for children’s mental health (Green-Hennessy, 2010). The complex and disjointed nature of the services delivery system is an especially noteworthy challenge for children’s mental health. The child mental health service “system” is not one organized system of care, but rather a complex arrangement comprised of numerous child-serving systems, few of which have a primary focus on mental health. As a result, youth who receive mental health services usually receive them in a variety of settings from a number of different providers (Burns, et al., 1995). In fact, most youth with mental health needs who do receive services receive them from non-specialty mental health providers in education and primary practice settings (Ford, 2008). Because these different systems often operate in parallel, without communicating or sharing resources, it can be very difficult for families to get the care their children need. Additionally, despite the high likelihood of comorbidity, coordination of mental and physical health care is not reflective of typical practice (Hennessy, 2010).

School-Based Mental Health

Many of the barriers preventing youth from receiving needed services can be overcome through the provision of school-based mental health services. School-based mental health services offer greater access to services, and have demonstrated success in reducing logistical barriers and decreasing the stigma of help seeking (Bringewatt & Gershoff, 2010). Evidence suggests that for youth who do receive mental health services, the majority receive services in

the school (Rones & Hoagwood, 2000). Beyond increasing access to services for students with mental health problems, school-based mental health programs have the potential to benefit all youths in school by building positive school climate and promoting positive social, emotional, and behavioral health (Bruns, Walrath, Glass-Seigel, & Weist, 2004).

There is clear federal support for the provision of mental health services in schools. Both the Surgeon General's Report on Children's Mental Health (USDHHS, 2000) and the report from the President's New Freedom Commission on Mental Health (2003) recognize the potential of schools as a setting for providing mental health care and enhancing service utilization. More recently, President Obama released a four-point plan to protect children and communities that included increasing access to school mental health services (The White House, 2013).

Given the appeal of school-based mental health programs and services to reach many youth and affect positive outcomes, as well as consistent support at the federal level for the implementation of such programs, it is not surprising that most schools in the U.S. offer some type of school mental health programming (Foster, Rollefson, Doksum, Noonan, & Robinson, 2005). However, despite their widespread implementation, the growing literature base on the effectiveness of school mental health programs has failed to provide conclusive evidence for the impact of these programs and services on outcomes for youth and their families (Rones & Hoagwood, 2000; Kutash, Duchnowski, & Lynn, 2006). Even with an abundance of specific interventions with empirical support for their efficacy, school-based mental health programs and services have generally not produced significant improvements in outcomes for a large number of children and youth. In response to these observations, both researchers and policy makers have suggested that a public health approach to school mental health is necessary to ensure the capacity of schools to provide effective services to all youth (e.g., Duchnowski & Kutash, 2007;

Smith, Molina, Massetti, Waschbusch, & Pelham, 2007; Adelman & Taylor, 2006). With an emphasis on populations rather than individuals, as well as prevention and health promotion, a public health approach has been suggested as a means by which to realize the potential of school-based mental health programs (Kutash, et al., 2006).

Of those researchers who have suggested the application of a public health approach in school mental health, most have emphasized the inclusion of prevention efforts in school-based mental health programming using a tiered structure (e.g., Smith, et al., 2007, Adelman & Taylor, 2006). While prevention is a hallmark of public health, it is but one component of a comprehensive public health approach to the provision of effective school-based mental health services for children and their families. A broad view of public health that incorporates but also goes beyond a tiered system of prevention is necessary to address the mental health needs of all students, including those with serious emotional and behavioral challenges.

The Role of Parents in Children's Mental Health

In 1969 the Joint Commission on Mental Health in Children published a report titled "Crisis in Child Mental Health: Challenges for the 1970's." In this report, members of the Commission shame the United States for not using its abundant knowledge and resources to properly care for the nation's children, particularly children with emotional and behavioral disorders. As a consequence of uncoordinated and inefficient service delivery systems, many children with unmet needs found themselves removed from their families and communities and confined to overcrowded state hospitals, with few adequately trained professionals to provide treatment. Findings of the Joint Commission were echoed by the President's Commission on Mental Health in 1978, which found few communities provided the volume or continuum of programs and services necessary to meet children's mental health needs. Both Commissions

recommended the creation of an integrated network of comprehensive services, programs and policies to meet the needs of children and youth. However, despite this recommendation and the harsh criticisms put forth in the Joint Commission's report, system change remained elusive more than 10 years later, as evidenced by the publication of "Unclaimed Children" by Jane Knitzer (1982). In this report, Knitzer described mental health services for children and their families as still lacking, stating that relatively few children in need of services received them, and when treatment was received, it was often inappropriate and excessively restrictive.

Overwhelmingly, findings from these reports paint the picture of uncoordinated, difficult to navigate, often inappropriate and overly restrictive mental health systems unresponsive to the needs of children and their families. In response to the need to better serve these children and their families, Congress appropriated funds for a federal initiative in child mental health, launching the Child and Adolescent Service System Program (CASSP) in 1984. In the three decades that followed, children's mental health service systems have undergone sweeping reforms in the way services are provided to children with emotional and behavioral disorders and their families, the way families are viewed, and the role families play in their children's care.

The Changing Role of the Family in Children's Mental Health

The evolution of how families are viewed in relation to their child's mental health problems and treatment has been described as a paradigm shift (Spencer, Blau, & Mallery, 2010). Historically, parents were seen as the cause of their child's problems, and because a child's behavioral and emotional status was considered the result of care giving, problems with behavior or emotions were often explained by parental failure. As a result, families often felt blamed and ashamed as a result of their child's problems (Spencer, et al., 2010). Within service settings, the role of parents in their child's treatment was limited to providing information about

the child and family at the beginning of the treatment process, and parents were not generally involved in developing treatment plans for their children (Koroloff, Friesen, Reilly, & Rinkin, 1996). Additionally, because parents were viewed as the cause of their child's problems, they were themselves often targets for treatment and viewed as patients, clients, or learners (Friesen & Stephens, 1998).

Over time however, parents have come to be recognized as partners in the treatment process, whereby the relationship between caregivers and service providers has shifted from an "expert-service recipient" role to one that recognizes the expertise parents provide in their children's treatment. As partners in their child's treatment, it is now generally expected that parents work together with professionals to identify goals and to develop, implement, and evaluate services for their child and their family (Friesen & Stephens, 1998). This shift in how parents are viewed in relation to their child's mental health problems and treatment occurred alongside changes in children's mental health service delivery systems. Simultaneously, service systems reform impacted changes in the role of families, and many service systems changes resulted from advocacy efforts by parents themselves.

Caring for Children with Emotional and Behavioral Disorders

One of the most significant results of service systems reform and changes to the role of the family was a shift in where services were provided to children and their families. Whereas the early service systems were characterized by the provision of mental health services in residential settings, current service systems are characterized by the provision of services to children and their families in their own homes and communities. Previously asked to relinquish custody of their children for them to be placed in an institution to receive care, parents gained responsibility for the day-to-day care of their children with emotional or behavioral disorders and

for the facilitation and coordination of their mental health services. As a result, families often report stressors related to their child's symptoms, disruption of family and social relationships, strain on family finances (Heflinger, Northrup, Sonnichsen, & Brannan, 1998), lack of time for self, spouse, and other children, and stigma (Friesen & Huff, 1996). Additionally, service systems can present stressors for families who encounter insensitive and unresponsive professionals and programs (Friesen & Koroloff, 1990).

Caregiver Strain

The stressors related to caring for a child with emotional or behavioral disorders can have a significant impact on parents and families. Impact of their child's problems is apparent in parents' mental and emotional health, physical health, social relationships, work life, and the general family environment (Mendenhall & Mount, 2011). Caregiver strain refers to the additional demands placed upon caregivers related to the day-to-day care of their children with emotional and behavioral disorders, and the impact of these demands on families (Brannan, Athay, & de Andrade, 2012). Caregiver strain results from the cumulative negative effect of factors resulting from caring for an individual with emotional or behavioral challenges and has been characterized as a normative response to caring for a child with emotional and behavioral problems (Brannan & Heflinger, 2006). Caregiver strain is generally thought to be comprised of two related but distinct dimensions, objective strain and subjective strain. Generally, objective strain is related to observable negative consequences resulting directly from the child's problems. In contrast, subjective strain refers to caregivers' feelings related to negative occurrences that result from their child's problems, and can be characterized as internalized or externalized (Brannan & Heflinger, 2001).

The Modified Double ABXC Model (Heflinger, Northrup, Sonnichsen, & Brannan, 1998; Brannan, Heflinger, & Foster, 2003) specifically addresses stress and coping within families of children with emotional and behavioral disorders, and provides a useful framework for understanding caregiver strain in the context of a family's day-to-day experience. The Modified Double ABCX Model is the theoretical framework that guided the current study.

Caregiver Strain and Service Use

The fact that so few children with mental health needs receive treatment suggests that the mere presence of a disorder is not sufficient to explain treatment seeking (Angold, et al., 1998); other factors play an important role in determining which youth receive needed services, and subsequently who is likely to experience the negative impact of untreated mental health needs. Caregivers of children with emotional and behavioral problems play a critical role in their child's service use. Caregivers are essential to finding services for their children, transporting youth to and from services, and can terminate services at any time (Mayberry & Heflinger, 2013). Caregivers have the ability to facilitate or hinder treatment in a variety of ways (Reich, Bickman, & Heflinger, 2004), and are important to accessing treatment, shaping the treatment experience, and supporting clinical gains in the home, school, and community (Heflinger & Brannan, 2006).

There is a large body of literature that demonstrates the critical role of caregiver strain in children's mental health services utilization. Caregiver strain has been shown to impact the likelihood of receiving mental health services (Farmer, Burns, Angold, & Costello, 1997; Bussing et al., 2003; Villagrana, 2010; Brannan & Heflinger, 2005), the types of services received (Angold, et al., 1998; Chavira, Garland, Yeh, McCabe, & Hough, 2009; Brannan, Heflinger, & Foster, 2003) and the length, duration, or amount of services received (Burnett-Zeigler & Lyons, 2010; Brannan & Heflinger, 2005).

Given the apparent influence of caregiver strain on mental health services utilization, researchers have looked toward racial/ethnic differences in the experience of caregiver strain as an explanation for observed disparities related to mental health service utilization. Several studies have documented racial and ethnic differences in the experience of caregiver strain (McCabe, Yeh, Lau, Garland, & Hough, 2003; Kang, Brannan, & Heflinger, 2005) and there is support for the idea that culturally influenced perceptions of strain may lead to different rates of service use (Shin & Brown, 2009). While many potential explanations for the observed racial/ethnic differences of caregiver strain have been suggested, none of these proposed explanations have been conclusively supported by research findings. This has led some investigators to suggest the need for more theoretically driven studies of caregiver strain to better understand this relationship (Kang, et al., 2005).

Caregiver Strain and Parent Support and Engagement

Addressing the needs of youth with serious emotional and behavioral problems not only requires the provision of accessible and appropriate services, but also parent engagement in these services. As stated by Ingoldsby (2010), “Engaging and retaining families in mental health prevention and intervention programs is critically important to insure maximum public health impact.” (p.629). Lack of parent engagement, however, has been described as one of the major challenges facing the education and mental health systems (Kutash & Duchnowski, 2013).

A multitude of factors can impact engagement in services, including demographic factors, familial characteristics, social networks, personality variables, and provider characteristics. Within school mental health programs, administrative structures or school climate/culture can also impact family involvement (Bickham, Pizarro, Warner, Rosenthal, & Weist, 1998). For parents of children with serious emotional and behavioral challenges, the

impact of past experiences with service systems have been shown to impact engagement in services (Wagner, Kutash, Duchnowski, Epstein, & Sumi, 2005; Owens, et al., 2002).

Additionally, parents' expectations about services can impact engagement in services (Evans & Weist, 2004; Nock & Kazdin, 2001; Bannon & McKay, 2005) as well as parent socio-demographic factors (Armbruster & Fallon, 1994; Zhang, Hsu, Kwok, Benz, & Bowman-Perrot, 2011).

Because family engagement in services is critical to improved outcomes for youth and their families, improving engagement of families through the provision of education and support is an important priority in the field. However, despite the widespread provision of parent support services through the schools, there is evidence to suggest that families of youth with serious emotional and behavioral problems do not access these services (Duchnowski, et al., 2012). Just as caregiver strain has been shown to impact youth's use of mental health services, there is also evidence to suggest that caregiver strain may be an important factor in determining a parent's use of support services (Cook and Kilmer, 2010; Mayberry & Heflinger, 2013) and response to support interventions aimed at increasing parent engagement in their children's services (Kutash, Duchnowski, Green, & Ferron, 2011; Kutash, Duchnowski, Green, & Ferron, 2013).

The Current Study

The past three decades have produced sweeping reforms in children's mental health that have changed the ways in which services are delivered to children and how the family is viewed in their child's treatment. Concurrently, researchers have increasingly focused on the impact of caring for children with emotional and behavioral disorders. A relatively large body of research has demonstrated the importance of caregiver strain as it relates to child mental health services utilization, and an emerging body of literature has begun to accumulate acknowledging the

potential of caregiver strain to aid in our understanding of parents' use of support services and engagement in their child's services. Caregiver strain has also emerged as a potentially important factor that could help to explain disparities in access to and use of quality mental health services.

Purpose of the Current Study

While a great deal of work has been done to understand the role and function of caregiver strain, many questions remain about this construct and how it functions in different populations. For example, although caregiver strain has been broadly studied in community mental health samples, few studies have examined caregiver strain in school-based samples. This is true despite the fact that the majority of children who receive mental health services receive them in the school. Further, few if any studies have examined caregiver strain and its related constructs in parents of children receiving special education services for Emotional Disturbance (ED). Understanding the mechanisms that have the potential to impact service use and engagement is of particular importance in this population. These students do not only have educational deficits but also demonstrate a complex array of mental disorders (Kutash & Duchnowski, 2013). Additionally, these youth have the poorest outcomes compared to youth in other disability groups (Kutash, Duchnowski, & Green, 2011).

In addition to questions about the experience of strain in different populations, there is not yet a clear understanding of the underlying theory of caregiver strain. While several researchers have acknowledged the potential of the Modified Double ABCX Model of family stress and coping to understand caregiver strain and its related constructs, questions remain about how all of the components of this model work together to influence caregiver strain and the mechanism by which caregiver strain influences youth mental health service use and parent engagement in services.

Broadly, the purpose of this research study was to address these gaps in the knowledge base through an examination of caregiver strain and other theoretically related constructs in a sample of parents of high-risk youth. Specific aims and questions for the study (outlined below) were addressed through the secondary analysis of data collected as part of a parent support intervention trial conducted with parents of students receiving special education for ED.

Specific Aims and Research Questions

Aim 1. Explore the construct of caregiver strain and its relationship with theoretically related constructs in caregivers of youth in special education for ED.

1. What is the level of reported strain in the sample?
2. Are there differences in the level of different types of strain reported by individuals in the sample?
3. Is the level of strain in the sample stable over time?
4. Does the level of each of the different types of strain differ according to child and family demographic characteristics?
5. What is the relationship between caregiver strain and youth functioning, perceptions, and resources?
6. Is race/ethnicity related to caregiver strain, perceptions, and resources?

Aim 2. Examine the factors, including caregiver strain, that predict school-based mental health services utilization and parent engagement in services.

1. Do caregiver strain and other theoretically related constructs predict the amount of school-based mental health services received by youth?

2. Do caregiver strain and other theoretically related constructs predict whether or not caregivers consult with their child's school-based mental health services provider during the school year?

Concluding Remarks

As children's mental health systems have transitioned into a family-focused system of care, more and more researchers have recognized the important role of the family, and specifically parents, in caring for children with emotional and behavioral problems. In the last two decades, a growing body of research has pointed to the significance of strain that can result from this care giving experience. The knowledge base on caregiver strain clearly points to both its importance and its complexities. While it is generally accepted that strain is important, many questions remain about exactly how strain is experienced by caregivers and how it functions in important relationships, such as those with service use, engagement, and race/ethnicity. As a result, there is limited understanding of how caregiver strain functions to impact different aspects of mental health service use. These limitations in understanding caregiver strain are perhaps most pronounced for parents of youth receiving special education services. The current study aims to address these limitations through a theoretically guided examination of caregiver strain and related constructs.

Chapter Two

Literature Review

National epidemiological data suggest that approximately one half of youth in the United States experience a diagnosable mental disorder at some time in their lives, and more than one quarter experience a diagnosable disorder with severe functional impairment (Merikangas, et al., 2010b). Further, there is evidence that approximately half of all lifetime cases of mental disorders begin by age 14 (Kessler, et al., 2005) and between 37% and 39% of youth have received one or more diagnoses for mental disorders by 18 years of age (Forness, Freeman, Paparella, Kauffman, & Walker, 2012). Findings from the National Health and Nutrition Examination Survey (NHANES) suggest that approximately 13% of youth in the U.S. experienced a mental disorder during the previous year and approximately 11% experienced a mental disorder with moderate or severe functional impairment in at least two domains (Merikangas, et al., 2010). The impact of mental disorders in youth are significant and include psychosocial and economic costs for youth, their families, their schools, and their communities (National Academy of Sciences, 2009). In fact, close to \$9 billion is spent per year to treat youth who meet criteria for a diagnosable mental disorder, more than for any other childhood illness (Blau, Huang, & Mallery, 2010). Even mild mental health problems can negatively impact overall health and quality of life and make it more difficult for youth to succeed in school, at work, and in social situations (Miles, Espiritu, Horen, Sebian, & Waetzig, 2010).

Youth Mental Health Services Utilization

Despite the high number of youth with mental health needs, results from multiple studies reveal that few of these youths receive mental health services. For example, results from the NHANES suggest that among all U.S. youth ages 8-15 years with a diagnosable mental disorder, approximately half (50.6%) received treatment in the past year; the percentage of youth with a diagnosable mental disorder and severe impairment who received treatment in the past year was just slightly higher (52.8%). Findings from this study further revealed that boys were more likely than girls to seek treatment, and older youths were more likely to seek treatment than younger youths. Finally, results from this study revealed no differences in the rates of service use according to race/ethnicity or poverty level (Merikangas, et al., 2010).

Findings from other studies reveal even lower estimates of service use. For example, in their examination of data from the Great Smoky Mountains Study, a longitudinal, population-based community survey of children and adolescents, Burns and colleagues found that only 40% of children with both a mental health diagnosis and functional impairment received mental health services from any child serving sector in the previous three months. Only 20% of these children received specialty mental health services during this time period (Burns, et al., 1995). Findings from the National Comorbidity Survey Adolescent Supplement (NCS-A) study revealed similar results. Only 36% of adolescents with mental disorders received services. While the likelihood of receiving services increased with greater disorder severity, still only half of adolescents with a mental disorder and severe functional impairment received mental health services. Overall, service rates were highest in youth with attention-deficit/hyperactivity disorder (59.8%) and behavior disorders (45.4%); fewer than 20% of youth with anxiety, eating disorders, or substance use disorders received treatment (Merikangas, et al., 2011).

Unlike the NHANES, findings from the NCS-A also suggest some difference in rates of service use by race/ethnicity, whereby Hispanic and non-Hispanic Black adolescents were less likely than White adolescents to receive services for mood and anxiety disorders, regardless of level of impairment (Merikangas, et al., 2011). Similarly, Garland and colleagues (2005) found that in a sample of youth from a publicly funded system of care, African American and Asian American/Pacific Islander youth were half as likely to receive any mental health services compared to non-Hispanic whites. This difference was evident after controlling for potential confounding variables (Garland, et al., 2005).

School-Based Mental Health Services

A multitude of factors can contribute to children who need mental health services but do not receive them, including lack of accessibility to treatment sites, fragmentation of services, the cost of mental health treatments, difficulty obtaining reimbursement from managed care organizations, and stigma (Weist, 1997). Many of the barriers preventing youth from receiving needed services can be overcome through the provision of school-based mental health programs and services (Bringewatt & Gershoff, 2010). In fact, both the Surgeon General's Report on Children's Mental Health (USDHHS, 2000) and the report from the President's New Freedom Commission on Mental Health (2003) recognize the potential of schools as a setting for providing mental health care and enhancing service utilization.

Comprehensive school-based mental health programs were implemented in the United States in the 1960s, and gradually grew into a national movement around the late 1980s (Bickham, et al., 1998). Today, the majority of schools in the U.S. offer some type of school mental health programming, including assessment for mental health problems, behavior management consultation, crisis intervention, referrals to specialized programs, individual and

group counseling, and case management (Foster, et al., 2005). Additionally, in the majority of American schools, all students (including those in regular education and special education) are eligible to receive mental health services, and approximately one fifth of the students receive some type of school-supported mental health services in a given year (Foster, et al., 2005).

It is widely acknowledged that for those youth who do receive services, the majority receive them through the school (e.g., Burns, et al., 1995; Farmer, Burns, Phillips, Angold, & Costello, 2003; Leaf, Schultz, Kiser, & Pruitt, 2003). In their examination of data from the Great Smoky Mountains Study, Burns and colleagues (1995) found that of those children who did receive services for a mental health problem, between 70% and 80% of them received these services solely from providers working within the education sector. They concluded “The education system was clearly the major player in the *de facto system* of care for children with mental health problems.” (Burns, et al., 1995, p. 152). Additionally, findings from this study indicated that roughly 60% of all youths who received services at some time during their lives first entered a service system through the education sector, which is more than twice the approximately 27% of youth who first entered a service system through the specialty mental health sector (Farmer, et al., 2003).

In their review of nearly 50 studies of school-based mental health services for children, Rones & Hoagwood (2000) found there are many school-based mental health programs that have evidence of impact on emotional and behavioral problems in youth. There is also evidence to suggest that school mental health programs help to close the gap in services experienced by ethnic minority youth. For example, results from the National Longitudinal Study of Adolescent Health, a nationally representative school-based sample of adolescents in grades 7-11, suggest that among high risk youth (i.e., those with high depressive symptoms, suicidal thoughts, and/or

delinquent behavior), being a racial/ethnic minority was related to a lower likelihood of receiving clinical counseling, but was not related in any way to the likelihood of receiving school-based counseling (Cummings, Ponce, & Mays, 2010). In terms of public health impact, school-based mental health programs have the potential to benefit all youths in school by building positive school climate and promoting social, emotional, and behavioral health for all students (Bruns, et al., 2004).

Caregiver Strain

Caregivers of youth with emotional and behavioral disorders often report stressors related to their child's symptoms, disruption of family or social relationships, strain on family finances (Heflinger et al., 1998), lack of time for self, spouse, or other children, and stigma (Friesen & Huff, 1996). Additionally, service systems can present stressors for families who encounter insensitive and/or unresponsive professionals and programs (Friesen & Koroloff, 1990). The stressors related to caring for a child with emotional or behavioral disorders can have a significant impact on parents and families. The impact of their child's problems is apparent in parents' mental and emotional health, physical health, social relationships, work life, and the general family environment (Mendenhall & Mount, 2011).

Several terms have been used to describe the added strain of caring for a relative with special needs, including burden of care, family burden of care, and caregiver burden (Brannan, Heflinger, & Bickman, 1997). The term "caregiver strain," first adopted by Brannan, Heflinger, & Bickman (1997), is now commonly used to refer to the additional demands placed upon caregivers related to the day-to-day care of their children with emotional and behavioral disorders, and the impact of these demands on families (Brannan, Athay, & de Andrade, 2012).

Caregiver strain results from the cumulative negative effect of factors resulting from caring for an individual with emotional or behavioral challenges, such as financial repercussions, impediment on social relationships, infringement on personal time and family quality of life, as well as feelings of anger, fatigue and guilt toward the individual being cared for and supported (Brannan & Heflinger, 2006). Caregiver strain has been characterized as a normative response to caring for a child with emotional and behavioral problems, an assertion partially supported by evidence to suggest parents of youth with emotional and behavioral disorders experience high levels of caregiver strain (Brannan, et al., 2003; Angold et al., 1998; Brannan & Heflinger, 2006; Taylor-Richardson, Heflinger, & Brown, 2006).

Caregiver strain is generally thought to be comprised of two related but distinct dimensions: (1) objective strain, and (2) subjective strain. Brannan & Heflinger (2001) define objective strain as the “extent to which caregivers perceive as problematic the observable negative events related to their child’s emotional or behavioral difficulties” (p. 407). Generally, objective strain is related to observable negative consequences and constraints resulting directly from the child’s problems (e.g., missing work, problems with police, or loss of personal time). In contrast, subjective strain is defined as the “unobservable emotional impact of caregiving” (Brannan and Heflinger, 2001, p. 407). Subjective strain refers to caregivers’ feelings related to negative occurrences that result from their child’s problems, and can be characterized as internalized (e.g., feelings of guilt, sadness, or worry) or externalized (e.g., anger, embarrassment, or resentment toward child).

Theoretical Framework

The Modified Double ABXC Model (Heflinger, et al., 1998; Brannan, et al., 2003) specifically addresses stress and coping within families of children with emotional and behavioral disorders and provides a useful framework for understanding caregiver strain in the

context of a family’s day-to-day experiences. Overall, the Modified Double ABCX Model offers a health-based, rather than disease-based, model that emphasizes strengths and resources within families that contribute to a family’s ability to cope (Heflinger, et al., 1998). Additionally, this model recognizes influential factors inside and outside the family that impact the process of stress and coping within the family and acknowledges the developmental and transactional nature of the family process (Brannan, et al., 2003). Table 1 presents the aims and research questions for the current study and related theoretical constructs from the Modified Double ABCX Model.

Table 1.

Study aims, research questions, and related theoretical constructs

Research Questions	Related Theoretical Constructs
<i>Aim 1: Explore the construct of caregiver strain and its relationship with theoretically related constructs in caregivers of youth in special education for ED.</i>	
1) What is the level of reported strain in the sample?	<ul style="list-style-type: none"> • <u>Stressors (aA)</u>: Youth Functioning • <u>Resources (Bb)</u>: Social Support; Material Resources
2) Are there differences in the level of different types of strain reported by individuals in the sample?	<ul style="list-style-type: none"> • <u>Perceptions (Cc)</u>: Mental Health Services Efficacy; Expected Benefit of Engagement; Social Norms
3) Is the level of strain in the sample stable over time?	
4) Does the level of each of the different types of strain differ according to child and family demographic characteristics?	<ul style="list-style-type: none"> • <u>Crisis (xX)</u>: Caregiver Strain
5) What is the relationship between caregiver strain and youth functioning, perceptions, and resources	
6) Is race/ethnicity related to caregiver strain, perceptions, and resources?	

Table 1 (continued)

Research Questions	Related Theoretical Constructs
<i>Aim 2: Examine the factors, including caregiver strain, that predict school-based mental health services utilization and parent engagement in services.</i>	
1) Do caregiver strain and other theoretically related constructs predict the amount of school-based mental health services received by youth? 2) Do caregiver strain and other theoretically related constructs predict whether or not caregivers consult with their child’s school-based mental health services provider during the school year?	<ul style="list-style-type: none"> • <u>Stressors (aA)</u>: Youth Functioning • <u>Resources (Bb)</u>: Social Support; Material Resources • <u>Perceptions (Cc)</u>: Mental Health Services Efficacy; Expected Benefit of Engagement; Social Norms • <u>Crisis (xX)</u>: Caregiver Strain • Coping Response: School-Based Counseling Received by Youth; Caregiver Consultation with Service Provider

Hill’s model was later modified by McCubbin and Patterson (1983) to depict the active processes of family adaptation through intra-family coping and transactions with the community. This modified model, the Double ABCX Model, includes the addition of post-crisis variables to capture the longitudinal nature of a family’s response to stressors. Many of the components of the Double ABCX Model are similar to Hills’s original model. As with the original model, family demands (A) interact with family capabilities (B) and family definitions (C) to influence family crisis (X). However, unlike the original model, in the Double ABCX Model the cycle of stress and coping is repeated over time, such that demands on the family can accumulate (aA), resources can be enhanced or depleted over time (bB), perceptions can be altered (cC), and families adapt to their situations (xX). The accumulation of demands on the family is included in this model to reflect the fact that families are rarely dealing with a single stressor at a time.

Rather, there is more often an accumulation of demands, including the initial stressor and its hardships, as well as normative transitions in the family, prior strains, and consequences of coping efforts (McCubbin & Patterson, 1983). Family adaptive resources represent both the existing resources of the family, as well as expanded family resources, which are strengthened or developed in response to the additional demands from the crisis situation or accumulation of stressors. Perceptions can change over time, whereby families may redefine the crisis situation and give it new meaning in order to clarify the situation and make it more manageable. Finally, a family's coping response is included in this model as a factor that influences both resources and perceptions to impact adaptation, or the outcome of family efforts to achieve a new level of balance after experiencing stressors (McCubbin & Patterson, 1983).

The Modified Double ABCX Model

In their study of children with mental health needs and their families, Heflinger and colleagues (1998) adapted McCubbin and Patterson's Double ABCX Model to examine the role of the family in clinical outcomes for children with emotional and behavioral disorders. This Modified Double ABCX Model differs from the Double ABCX Model in that child factors and their influence on family stressors are directly considered, along with child outcomes as a result of a family's adaptation to stressors. As with the Double ABCX Model, family resources and perceptions interact to determine a family's response to stressors. Over time, stressors accumulate, resources are acquired and depleted, and perceptions change, all of which influence the family's coping response and subsequent adaptation (Heflinger, et al., 1998).

In families with children who have emotional and behavioral disorders, family stressors (aA) might include the child's symptoms, disruption of family and social relationships, and experiences with professionals and programs that are insensitive and unresponsive to the

family's needs. Family resources (bB) relevant to coping with a child with emotional or behavioral disorders might include personal qualities of individual family members, parental relations, practical resources such as education and income, available coping strategies, informal and formal social support, and availability of community-based services (Heflinger, et al., 1998; Marsh, 1996). Perceptions (cC) refer to appraisals of stressors, and include a family's attitudes about emotional and behavioral disorders, which are influenced by social and cultural norms (Mayberry & Heflinger, 2013) as well as expectations about treatment effectiveness (Nock & Kazdin, 2001) and perceptions of the relevance of treatment (Bannon & McKay, 2005).

Within the context of this model, caregiver strain is depicted as a crisis (xX) that results from the family processing stressor events through resources and perceptions. More specifically, when the outcome of this process is an adaptive response, caregivers experience no or manageable levels of caregiver strain; when the response is maladaptive, caregivers can experience high levels of strain, which can result in additional stressors (Brannan & Heflinger, 2001).

As a crisis response, caregiver strain can subsequently influence the coping response of the family. Coping involves both cognitive and behavioral responses, which can influence both resources and perceptions. For example, a parent may cope by reframing their child's problems as a challenge that can lead to growth (cognitive response), which may result in a shift from appraising the stressor as a negative toward seeing the positive aspects of the experience (change in perception). A parent may also cope by changing his or her job to allow more time to be spent with the child (behavioral response), which could then lead to a reduction in family income (change in resource). Service utilization (including whether or not a family accesses services, the amount and type of services used, and the level of family involvement in the treatment

process) can also be viewed as a coping response that interacts with stressors, perceptions, and resources. Family adaptation (or maladaptation) results from the coping response, ultimately affecting outcomes for the child and family (Heflinger, et al., 1998).

Theoretical Constructs Related to Caregiver Strain

The Modified Double ABCX Model has been used by researchers to examine a variety of topics related to caregiver strain, child emotional and behavioral disorders, and the role of families in their child's mental health treatment (Brannan, 2013). Based on this model, multiple factors interact to predict caregiver strain, including child characteristics, caregiver characteristics, resources, and perceptions. Available evidence supporting the relationship between strain and these factors is presented in the following sections.

Child Characteristics. Among factors that predict strain in caregivers of youth with emotional and behavioral disorders, child characteristics are some of the most salient. Multiple child factors (represented in the Modified Double ABCX Model as A and aA) have been shown to be associated with caregiver strain, including level of child's symptomology, level of child's impairment, type of child's mental illness, and externalizing behavior problems (Mendenhall & Mount, 2011). There is an abundance of evidence that points to child symptoms and impairment as primary predictors of caregiver strain (Farmer, et al., 1997; Angold, et al., 1998; Brannan & Heflinger, 2001). The consistency of this relationship across studies has been cited as evidence that caregiver strain is a normative response of caregivers of children with emotional and behavioral disorders, and is distinct from caregiver psychological distress, which is more directly related to life stressors outside those specific to the child's emotional and behavioral problems (Brannan & Heflinger, 2001).

The complexity and severity of a child's problems can have a significant impact on the level of caregiver strain reported by parents. Specifically, greater complexity of problems and greater problem severity have been associated with higher levels of caregiver strain. For example, parents of children with multiple comorbid conditions experience high levels of caregiver strain (Rockhill, Violette, VanderStoep, Grover, & Myers, 2013). Further, parents of children with both a psychiatric diagnosis and functional impairment report higher caregiver strain than parents of children with a psychiatric diagnosis but no functional impairment and parents of children with functional impairment but no psychiatric diagnosis, suggesting an additive effect of child symptoms and impairment on caregiver strain (Angold, et al., 1998).

There is evidence to suggest that the type of disorder or problems experienced by a child can have a differential impact on caregiver strain. Generally, higher caregiver strain has been shown to be more strongly related to child externalizing behavior problems or disorders (e.g., ADHD, conduct disorder, or oppositional defiant disorder) than to child internalizing behavior problems or disorders (e.g., anxiety, depression; Angold et al., 1998). For example, Meltzer, Ford, Goodman, & Vostanis (2011) examined caregiver strain in parents of children with conduct disorders (externalizing disorders) and emotional disorders (internalizing disorders) and found that parents of children with emotional disorders reported lower levels of strain than parents of children with conduct disorders or parents of children with both emotional and conduct disorders. Type of externalizing disorder does not appear to differentially impact the level of strain reported by caregivers; both Conduct Disorder and Oppositional Defiant Disorder have been found to be highly and significantly associated with caregiver strain (Tsai, Yeh, & Slymen, 2015). It is possible that child gender plays a role in this observed relationship between disorder type and caregiver strain. Male gender has been associated with higher levels of

caregiver strain in several studies (e.g., Chavira, et al., 2009, Kang, Brannan, & Heflinger, 2005; Bussing, et al., 2003). This relationship could be explained by the higher prevalence of externalizing problems often observed in boys compared to girls.

There is also evidence to suggest a differential impact of the types of problems exhibited by the child on the different types of caregiver strain. For example, Bussing and colleagues (2003) found that parents having a child with Oppositional Defiant Disorder predicted higher levels of all types of strain and having a child with Attention Deficit Hyperactivity Disorder predicted higher levels of objective and subjective-internalized strain. Having a child with depression predicted higher levels of subjective-internalized and subjective-externalized strain.

In another study, Vaughn and colleagues (2013) grouped youth according to whether they exhibited internalizing and/or externalizing symptoms at the clinical level. They found that parents of children who exhibited both externalizing and internalizing symptoms had higher objective strain than parents whose children exhibited only internalizing symptoms and parents whose children did not exhibit any symptoms at the clinical level. They also found that parents of children who exhibited both internalizing and externalizing symptoms reported higher subjective strain than parents of children who exhibited only externalizing symptoms and parents whose children did not exhibit any symptoms. Finally, findings from this study also showed that parents of children who exhibited both internalizing and externalizing symptoms and parents of children who exhibited externalizing symptoms only had higher subjective externalized strain than parents whose children did not exhibit any symptoms at the clinical level (Vaughn, Feinn, Brereton, & Kaufman, 2013).

While several studies have examined strain in caregivers of children with externalizing versus internalizing disorders, few have examined potential differences in strain between parents

of children with mental health versus substance abuse problems. However, in their study, Heflinger & Brannan (2006) found that parents from both groups reported similar levels of strain, and for both samples, subjective internalized strain was higher than both of the other types of strain. Notably, youth challenges, especially externalizing problems and psychosocial functioning, were the most salient predictors of strain for caregivers in both groups.

Caregiver Characteristics. Caregiver type, or the relationship between the caregiver and the child, has been shown to be related to caregiver strain. Generally, there is evidence that parents experience higher levels of strain compared to relative caregivers. For example, Villagrana (2010) examined caregiver strain in a sample of caregivers of youth receiving services through child welfare. In terms of factors related to caregiver strain, results indicated that biological parents reported higher levels of caregiver strain than both foster parents and relative caregivers. In another study, Heflinger and Taylor-Richardson (2004) found that while relative caregivers and parents reported similar levels of strain overall, relative caregivers reported lower levels of internalized strain. In both of these studies, researchers observed an association between caregiver type and perceived social support. Villagrana (2010) found that biological parents reported having a weaker support system than relative caregivers and foster parents, and Heflinger and Taylor-Richardson (2004) found a link between lower strain and having more people in the household, which could suggest the influence of perceived social support.

In addition to caregiver type, caregiver race/ethnicity has been shown to impact caregiver strain. Studies have documented racial and ethnic differences in the experience of caregiver strain, with African Americans generally reporting lower levels of strain than caregivers of other race/ethnicity. For example, in their study of a public service sector sample of youths and their

families, Shin & Brown (2009) found that compared to White caregivers, African American caregivers reported lower levels of both objective and subjective strain and Hispanic caregivers reported lower levels of objective strain. Similarly, in a random sample of high risk youth active in at least one public sector of care, McCabe and colleagues (2003) found that African American caregivers reported significantly lower levels of caregiver strain than Non-Hispanic White caregivers, controlling for youth age, parental education, presence in an alcohol/drug or mental health sector, and severity of child problems.

In a study by Kang, Brannan and Heflinger (2005), African Americans reported significantly lower levels of objective strain compared to White caregivers. However, this relationship was not observed for subjective-internalized strain or overall caregiver strain. Consistent with other studies that have demonstrated a link between child symptoms and caregiver strain, findings from this study also demonstrated a positive relationship between child symptoms and objective caregiver strain for both African American and White caregivers. Compared to White caregivers, however, African American caregivers experienced less of an increase in objective strain at a given increase in child internalizing symptoms. Levels of subjective strain remained similar at different levels of child symptoms. In another study of over 1,200 youth from a large publicly funded system of care, Garland and colleagues (2005) found that of all racial/ethnic groups, African American caregivers were the least likely to score above the median on a measure of caregiver strain.

Notably, none of the studies that have examined race/ethnicity differences in strain have used a sample of caregivers of children receiving special education services for emotional disturbances. As a population, these children tend to experience some of the greatest challenges and suffer some of the worst outcomes (Wagner, et al., 2005). Given that child symptom severity

has been consistently shown to be the strongest predictor of caregiver strain, it is possible that previously noted racial/ethnic differences in strain will not be observed in this population, especially if the impact of child symptom severity outweighs the impact of race/ethnicity on caregiver strain.

Resources. Many potential explanations for the observed racial/ethnic differences caregiver strain have been suggested. One of the more commonly cited possibilities is social support, which could be considered a resource in the context of the Modified Double ABCX Model. In particular, it has been hypothesized that greater family and kinship social support for African Americans may help to explain findings of lower reported caregiver strain. This possibility is at least partially supported by findings from a study by Bussing et al (2003) in which the relationship between social networks, caregiver strain, and mental health services utilization was examined among a sample of elementary school students at high risk for ADHD and their parents. Findings from this study indicated that African American parents and parents from more disadvantaged backgrounds reported smaller network sizes, but more frequent contact and higher levels of perceived support than their White and high-SES counterparts. For all parents in the sample, close geographic proximity of support was related to lower objective strain and affirmational support was associated with lower objective and lower subjective-internalized strain.

However, other studies have yielded contrary findings. For example, Brannan & Heflinger (2001) found no relationship between social support and caregiver strain, but a direct effect of social support on psychological distress in a sample of parents of children receiving services for emotional and behavioral problems. In another study, McCabe et al (2003) examined racial/ethnic variations in caregiver strain and perceived social support among parents caring for

children with emotional/behavioral problems who were active in public sectors of care. Findings from this study showed that while African American caregivers reported lower levels of strain than White caregivers, they also reported lower levels of perceived social support. That African American caregivers in this study reported lower levels of strain could not be explained by perceived social support, as the tendency to report lower strain became more pronounced when perceived social support was controlled.

Financial resources and caregivers' education are other resources that have been shown to have an impact on caregiver strain. Interestingly, while it might be expected that higher income and more education would serve as resources to lower the experience of caregiver strain, there is evidence to the contrary. In their study, Kang and colleagues (2005) found that compared to other caregivers, those without high school diplomas reported less objective strain. Additionally, being in the lowest family income categories was related to less subjective externalized strain. Notably, while the reported income level was similar for African American and White caregivers in this study, African American caregivers had significantly lower levels of education than White caregivers.

Findings such as these raise the possibility that factors related to income and education may have a greater impact on caregiver strain, namely caregiver race/ethnicity. Results from a study by Hinojosa, Knapp, & Woodworth (2014) provide some support for this possibility. In their examination of strain among Non-Hispanic White (NHW) parents and Latino parents of children who had received treatment for a behavioral health condition in the last 12 months, Hinojosa and colleagues found that having a high school diploma was related to less caregiver strain for NHW parents; no relationship between education and strain was observed for Latino parents. In another study, Taylor-Richardson, Heflinger, & Brown (2006) examined strain

among families living in poverty and enrolled in Medicaid compared to military families participating in a mental health services evaluation project. They found that, compared to military caregivers, caregivers in the Medicaid sample reported higher objective strain, but lower subjective-internalized strain and lower subjective-externalized strain. This was true despite caregivers in the Medicaid sample reporting more child symptoms/problems. Notably, a significantly greater proportion of the Medicaid sample was African American compared to the military sample.

Acknowledging the complexities and inter-relatedness of factors that influence caregiver strain, McDonald, Gregoire, Poertner, & Early (1997) used Structural Equation Modeling to estimate a model of family caregiving for children with severe emotional disorders. Findings from this analysis demonstrated that child characteristics, specifically external problem behaviors, had the largest influence on caregiver strain. External problem behaviors also had an indirect effect on caregiver strain through family support and coping behaviors, such that increases in external problem behaviors reduced support from relatives and family, which reduced parent's coping behaviors, leading to increased caregiver strain. Child competencies on the other hand, led to greater social support, increasing parent coping behaviors and reducing caregiver strain. Socio-economic status (SES, measured by gross family income, caregiver's educational level and employment) also had a direct effect on caregiver strain. Consistent with Kang, et al (2005), findings from this study revealed that higher SES was associated with higher levels of caregiver strain. Higher SES also had an indirect effect on strain through an association with lower relative and family support, leading to decreased coping behaviors and higher strain. Interestingly, while higher SES was associated with lower levels of relative and family support,

it was also associated with higher levels of social support in the community (McDonald, et al., 1997).

Perceptions. A family's perceptions, or the meaning they make of stressors and hardships, are another component of the Modified Double ABCX Model that can impact caregiver strain. While arguably the least studied and least understood factors of this model (Brannan, 2013), perceptions have been suggested to play a crucial role in whether and how caregivers experience strain and also the coping mechanisms utilized by caregivers to address stressors (Mayberry & Heflinger, 2013).

Knowledge about mental health and mental illness can impact the meaning families make of the stressors associated with a child's emotional and behavioral problems. Families who understand the causes of mental health problems and who believe that treatment can be effective are likely to have different perceptions than families who do not have this knowledge (Jorm, et al., 2006). This knowledge can impact caregivers' self-efficacy as well, and in particular their mental health services efficacy. Mental health services self-efficacy is defined as a "domain specific form of self-efficacy in which caregivers believe they have the ability to influence the type and amount of services their children will receive" (Reich, Bickman, & Heflinger, 2004, p.101). In their examination of data from a parent empowerment intervention study, Reich and colleagues (2004) found that mental health services efficacy was positively associated with caregiver attitudes toward collaboration with professionals, attitudes toward treatment acceptability, and knowledge about mental health services, and negatively related to perceived social support from family (Reich, et al., 2004). Notably, parents' perceptions of stress related to caring for their child have been shown to predict self-efficacy (Scheel & Rieckmann, 1998), and

some researchers have concluded that parent empowerment occurs when strain is reduced, leading to increased self-efficacy (Olin, et al., 2010).

Culture can also have an impact on perceptions, as social and cultural norms are important to parents' conceptualizations of emotional and behavioral disorders (Mayberry & Heflinger, 2013). Given the uncertainties regarding the reasons why African American caregivers tend to report lower levels of strain compared to other caregivers, even when their children exhibit greater symptom severity or functional impairment, several researchers have suggested that perceptions may play a critical role in this relationship (e.g., McCabe, et al., 2003; Stueve, et al., 1997). Stueve et al. (1997) cite tolerance for child problems in racial/ethnic minority cultures and illness attributions as potential explanations for racial/ethnic differences in strain. McCabe and colleagues (2003) suggested that lower strain in African Americans could be a result of several factors: 1) caring for a child with emotional and behavioral problems could be considered normative or expected; 2) caregivers may be more tolerant of disturbances in family members; and 3) past experiences with life stressors may prepare caregivers for the demands of caring for a child with mental health problems (McCabe, et al., 2003). Researchers have also noted the influence of social and cultural norms on attitudes about mental health problems (Mayberry & Heflinger, 2013). Subjective norms are determined by normative beliefs, or whether important referent individuals approve or disapprove of a behavior, and motivation to comply with these individuals. Understanding a parent's beliefs regarding what other people important to them think about mental health treatment could add to an understanding of why some parents seek mental health services for their children and others do not.

Caregiver Strain and Mental Health Services Utilization

As previously noted, few youth with emotional and behavioral problems receive mental health services. Caregivers of children with emotional and behavioral problems play a critical role in their child's service use. Caregivers are essential to finding services for their children, transporting youth to and from services, and can terminate services at any time (Mayberry & Heflinger, 2013). Caregivers have the ability to facilitate or hinder treatment in a variety of ways (Reich, Bickman, & Heflinger, 2004) and are important to accessing treatment, shaping the treatment experience, and supporting clinical gains in the home, school, and community (Heflinger & Brannan, 2006).

The Modified Double ABCX Model addresses child mental health services through a process of stress and coping that is largely impacted by caregiver strain. Together, stressors related to the child's mental health problems and stressors related to other life events interact with a family's resources and perceptions to influence a family's efforts to cope. Coping efforts may occur within the family system or outside the family system, or both, and determination of the type of coping efforts a family uses is largely dependent on the level of caregiver strain experienced (Brannan, 2013).

A family's intra-family coping response is often the first attempt of a family to restore balance to the family system. Coping efforts within the family may include self-help strategies such as changing parenting, manipulating the child's diet, or using over the counter medications to address the child's emotional and behavioral problems (Brannan, 2013). Families may find that these initial coping attempts are successful or unsuccessful. When successful, child challenges may be alleviated and levels of caregiver strain remain the same or are reduced. When unsuccessful, child challenges may remain the same or get worse, and level of caregiver strain

may be increased. This increase in strain may then prompt the family to engage in coping efforts outside the family system, through the use of mental health services. This extra-family coping response, depending on the family's experience with treatment, could then serve to either increase or decrease strain. For example, both lack of coordination among services providers and barriers to mental health care can contribute to increased strain (Yatchmenoff, et al., 1998; Brannan & Heflinger, 2006). There is a large body of literature that demonstrates the critical role of caregiver strain in children's mental health services utilization. The following sections present a review of the available evidence of the impact of caregiver strain on the likelihood of receiving mental health services, the types of services received, and the length, duration, or amount of services received.

Likelihood of Receiving Services. The relationship between strain and service use has been studied using a variety of methods and with multiple different populations. In terms of the likelihood of receiving services, evidence suggests an overall trend by which higher levels of caregiver strain are related to an increased likelihood of youth mental health service use, regardless of population or service sector. For example, Garland, et al (2005) examined mental health service use among youths receiving services in a large publicly funded system of care. For participants in this study, use of any mental health services was positively associated with higher caregiver strain. In another study, Villagrana (2010) found that for children in the child welfare system, caregivers who reported higher strain were more likely to report using any specialty outpatient mental health or inpatient mental health services in the past year.

In a random sample of youth selected from school databases in four counties, Angold and colleagues (2002) found that the strongest correlate of access to specialty mental health care was the impact of the child's problems on the family. Use of school-based services was also

associated with higher parent psychological burden (Angold, et al., 2002). Further, among parents of elementary school students at high risk for Attention Deficit Hyperactivity Disorder (ADHD), Bussing et al. (2003) found that while higher levels of instrumental support reduced the likelihood of formal treatment, higher levels of caregiver strain increased the likelihood of receiving formal treatment services. The relationship between caregiver strain and instrumental support was not examined in this study. In another study, Bussing, Zima, & Belin (1998) examined variation in patient characteristics and treatment patterns for ADHD by provider type in a school-district wide sample of special education students in 2nd through 4th grade receiving treatment for ADHD. Findings from this study demonstrated that the odds of receiving treatment solely by mental health specialists were greater for children whose parents reported high burden. Additionally, the odds of receiving treatment by both primary care and mental health providers were greater for children whose parents reported high burden (Bussing, Zima, & Belin, 1998).

There is evidence to suggest that the observed association between higher caregiver strain and greater likelihood of mental health service use persists even when youth problem severity is taken into account. Farmer, et al. (1997) found that at each level of child problem severity, youths whose parents reported impact on the family due to the child's problems were at least twice as likely to enter services as were youth with similar levels of severity whose parents did not report impact. Findings from this study demonstrated that after taking into account other factors (e.g., severity of child problems and family background), parents who perceived more negative impacts from their child's problems were more likely to receive mental health services.

Similar to the study by Farmer et al (1997), Angold et al. (1998) found that in addition to child symptomology, perceived parental burden significantly predicted use of specialty mental health services. Notably, findings from this study also demonstrated there was little or no

additional increase in the probability of specialty mental health service use above a specific level of perceived burden. The effect of perceived parental burden was not as strong for school service use as for specialty mental health service use. Findings from this study also demonstrated that across all levels of child diagnosis and impairment, a greater percentage of children whose parents reported burden received specialty mental health services compared to children whose parents did not report burden (Angold, et al., 1998).

While a preponderance of evidence supports the relationship between higher levels of caregiver strain and increased likelihood of mental health service use, it is worth mentioning that some studies have yielded contrary results. For example, Bussing, Zima, Mason, Porter, and Garvan (2011) found that after controlling for other variables, strain was not a significant predictor of past year mental health services use. In another study, greater subjective externalized strain was associated with a reduced likelihood of receiving services for Medicaid youth in a fee-for-service system (Brannan & Heflinger, 2005).

Collectively, these studies demonstrate a lack of consistency with regard to a relationship between caregiver strain and service utilization that points to a need for a better understanding of how caregiver strain and related factors function in this relationship. A heavy reliance on parent or youth report of services received, categorization of service receipt variables, and the lack of control of potential confounding variables are a few of the factors that likely contribute to the observed inconsistencies in the literature.

Types of Services Received. Not only does there appear to be a critical role of strain in determining use of services, there is also evidence to suggest that caregiver strain is related to the types of mental health services accessed by children and their families. For example, Angold and colleagues (1998) found that caregiver strain predicted specialty mental health service use, but

child symptom severity was a better predictor of school mental health service use. In a sample of children with anxiety disorders who were active in at least one public sector of care, Chavira, et al. (2009) found increased caregiver strain was associated with a greater likelihood of using non-specialty mental health services (e.g., family doctor, pediatrician, emergency room, or in-home counselor), but strain was not associated with use of any other service type (inpatient, outpatient, or school services). In another study, Garland, Aarons, Brown, Wood, & Hough (2003) found that in a sample of high risk youth in publicly funded systems of care in one county, use of professional services, but not use of informal services, was associated with high caregiver strain.

There is evidence to suggest that the different types of strain may differentially impact types of services used. For example, Brannan et al. (2003) found that lower subjective externalized strain was related to a greater likelihood of using only traditional outpatient services, and higher subjective-internalized strain was related to a greater likelihood of receiving both traditional outpatient and residential services, including more restrictive services. In another study, Brannan & Heflinger (2005) examined the service use in a random sample of Medicaid enrollees in two states and found evidence to suggest that greater objective strain increased the likelihood of residential placement; greater subjective-internalized strain was associated with a lower likelihood of receiving day treatment services; and greater subjective externalized strain was associated with an increased likelihood of day treatment use.

It is notable that not all studies that have examined caregiver strain and service utilization have measured the different types of strain. Doing so may help to provide more clarity as to how strain impacts use of formal services. Only examining overall strain may present an oversimplified picture of the relationship. Additionally, despite schools being the most common

setting for services, the relationship between caregiver strain and school-based mental health service utilization is relatively understudied.

Length, Duration, or Amount of Services Received. Findings from several studies of youth currently receiving mental health services support a relationship between caregiver strain and amount of services received by children. For example, Burnett-Zeigler and Lyons (2010) examined a sample of caregivers of children with serious emotional disturbance who were receiving services as part of a System of Care and found that as caregiver strain increased, the mean number of days of community-based mental health service use by youth also increased. Similarly, in a study by Brannan & Heflinger (2005), researchers found that higher strain was associated with a greater amount of services received in a sample of youth enrolled in Medicaid in one state. In this study, a one unit increase in objective caregiver strain was associated with receiving 7.5 more service encounters over roughly a one year period (13 months). Notably, subjective caregiver strain was not found to be significantly related to number of service encounters in this study, suggesting the possibility of a differential impact of the different types of strain on amount of services received.

Brannan, Heflinger, & Foster (2003) examined whether caregiver and family variables predicted child mental health service utilization patterns in a sample of youth receiving services as part of a service demonstration project that provided a full continuum of mental health services for children and their families (i.e., Fort Bragg Evaluation Project; Bickman, et al., 1995). One of the notable strengths of this study is that child clinical and demographic variables, which have been found to have strong associations with service use, were held constant. Findings from this study indicate that children were more likely to have breaks in their treatment greater than 30 days if their caregivers reported fewer observable family disruptions due to the child's

problems (i.e., lower objective strain) or more feelings of worry, guilt, and fatigue as a result of their child's problems (i.e., higher subjective-internalized strain).

Farmer, Stangl, Burns, Costello, & Angold (1999) examined use, persistence, and intensity of mental health services in children aged 9-13 in a predominantly rural sample (GSMS). Researchers found that family impact was related to greater persistence of use of any service (i.e., involvement in services during multiple 3-month follow up periods), as well as greater intensity of services (i.e., average number of contacts over a 3-month follow up period). A study by Foster (1998) yielded similar results. However, as with Brannan & Heflinger (2005), findings from this study demonstrate a differential impact for the different types of caregiver strain. Children whose caregivers reported higher objective burden were more likely to remain in treatment, but children whose caregivers reported higher subjective externalizing burden (e.g., embarrassment about the child's problems) were more likely to leave treatment. Consistent with these findings, it is not surprising that higher objective strain has been shown to be related to higher costs of services, while higher levels of subjective externalized strain have been related to lower costs of services (Brannan, et al., 2003).

Service Use Disparities. It is widely acknowledged that disparities exist with regard to access to mental health services, quality mental health care, and mental health service utilization for youth in different racial/ethnic groups (U.S. Department of Health and Human Services, 1999). Given the apparent influence of caregiver strain on mental health services utilization, several researchers have looked toward racial/ethnic differences in the experience of caregiver strain as an explanation for observed disparities related to mental health service utilization.

As discussed previously, higher levels of caregiver strain have been consistently associated with greater use of child mental health services (e.g., Farmer, et al., 1997; Bussing, et

al., 2003; Villagrana, 2010). As several studies have documented racial/ethnic differences in caregiver strain, with African Americans generally reporting lower levels of strain when compared to caregivers of other race/ethnicity, it stands to reason that strain could help to explain differences in rates of service use. There is evidence for this proposed relationship from a study conducted by Shin and Brown (2009). Findings from this study, which used structural equation modeling, demonstrated a direct path from caregiver strain to both mental health and non-mental health service use. While being an African American youth did not have a direct path to service use, it did have significant indirect effects on service use that were mediated by caregiver strain.

Some researchers have suggested that culturally influenced perceptions may result in racial/ethnic differences in strain and different rates of service use (Shin & Brown, 2009). While it has been suggested that greater extended family and kinship social support in ethnic/minority cultures may provide a potential explanation for observed differences in caregiver strain based on race/ethnicity, McCabe and colleagues (2003) found that African American caregivers reported lower perceived social support than Non-Hispanic White caregivers. They further found that after controlling for perceived social support, the tendency of African American caregivers to report lower caregiver strain became more pronounced, suggesting that the differences in strain between African American and White caregivers could not be explained by perceived social support. They suggest that other cultural variables, such as familialism and tolerance may help to explain observed racial/ethnic differences in caregiver strain (McCabe, et al., 2003).

Because the underlying mechanisms for the observed relationship between race/ethnicity and caregiver strain are not well understood, Kang and colleagues (2005) stress the need to incorporate theory into the study of caregiver strain in order to elucidate this relationship. Doing

so can have potentially significant implications for efforts to reduce disparities in the use of mental health services.

Youth Receiving Special Education Services for Emotional Disturbance and their Parents

A public health approach to the delivery of school-based mental health services emphasizes a focus on the population, whereby the mental health needs of the entire population are addressed, including students with the greatest mental health needs. Students with serious emotional and behavioral challenges, particularly those receiving special education services for ED, often require an array of comprehensive and coordinated services over a long period of time (Kutash & Duchnowski, 2013). Additionally, parent engagement in services for these youth is critical to maximize any positive treatment outcomes. A long history of experiences with multiple child serving systems exerts a particular influence on the likelihood that these parents will engage in their child's services.

Youth Receiving Special Education Services for Emotional Disturbance

In 2012, 6.2% of all U.S. students in special education were identified as having ED, which is the primary category designated for students with emotional and behavioral disorders. This equates to approximately 361,000 students nationwide (U.S. Department of Education, 2014). The current federal definition of ED is included below:

Emotional disturbance refers to a condition exhibiting one of more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance: (a) an inability to learn that cannot be explained by intellectual, sensory, or health factors, (b) an inability to build or maintain satisfactory interpersonal relationships with peers and teachers, (c) inappropriate types of behaviors or feelings under

normal circumstances, (d) a general pervasive mood of unhappiness or depression, or (e) a tendency to develop physical symptoms or fears associated with personal or school problems (34 C. F. R. §300.8(4)(i), 2015) OR 34 C. F. R. §300.8(4)(i) (2015).

Characteristics of youth with ED. In their examination of data from two national longitudinal studies of students in special education, Wagner and colleagues (2005) found that more than 75% of students classified as ED were boys, and African Americans represented a significantly larger percentage of students with ED than found in the general population. Their findings are supported by those of the Committee on Minority Representation in Special Education, which found that a disproportionate percentage of Black students are being served in special education for ED. They further found that Black students are at a higher risk for ED identification compared to all other racial/ethnic groups (Donovan & Cross, 2002). Students with ED are significantly more likely than students with other disabilities and students in the general population to live in households with multiple risk factors for poor outcomes, including poverty, single parent household, unemployed head of household, head of household not a high school graduate, or another member of the household with a disability (Wagner, et al., 2005).

Along with these risk factors, youth within the special education system have high rates of mental disorders, even higher than those observed in the specialty mental health care sector (Hoagwood & Johnson, 2003). In particular, students who are receiving special education services for ED do not only have educational deficits, but also demonstrate a complex array of mental disorders (Kutash & Duchnowski, 2013). Findings from two national studies of youth in special education (SEELS and NLTS2) demonstrate that parents of youth with ED report a multitude of disabilities or problems in their children, including anxiety, bipolar and Tourette's

disorders, depression, obsessive-compulsive and oppositional behaviors, ADHD, learning disability, and psychosis (Wagner, et al., 2005).

In another study that used a standardized measure of emotional and behavioral problems in youth, Kutash, Duchnoski and Madias (2011) found that students from nine states being served in special education for ED exhibited significant mental health problems. The majority of students in this study scored in the highest level of need for overall mental health problems, and in the highest level of need for externalizing mental health problems. Approximately one third of students scored in the highest level of need for internalizing problems. Notably, more than half of the students who scored in the highest level for need for externalizing mental health problems also scored in the highest level of need for internalizing mental health problems (Kutash, Duchnowski, & Madias, 2011). Almost all of the students in this study had a long history of mental health involvement and approximately one third of them had a history mental disorder so severe that residential placement was necessary (Kutash, Duchnowski, & Green, 2015).

Outcomes of youth in special education for ED. Youth with severe emotional and behavioral problems, while they represent a relatively small percentage of all students, have the poorest outcomes compared to youth in other disability groups (Kutash, et al., 2011). In particular, youth receiving special education services for emotional disturbance (ED) have the highest school absenteeism rates and the highest probability of failing grades (Blackorby & Wagner, 1996). While graduation rates for students with ED are comparable to the rate for the general population of students, many of these students do not receive regular diplomas (Wagner & Newman, 2012). Average academic achievement for these students is below the 25th percentile (Wagner, et al., 2005) and half of the students in this group drop out of school each year, which is the highest dropout rate for any disability category (Jans, Stoddard, & Kraus, 2004).

Approximately half of elementary and middle school students with ED and nearly three fourths of secondary school students with ED have been suspended or expelled at some time during their school careers, compared to approximately one quarter of students with other disabilities and between 13-22% of students in the general population (Wagner, et al., 2005). Upon leaving school, these youth tend to experience a poor transition to young adulthood and adverse life outcomes, including involvement with the criminal justice system, job instability, and a high likelihood of entering the adult mental health systems (Duchnowski, et al., 2012). In one recent study, more than 60% of youth with ED had been arrested at some time during the eight years following high school, and approximately 40% had been on probation or parole during this time period (Wagner & Newman, 2012).

The Role of Parents in their Child's Education and Mental Health Services

In light of the multitude of negative outcomes often experienced by youth with emotional and behavioral problems, addressing the needs of these youth is an important public health priority. Doing so not only requires the provision of accessible and appropriate services, but also parent engagement in these services. Lack of parent engagement, however, has been described as one of the major challenges facing the education and mental health systems (Kutash & Duchnowski, 2013).

Problems with engaging and retaining families in services present significant problems for mental health prevention and intervention programs (Ingoldsby, 2010). In fact, studies suggest that many children and families receive less than half of intended interventions due to premature termination of treatment (Kutash & Duchnowski, 2013). In the context of a school-based mental health program, this lack of involvement is particularly notable due to the potential impact on the implementation and effectiveness of evidence-based practices. Because evidence-

based interventions often require a minimum dose of the intervention to produce intervention effects, low engagement and retention present major threats to the effectiveness of evidence-based practices. In fact, the National Institutes of Health has identified low engagement and retention as significant threats to evidence-based interventions (National Advisory Mental Health Council Workgroup on Child and Adolescent Mental Health Intervention Development and Deployment, 2001).

Engaging in treatment services is critical to realizing the potential of treatments to produce positive outcomes (Owens, et al., 2002). Research consistently demonstrates that parent involvement in their child's education services is associated with better academic achievement and mental health in youth (Pomerantz, Moorman, & Litwack, 2007). While beneficial for all students, parent involvement may be even more important for students with disabilities (Zhang, Hsu, Kwok, Benz, & Bowman-Perrott, 2011). For these students, family involvement in services and supports can contribute to youth receiving more appropriate and effective services (Brannan, 2003). Parent involvement can have a positive influence on the likelihood of treatment attendance and treatment completion (Olin, et al., 2010). Additionally, families can serve as a protective factor for children with disabilities by preventing problems from developing or getting worse, and implementing interventions with their children at home (Osher, Osher, & Blau, 2008). Family involvement is critical to improving both school and mental health outcomes and also to reducing mental health disparities. Not only are parents in a position to promote health development and reduce or eliminate risk factors, but they are also able to implement and reinforce treatment plans (Osher, et al. 2008). Further, the cultural knowledge parents share with their children puts them in a unique position to be able to aid in the design and implementation of culturally appropriate interventions.

Factors that Influence Parent Engagement in Services

Consistent with findings that individuals at greater risk for poor outcomes are more likely to drop out of treatment programs (Snell-Johns, Mendez, & Smith, 2004), there is evidence that families of youth receiving special education services for ED are the least involved in their child's education and support services compared to families of youth with other disabilities or no disability (Wagner, et al., 2005). Given the complex array of educational and mental health problems facing youth with ED, as well as the poor outcomes so often experienced by these youth, students with ED are among the most severely impaired students in the schools (Rones & Hoagwood, 2000; Kutash & Duchnowski, 2013) and require a comprehensive array of services and supports over an extended period of time (Kutash & Duchnowski, 2013). A long history of experiences with complex and often uncoordinated systems can contribute to the likelihood of parents engaging in their children's services. Additionally, socio-demographic factors have been shown to impact the likelihood of parent engagement in services.

Past Experiences and Expectations about Services. Particularly for parents of youth with ED, a history of negative experiences with the school and/or mental health system may serve as a deterrent to parent engagement (Wagner, et al., 2005; Owens, et al., 2002). For example, in their examination of data from two national studies of youth in special education and their families, Wagner and colleagues (2005) found that compared to parents of youth in other disability groups, parents of youth with ED report putting more effort into securing services for their children, and despite this effort, report being less satisfied with the services their children. This lack of satisfaction with services may result from any number of factors. It may be that parents perceive the services their children receive as not appropriate or effective. Parents may also be dissatisfied with their child's services due interactions between parents and services

providers. For example, when parents of children with serious emotional and behavioral challenges are involved in the school (e.g., attending school conferences), interactions with school staff tend to be more negative concerning discipline, rather than opportunities to build positive partnerships (Duchnowski & Kutash, 2011).

Parents' past experiences with the education and mental health systems are likely to influence parents' expectations about their service experience. For example, families may fear being blamed for their child's problems, that professionals will speak to them in a condescending way, or they may feel criticized and ineffective in meeting their child's needs. Families may also view mental health issues and services with suspicion and stigma and have concerns about confidentiality when working with mental health professionals (Bickman, et al., 1998). Provider-focused factors such as provider training, expertise and attitudes toward families, organizational and system characteristics, poor coordination and collaboration among providers and agencies, and absence of ongoing monitoring and training can have a significant impact on parents' experiences with treatment and subsequent expectations about the treatment experience (Brannan, 2003).

Previous experiences with services can also impact parents' expectations about treatment outcomes. If previous treatment experiences did not result in perceived improvement, parents may attribute this lack of treatment success to the entire mental health field, which can serve as a barrier to accessing care in the future (Evans & Weist, 2004). Expectations about treatment effectiveness (Nock & Kazdin, 2001) and perceptions regarding the relevance of treatment (Bannon & McKay, 2005) have been identified as important factors in determining service engagement. For example, in their study of more than 400 children and their parents attending an outpatient treatment center, Nock and Kazdin (2001) found that while parents with lower

expectations for treatment reported more barriers to participation in treatment, those parents with either very high or very low expectations about treatment attended more treatment sessions and were less likely to drop out of treatment. In another study (Baker-Ericzen, Jenkins, & Brookman-Frazer, 2010), researchers conducted focus groups with clinicians and parents from community six child mental health clinics in a large metropolitan county to explore parent and family contextual factors that impact mental health services. Following the focus groups, participants were asked to respond to a list of parent and family contextual factors to indicate if each factor was important and relevant to child mental health treatment. Parents who participated in this study indicated that positive expectations of treatment outcome and feeling supported were important to their involvement in their child's treatment, citing low expectations due to experiencing minimal positive outcomes in the past and feeling blamed by service providers as specific reasons for not being involved in their child's treatment (Baker-Ericzen, et al., 2010).

Impact of Socio-Demographic Factors on Parent Engagement. In addition to previous experiences with services and parents' perceptions about treatment, there is evidence to suggest that socio-demographic characteristics of parents can have an impact on parent engagement in services and supports. For example, in a study of youth receiving outpatient services at a child mental health clinic, ethnic minority status and lower SES were found to be individually related to a greater likelihood of dropping out of services. However, when SES was controlled for, minority status no longer predicted an increased risk of dropout (Armbruster & Fallon, 1994). Findings from a more recent study that utilized data from a nationally representative sample of students in special education yielded similar results. In their examination of the influences of race/ethnicity and SES on parent engagement in school and at home and the relationship of parent engagement and student achievement, Zhang and colleagues

(2011) found that overall African American parents and parents with lower SES demonstrated less participation in their child's school activities than Caucasian parents. Similar to Armbruster and Fallon's findings, this relationship was found to be moderated by SES. While African American parents with high SES were less involved in their child's school activities than Caucasian parents with the same SES, differences in participation by race/ethnicity decreased as SES decreased (Zhang, et al., 2011).

Increasing Parent Engagement in their Child's Services

Because family engagement and maintenance of families in services is critical to insure maximum public health impact (Ingoldsby, 2010), developing strategies to improve engagement of families of youth with emotional and behavioral challenges has become an important priority in the field, as evidenced by increasing support for family support services aimed at increasing parent engagement to positively impact youth and family outcomes (Kutash & Duchnowski, 2013). Family support services have been described as being "directed at meeting the needs of parents or caregivers of children with mental health needs with the explicit purpose of helping parents/caregivers: (a) clarify their own need and concerns; (b) reduce their sense of isolation, stress, or self-blame; (c) provide education or information; (d) teach skills; (e) empower and activate them, so that they can more effectively address the needs of their families" (Hoagwood, et al., 2010, p.3). Salient components of family support services include informational support, instructional support, emotional support, instrumental support, and advocacy (Hoagwood, et al., 2010).

Within the context of schools, the provision of family education and support services is common. However, while many schools offer support services, studies suggest that families of children with ED do not use available services. For example, a recent examination of data from

the Special Education Elementary Longitudinal study revealed that while 71% of students in the sample attended schools that offered at least one family education and support service, only 17% of families received these services (Duchnowski, et al., 2012). While not specified by findings from this study, a multitude of potential reasons for parents not accessing available support services in schools is plausible. One possibility may be that the support services offered by schools are not consistent with the perceived needs of parents. It is also possible that parents are reluctant to access services within the schools because they do not perceive the school environment as friendly or welcoming to parents.

There is evidence to suggest that caregiver strain may be an important factor in determining a parent's use of support services. For example, Cook and Kilmer (2010) examined data from the National Evaluation of Systems of Care (SOC) to assess parents' and caregivers' views of their connections to and support from their community within a SOC. Results demonstrated that caregivers' desire for more support was associated with caregiver strain, with more desire for support being significantly and positively related to subjective externalizing, subjective internalizing, and global strain. That is, when parents viewed themselves as needing more support, they felt more strain directed toward themselves and their children. Additionally, caregivers' baseline ratings of their desire for more support were negatively related to their participation in and satisfaction with the services they were receiving.

In another study, Mayberry and Heflinger (2013) collected qualitative data to explore caregivers' conceptualizations about the cause of their child's emotional and behavioral problems. Findings from this study revealed that caregivers tended to conceptualize their child's problems in one of two ways: as a stressful event (i.e., problems occurred unexpectedly and caused by the child's disorder), or as a response to a stressful event (i.e., problems are a

predictable or normal response to a previous stressful event, such as trauma, abuse, etc.). Further, caregivers with a stressful event conceptualization evidenced a high sense of control and were more likely to seek services for their children and formal supports for their own needs, while caregivers with a response conceptualization evidenced a low sense of control, expressed acceptance of their child's problems and reported more use of informal support for themselves.

Findings from two trials of a parent support intervention provide further support for the potential role of caregiver strain in determining parent utilization of support services and subsequent engagement in their child's services. Kutash and colleagues (2013) describe a parent support program, Parent Connectors, that is guided by the integration of the Modified Double ABCX Model (Heflinger, et al., 1998) and the Theory of Planned Behavior (TpB; Ajzen, 1991). The overall goal of the Parent Connectors program is to increase the engagement of parents in the education and mental health services their child receives in school and the community. By incorporating components of the Modified Double ABCX Model and the TpB into the program, this intervention directly acts on parents' perceptions of social norms and expectations about treatment to support engagement in services available to the family (Kutash, Duchnowski, Green, & Ferron, 2013). Further, factors related to caregiver strain which may create barriers to service engagement are addressed (Kutash, Duchnowski, Green, & Ferron, 2011).

Two randomized controlled trials have been conducted on the Parent Connectors program (see Kutash, et al., 2011 and Kutash, et al., 2013). Findings from the first trial demonstrated positive effects of the intervention on parent mental health services efficacy, family empowerment, amount of school-based mental health services received by youth, number of days of school attended by youth, and youth's scores on a standardized reading assessment. In addition to these positive intervention effects, findings from this trial demonstrated the critical

role of caregiver strain in determining intervention outcomes. Specifically, across nearly all domains assessed, the effectiveness of the parent support program was more pronounced for caregivers who reported high levels of strain at baseline (Kutash, et al., 2011). Based on findings from the first trial, Kutash and colleagues (2013) examined the potential moderating effect of caregiver strain as part of their second trial. Findings from this trial consistently revealed a moderating influence of caregiver strain on both parent and youth outcomes, such that the effects of the parent support intervention were more pronounced at higher levels of baseline strain.

Collectively these studies represent an emerging body of literature that acknowledges the potential of caregiver strain to aid in our understanding of parents' use of support services and engagement in their child's services. This is an emerging literature, however, and warrants further investigation. It is important that the processes that shape families' perceptions of services are examined to understand how and why effective family-based intervention models work (Hoagwood, 2005). The present study aims to address these research gaps. The provision of services alone is not sufficient to maximize treatment benefits; parents need to be supported and involved in their children's services to realize the potential of positive treatment outcomes for youth and their families.

Chapter Three

Methods

Data Source and Participants

The proposed quantitative study is a secondary analysis of existing data collected as part of a randomized controlled trial of the Parent Connectors intervention, a parent support intervention for parents of students receiving special education services for Emotional Disturbance (see Kutash, et al., 2013). Data for this original study were collected during the 2010-2011 school year. There have been no changes to the federal definition of ED for special education since this time period. These data were selected for the current study for several reasons: 1) because the Modified Double ABCX Model is one theoretical framework that guided the implementation and evaluation of the Parent Connectors intervention, the data collected as part of the randomized controlled trial (RCT) included measures of variables within each of the constructs of the Modified Double ABCX Model; 2) the study sample includes a high-risk, high-need population that has been understudied with regard to caregiver strain; 3) outcome variables assessed as part of the RCT included measures of not only youth mental health services utilization, but also parent engagement in services; and 4) service use and engagement data are specific to school-based mental health services, which are relatively understudied compared to services delivered in other settings in terms of the potential impact of caregiver strain on the use of these services. While the data were not collected with the purpose of addressing the aims of the current study, use of this dataset provides the opportunity to examine aspects of the Modified

Double ABCX Model in relation to caregiver strain, school-based mental health services utilization, and parent engagement that have not been extensively addressed in the literature.

Procedure

The following sections present a brief description of participant recruitment and data collection procedures employed as part of the randomized controlled trial of the Parent Connectors intervention. More detailed information about study methodology can be found elsewhere (Kutash, et al., 2013).

Participant Recruitment. Participants were recruited from 22 middle schools or special centers with self-contained special education classrooms for students identified with emotional disturbance (ED). Students and their parents were eligible for inclusion in the current study if the student was receiving special education services due to a primary disability classification of ED and the student spent at least 50% of the school day in a special education setting. Students and their parents were ineligible to participate in the study if any of the following criteria were met: 1) student was not living at home (e.g., living in group care or foster care); 2) parent did not speak English; 3) parent was unable to communicate via telephone; 4) family moved out of the school district before the time 1 interview could be conducted; 5) student had a sibling enrolled in the study; or 6) a conflict of interest was present (e.g., parent worked for the school district).

School personnel identified eligible parent–student dyads and contacted these parents, either by phone or mail, to inform them of the opportunity to participate in the study. Parents who were interested in participating in the study either contacted the research study staff directly or gave their permission to school personnel for a research staff member to contact them about the study. Of the 169 eligible parent–student dyads contacted by school personnel, 128 agreed to participate in the study and provided informed consent (76% participation rate). Analyses

revealed no differences between participants and nonparticipants with regard to student age, race/ethnicity, or gender (Kutash, et al., 2013). Time 1 and time 2 data were collected for 112 participants.

Description of Participants. Overall, youth in the sample were primarily Black/Non-Hispanic (56.3%, $n=63$) males (83.0%, $n=93$) with average age of 13.63 years ($SD=1.12$). Youth in the sample had received special education services for an average of 6.32 years ($SD=2.36$). The majority of caregivers in the sample (75.9%, $n=85$) were biological parents and the average reported household income for all participants was \$24,811.48 ($SD=20,670.07$). Table 2 presents a complete description of participant demographic characteristics.

Data Collection. As part of the original study, data were collected from caregiver participants, school-based mental health service providers, and (school district maintained) student records. The current study used only data collected from caregivers and school-based mental health service providers. Caregivers completed phone interviews with trained interviewers at two time points during the study, the beginning of the school year (time 1) and approximately nine months later at the end of the school year (time 2). In addition to parent interview data, the current study also used data collected from school-based mental health service providers on individual counseling services provided to youth in the study and consultation with parents. These data were collected at time 2 and reflect services provided to youth and their parents during the entire course of the school year in which the study was conducted.

Instrumentation

The parent interview administered as part of the original study is made up of multiple sections containing a variety of instruments to address constructs focused on parental attributes,

attributes of the youth, and the Parent Connectors intervention. For the current study, a limited number of instruments administered as part of the parent interview were selected for use based on their relevance to the aims of the current study and relationship to the theoretical constructs of interest. Instruments used for the current study are described below according to each of the relevant study variables. In addition to the measures described below, parents also provided the following demographic information as part of the time 1 parent interview: youth race/ethnicity, youth age, youth gender, caregiver type (e.g., parent, grandparent, other relative, etc.), number of years youth had been in special education, and annual household income. See Table 3 for an outline of the theoretical constructs, study variables, instrumentation, and data sources for the current study.

Child Functioning. Child functioning was assessed using the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001), which is a parent report measure that assesses behavioral problems and competencies of youth based on the youth's behavior over the past six months. The SDQ is a 25-item measure that yields a total difficulties score and five domain behavior problem scores: emotional symptoms, conduct problems, hyperactivity, peer problems, and prosocial functioning. Each of the five domain scores is based on five items that are rated on a 3-point scale (0 = *not true*; 1 = *somewhat true*; 2 = *certainly true*). Domain scores can range from 0 to 15. The total difficulties score is derived by summing all of the domain scores, except the prosocial functioning score. The total difficulties score can range from 0 to 40, with higher scores indicating greater problems. Total difficulties scores can be interpreted as follows: *normal* (0–13); *borderline* (14–16); and *abnormal* (17–40). The SDQ is a commonly utilized brief measure of psychopathology in youth with extensive documentation of adequate reliability and validity (Goodman 2001; Mellor 2004).

Table 2.

Participant demographic characteristics

		%	<i>n</i>
Youth Gender	Male	83.0	93
	Female	17.0	19
Youth Race/Ethnicity	White/Non-Hispanic	28.6	32
	Black/Non-Hispanic	56.3	63
	Hispanic	8.9	10
	Other	6.3	7
Caregiver Relationship to Youth	Biological Parent	75.9	85
	Adoptive Parent	2.7	3
	Step parent	0.9	1
	Grandparent	12.5	14
	Other Relative	3.6	4
	Foster Parent	2.7	3
	Other	1.8	2
		<i>M</i>	<i>SD</i>
Youth Age		13.63	1.12
Number of Years Receiving Special Education Services		6.32	2.36
Annual Household Income		24,811.48	20,670.07

Table 3.

Theoretical constructs, variables, measures, and associated data source

Variable	Measure
Youth functioning	Strengths and Difficulties Questionnaire ^a
Social support	Sources of Support Questionnaire ^b
Material resources	Annual household income
Mental health services efficacy	Vanderbilt Mental Health Services Efficacy Questionnaire ^c
Expected benefit of engagement in mental health services	Expected Benefit of Engagement Questionnaire ^b
Social norms related to mental health	Social Norms Questionnaire ^b
Caregiver strain	Caregiver Strain Questionnaire ^d
Mental health services utilization	Minutes of individual counseling received by youth during the school year
Parent engagement in services	Minutes of consultation between parent and service provider during the school year
Child and family demographic characteristics	Youth race/ethnicity Youth age Youth gender Caregiver type Number of years in special education

^a Goodman, 1997

^b Kutash, Duchnowski, Green & Ferron, 2013

^c Bickman, Earl, & Klindworth, 1991

^d Brannan, Heflinger, & Bickman, 1997

Social Support. The Sources of Support Questionnaire (SoS; Kutash, et al., 2013) was created to measure the degree to which caregivers receive support through usual support systems (i.e., not the PC program). This questionnaire was administered during the time 2 parent interview and asked parents to reflect on support received throughout the previous school year. Items on the SoS address 14 support topics, as well as 5 false items to guard against social desirability response bias. Parents report whether or not they had discussed each of the topics with different sources of support (i.e., family, friends, other parents, teachers/school staff, counselor/therapist, or anyone else). Response options are on a 5-point scale and range from 0 *not at all* to 4 *very often*. The SoS produces a total frequency score for all items (minus the false items) to indicate how often support topics were discussed. The total frequency score can range from 0 to 56, with higher scores indicating greater frequency of discussion of support topics.

Mental Health Services Efficacy. The Vanderbilt Mental Health Services Efficacy Questionnaire (VMHSEQ; Bickman et al. 1991) was administered to measure mental health services efficacy. The VMHSEQ assesses self-efficacy expectations, behavioral intentions, personal mastery, and other experiences related to advocating for a youth's mental health services. This instrument contains 25 items, with response options that range from 1 *strongly disagree* to 5 *strongly agree*, with 3 being *uncertain*. The total score is calculated by summing responses to all of the items, and ranges from 25 to 125, with higher scores indicating greater efficacy. As demonstrated in previous studies, the VMHSEQ has adequate reliability as measured by internal consistency (Cronbach's alpha = .90) and three-month test-retest reliability ($r = .76$). Previous research has shown high scores on the VMHSEQ are related to more collaboration with professionals, increased knowledge of mental health services, and greater

social support by family and friends, demonstrating construct validity for this measure (Bickman, Heflinger, Northrup, Sonnichsen, & Schilling, 1998).

Expected Benefit of Engagement. Expected benefit of engagement was assessed using a questionnaire created to gauge parents' expected benefit of being involved in their child's mental health services (Kutash, et al., 2013). The questionnaire consists of 4 questions. Parents are asked what they would expect to happen when they become involved in their child's mental health services. For example, "Being involved in my child's mental health services makes how much of a difference for him/her?" Response options range from 1 to 5, with 1 indicating negative expectations of involvement and 5 indicating the most positive expectations of involvement. The total score is for the current study, and ranges from 4 to 20, with higher scores indicating more positive expectations of involvement.

Social Norms. Social normative influence on parent involvement behavior was assessed using a questionnaire created for the PC trial (see Kutash, et al., 2013). The first section of the questionnaire assesses parents' perceptions of the opinions of family, close friends, teachers, and mental health service providers toward involvement behaviors of the parent/guardian. This section includes 3 questions that are scored on a scale from -2 (*strongly disagree*) to 2 (*strongly agree*) based on responses to prompts such as "My family thinks I should be involved in my child's mental health care." The second section of the questionnaire was designed to assess the subjective importance of each social group (i.e. family, close friends, teachers, service providers) to a parent's behavior. The 4 questions in this section ask parents how much they care what others think they should do, such as "How much do you care what your family thinks you should do?" Response options for these 4 questions range from 0 (*not at all*) to 3 (*very much*). Corresponding items from both sections are multiplied to create normative influence scores for

each social group. This operation yields scores of -6 to 6 for each social group, which are summed to create a composite score ranging from -18 to 18. For the current study, this composite score was re-scaled to range from 1 to 37 in order to eliminate negative scores. Higher scores indicate a more positive normative influence on a parent's actions.

Caregiver Strain. Caregiver strain was measured using the Caregiver Strain Questionnaire (CGSQ; Brannan et al., 1997). The CGSQ assesses the impact of caring for youth with emotional and behavioral problems over the past six months and consists of 21 questions that ask parents how their child's emotional/ behavioral problems have impacted their family (e.g. "How much of a problem was interruption of personal time resulting from your child's emotional or behavioral problems?"), or how he/she has felt as a result of being a parent of a child with emotional/behavioral problems (e.g. "How sad or unhappy did you feel as a result of your child's emotional or behavioral problems?"). The CGSQ is divided into three subscales: 1) objective strain; 2) subjective-internalizing strain; and 3) subjective-externalizing strain. Parents respond on a 5-point scale from 1 (*not at all*) to 5 (*very much*). Subscale scores are derived by averaging responses to items on each subscale, resulting in a potential score range of 1 to 5 for each of the three subscales. An overall global strain score is derived by summing the three subscale scores. Scale developers report adequate to strong reliability and validity across multiple samples, with Cronbach's Alphas ranging from .74 to .93 (Brannan & Heflinger, 2001; Brannan et al., 1997; Kang, Brannan & Heflinger, 2005).

Youth Mental Health Services Utilization and Parent Engagement in Services. Data on mental health services utilization and parent engagement in services were collected at the end of the school year (i.e., time 2) about services provided to youth during the course of the school year. School-based mental health service providers reported the dates on which they provided

individual counseling services to students during the school year and the length of time (in minutes) that the service was provided. Additionally, parent engagement in mental health services was captured through the number of minutes parents spent in consultation with mental health providers discussing their child's treatment over the school year. Providers indicated the dates of consultation with a parent over the school year along with the number of minutes spent providing consultation services.

Analysis Plan

Several analytical approaches were employed to address the different study aims and research questions, including descriptive statistics, within group comparisons, multiple linear regression, multiple logistic regression, and structural equation modeling (SEM). All analyses, except those using SEM, were conducted using IBM SPSS v22. SEM analyses were conducted using SAS v9. A detailed description of the analyses conducted for the current study according to study aims and research questions follows. See Table 4 for an outline of the study aims, research questions and analyses conducted for the current study.

Aim 1: Explore the construct of caregiver strain and its relationship with theoretically related constructs in caregivers of youth in special education for ED.

The overall objective of this aim is to understand how caregivers in this sample experience strain and to explore relationships between the different constructs of the Modified Double ABCX Model of stress and coping in this sample. There are six research questions associated with this aim: 1) what is the level of reported strain in the sample? 2) are there differences in the level of different types of strain reported by individuals in the sample?; 3) is the level of strain in the sample stable over time?; 4) does the level of each of the different types of strain differ according to child and family demographic characteristics?; 5) what is the

relationship between caregiver strain and youth functioning, perceptions, and resources; and 6) is race/ethnicity related to caregiver strain, perceptions, and resources? Analyses conducted to address this aim are described below according to research question (RQ).

Table 4.

Study aims, research questions, and analysis strategy

Research Questions	Analysis
<i>Aim 1: Explore the construct of caregiver strain and its relationship with theoretically related constructs in caregivers of youth in special education for ED.</i>	
What is the level of reported strain in the sample?	<ul style="list-style-type: none"> • Descriptive Statistics (M, SD, score ranges) • Time 1 and time 2 data
Are there differences in the level of different types of strain reported by individuals in the sample?	<ul style="list-style-type: none"> • Dependent samples t-tests • Time 1 data
Is the level of strain in the sample stable over time?	<ul style="list-style-type: none"> • Dependent samples t-tests • Time 1 and time 2 data
Does the level of each of the different types of strain differ according to child and family demographic characteristics?	<ul style="list-style-type: none"> • ANOVA • Bivariate correlations • Time 1 data
What is the relationship between caregiver strain and youth functioning, perceptions, and resources?	<ul style="list-style-type: none"> • SEM • Time 2 data (income measured at time 1)
Is race/ethnicity related to caregiver strain, perceptions, and resources?	<ul style="list-style-type: none"> • SEM • Time 2 data (race/ethnicity and income measured at time 1)
<i>Aim 2: Examine the factors, including caregiver strain, that predict school-based mental health services utilization and parent engagement in services.</i>	
Do caregiver strain and other theoretically related constructs predict the amount of school-based mental health services received by youth?	<ul style="list-style-type: none"> • Multiple linear regression • Predictors measured at time 1 • Outcome measured at time 2
Do caregiver strain and other theoretically related constructs predict whether or not caregivers consult with their child's school-based mental health services provider during the school year?	<ul style="list-style-type: none"> • Multiple logistic regression • Predictors measured at time 1 • Outcome measured at time 2

RQ 1: To determine the level of strain reported by participants in the sample, descriptive analyses were used to generate summary statistics for each of the different types of strain. Means and standard deviations are reported for each of the subscales of the Caregiver Strain Questionnaire.

RQ 2: To assess potential differences in the levels of the different types of strain experienced by subjects in the sample, dependent samples T-tests were conducted. Separate tests were conducted to assess: 1) the sample mean for objective strain vs. the sample mean for subjective-internalized strain; 2) the sample mean for objective strain vs. the sample mean for subjective-externalized strain; and 3) the sample mean for subjective-internalized strain vs. the sample mean for subjective-externalized strain. Values for t-test statistics are reported with p-values and 95% confidence intervals. Results from these analyses are used to determine if one type of strain is higher or lower than others in the sample.

RQ 3: The stability of caregiver strain over time was assessed using dependent samples T-tests. Separate tests were conducted to assess: 1) the sample mean for objective strain at time 1 vs. the sample mean for objective strain at time 2; 2) the sample mean for subjective-internalizing strain at time 1 vs. the sample mean for subjective-internalizing strain at time 2; and 3) the sample mean for subjective-externalizing strain at time 1 vs. the sample mean for subjective-externalizing strain at time 2.

RQ 4: Potential differences in level of strain according to child and family demographic variables were assessed using Analysis of Variance (ANOVA) and/or correlation, depending on how demographic variables were measured. Separate one way between subjects ANOVAs were conducted to examine differences in strain according to each of the demographic characteristics measured categorically. For each of these tests, caregiver strain functioned as the dependent

variable and one of the demographic variables served as the independent variable. For example, to examine differences in level of global strain according to race/ethnicity, global strain served as the dependent variable and race/ethnicity served as the independent variable. For demographic variables with more than two categories, time 2 analyses to significant overall tests (Tukey HSD) were conducted. Descriptive statistics for caregiver strain by demographic characteristics are presented, as well as results from the F test and any time 2 tests conducted.

In order to avoid the potential loss of information that can result from categorizing continuous variables, for those demographic variables that were measured on a continuous scale (i.e., youth age, number of years in special education, and annual household income) bivariate correlation analyses were conducted. While this method does not allow for the assessment of statistically significant differences in strain, it can be used to determine if there is a relationship between strain and these demographic variables, which is consistent with the overall purpose of this aim. Correlation coefficients (r) and associated p -values are reported.

It is acknowledged that an alternative to the proposed analyses for this question would be to conduct multiple regression with all demographic variables entered as independent variables in the regression equation to predict strain. However, the rationale for the proposed analyses is based on the fact that the research question does not address the relative importance of the different demographic characteristic in predicting strain. Rather, the intent of the questions for this particular aim is to provide a description of the sample in terms of strain and associated child and caregiver characteristics.

RQ 5 and RQ 6: An examination of the relationships among youth functioning, resources, perceptions, caregiver strain, and race/ethnicity were addressed through the use of Structural Equation Modeling (SEM). When a phenomena of interest is complex and

multidimensional, as is the case with caregiver strain, SEM allows for the simultaneous tests of multiple relationships (Tabachnick & Fidell, 2001). SEM also allows for estimation of the model's parameters to determine the strength of each path in relation to the other (Lavee, McCubbin, & Patterson, 1985). Measurement error of the indicators is taken into account with SEM, so path coefficients between latent variables are not biased (Tabachnick & Fidell, 2001). Full structural models include a measurement component that specifies indicators for latent traits, and a structural component that specifies the relationships between the latent traits.

Maximum Likelihood (ML) estimation was used to estimate the model a theoretically driven model that included variables for stressors (child functioning), resources (social support, income), perceptions (mental health efficacy, social norms related to mental health services, expected benefit of engagement in services), crisis (caregiver strain), and race/ethnicity. The hypothesized model for the current study met criteria for identification (Kline, 2005) and was therefore able to be estimated. (Details about the model tested are presented in the following chapter.) Results from this analysis were used to determine if the overall model fit the data and understand the relationships between variables in the model.

Several different fit indices were examined to determine overall model fit: 1) the chi-square test of model fit (χ^2); 2) standardized root mean square residual (SRMR); 3) comparative fit index (CFI); 4) goodness of fit index (GFI); and 5) root mean square error of approximation (RMSEA). The chi-square statistic is a measure of the discrepancy between the sample covariance matrix and the implied covariance matrix based on the model. The null hypothesis is that the matrices are the same. Therefore, a significant chi-square result suggests the model may not fit the data (Hu & Bentler, 1999). Hu and Bentler (1995) note that this test is sensitive to

sample size; small discrepancies between the sample and implied covariance matrix can be found significant with a large enough sample.

The SRMR, GFI, and RMSEA are absolute fit indices, and CFI is a measure of incremental fit. The SRMR is the standardized value of the square root of the average squared residuals. Hu and Bentler (1999) recommend a cutoff value of .08 or less. The GFI is analogous to R squared in multiple regression, and indicates the proportion of observed covariation accounted for by the model. The conventional cutoff value for the GFI is .90, though some suggest a higher cutoff value would be more appropriate (Hu & Bentler, 1995). The RMSEA estimates the lack of fit of the population data to the model. Values of .05-.08 indicate close fit and values of .10 or greater indicate poor fit (Browne & Cudeck, 1993). Hu and Bentler (1999) recommend a cutoff close to .06 for the RMSEA. The CFI represents the relative reduction in the noncentrality parameters of the proposed and independence models. Hu and Bentler (1999) recommend a cutoff of .95 or above for the CFI.

In addition to examining overall model fit, the underlying structure and relationships between the variables in the model were assessed through an examination of parameter estimates. Parameter estimates, represented by standardized beta-weights (β), represent the coefficients for the relationships between the variables and provide information about how the different variables in the model are related. Standardized parameter estimates are reported along with standard errors and associated p -values.

Aim 2: Examine the factors, including caregiver strain, that predict school-based mental health services utilization and parent engagement in services.

The primary purpose of this aim is to examine factors that predict mental health services utilization and parent engagement in services, with a particular focus on caregiver strain. While

there is an abundance of evidence to support the role of caregiver strain in predicting a variety of different types of mental health services, little research has been conducted to examine the role of caregiver strain in predicting the use of school-based mental health services. Further, few if any studies to date have directly examined the role of caregiver strain in predicting parent engagement in their child's services.

The following research questions are associated with this aim: 1) do caregiver strain and other theoretically related constructs predict the amount of school-based mental health services received by youth?; and 2) do caregiver strain and other theoretically related constructs predict whether or not caregivers consult with their child's school-based mental health services provider during the school year? Analyses conducted to address this aim are described below according to research question (RQ).

RQ 1: The first research question for this aim, whether caregiver strain and other theoretically related constructs predict the amount of school-based mental health services received by youth, is addressed using multiple linear regression. Multiple linear regression can be used to determine how correlated a set of predictors are with a dependent variable, which variables are the strongest predictors of the dependent variable while controlling for the relationships among the predictors, and what regression equation will produce the best estimate of the dependent variable while being parsimonious.

Using multiple linear regression, the relative impact of different variables, including caregiver strain, on child use of school-based mental health services was assessed. The dependent variable for this analysis, amount of school-based mental health services, is based on mental health service provider report of the number of minutes of school-based counseling received by each child during the school year. Independent variables hypothesized to impact

service use are based on the theoretical model and previous research and include the following: child functioning (stressor), social support and income (resources), mental health services efficacy, expected benefit of engagement in services and social norms related to mental health (perceptions), caregiver strain (crisis), and child and family demographic characteristics. The proportion of variance in amount of school-based services explained by the set of independent variables (R^2) is reported, along with regression weights (B and β), standard errors, and associated p -values.

RQ 2: The second question for this aim, whether caregiver strain and other theoretically related constructs predict if caregivers consult with their child's service provider during the school year, is addressed using multiple logistic regression. Logistic regression can be used to predict a discrete outcome from a set of variables and emphasizes the probability of a particular outcome for each case.

The dependent variable for this analysis, whether or not caregivers consulted with their child's service provider during the school year, is based on mental health service provider report of the number of minutes spent talking with caregivers about their children during the school year. Caregivers were classified as having either: 1) consulted with their child's service provider during the school year (i.e., service provider reported at least one minute of consultation during the school year), or 2) not consulted with their child's service provider during the school year (i.e., service provider reported no minutes of consultation during the school year). Independent variables hypothesized to impact whether or not parents consulted with their child's service provider are based on the theoretical model and previous research. These include child functioning (stressor), social support and income (resources), mental health services efficacy, expected benefit of engagement in services and social norms related to mental health

(perceptions), caregiver strain (crisis), and child and family demographic characteristics. The χ^2 test for overall model fit is presented, along with regression weights and associated standard errors, and odds ratios and 95% confidence intervals for odds ratios.

Chapter Four

Results

In the following sections, results from data screening procedures and tests of assumptions are presented first. These findings are followed by a description of findings from the analyses conducted to address the specific objectives of the current study. These results are presented according to study aims and research questions.

Data Screening/Assumptions

Normality. Prior to conducting analyses, the data were assessed for normality and outliers by an examination of Shapiro-Wilk statistics, frequency distributions, and skewness and kurtosis. A significant Shapiro-Wilk test statistic suggests the data deviate significantly from, normal distributions (Shapiro & Wilk, 1965). Skewness and kurtosis values of zero indicate the data are normally distributed (Tabachnick & Fidell, 2007). While there is no clear consensus regarding an acceptable degree of non-normality, studies examining the impact of univariate normality on ML-based results suggest that problems may occur when skewness and kurtosis approach values of 2 and 7, respectively (e.g., Chou & Bentler, 1995; Curran, West, & Finch, 1996). Kline (1998) suggests cutoffs of 3 and 8 for skew and kurtosis, respectively. Table 5 presents descriptive statistics for all study variables, and skew and kurtosis values for each measure are presented in Table 6.

Table 5.

Descriptive statistics for study variables at time 1 and time 2

Study Variable	Measure (N=112) ^a	Time 1		Time 2	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Caregiver Strain	CGSQ Global ^a	8.28	.245	7.84	0.27
	CGSQ Objective Strain Subscale	2.61	1.00	2.43	1.11
	CGSQ Subjective-Internalizing Strain Subscale	3.28	1.08	3.08	1.08
	CGSQ Subjective-Externalizing Strain Subscale	2.38	0.91	2.33	0.99
Youth Functioning	SDQ Total Problems ^b	21.58	6.56	20.21	6.10
	SDQ Emotional Symptoms	4.45	2.61	3.84	2.37
	SDQ Conduct Problems	5.62	2.39	4.98	2.40
	SDQ Hyperactivity	7.33	2.22	7.07	2.44
	SDQ Peer Problems	4.02	2.40	3.88	2.36
Social Support	Sources of Support Questionnaire	NA	NA	14.72	13.49
Mental Health Services Efficacy	Vanderbilt Mental Health Services Efficacy Questionnaire	96.92	13.72	98.57	12.88
Expected Benefit of Engagement in Mental Health Services	Expected Benefit of Engagement Questionnaire	17.03	3.31	16.87	3.10
Social Norms Related to Mental Health	Social Norms Questionnaire	29.00	6.13	28.14	6.29
Minutes of Counseling	Service Provider Report of Minutes of Counseling Received by Youth	NA	NA	521.36	34.14
Minutes of Consultation	Service Provider Report of Minutes of Consultation with Caregivers	NA	NA	17.10	4.23

^a N=111 for mental health services efficacy at time 2^b CGSQ=Caregiver Strain Questionnaire^c SDQ=Strengths and Difficulties Questionnaire

Table 6.

Skewness and kurtosis values for all study variables

	<i>Time 1</i>				<i>Time 2</i>			
	Skewness	S.E.	Kurtosis	S.E.	Skewness	S.E.	Kurtosis	S.E.
Age at Interview	.243	.228	.181	.453	NA	NA	NA	NA
Years in Special Education	.125	.236	.333	.467	NA	NA	NA	NA
Annual Household Income ^a	1.669	.228	2.870	.453	NA	NA	NA	NA
Total Problems	-.307	.228	-.711	.453	-.540	.228	-.438	.453
Emotional Symptoms	-.060	.228	-1.022	.453	.162	.228	-.850	.453
Conduct Problems	-.012	.228	-.626	.453	.125	.228	-.588	.453
Hyperactivity	-.657	.228	-.359	.453	-.666	.228	-.434	.453
Peer Problems	.406	.228	-.269	.453	.380	.228	-.272	.453
Mental Health Services Efficacy	-.421	.228	-.394	.453	.031	.229	-.575	.455
Global Strain	-.181	.228	-.552	.453	.242	.228	-.949	.453
Objective Strain	.269	.228	-.711	.453	.617	.228	-.716	.453
Subjective-Internalizing Strain	-.498	.228	-.575	.453	-.248	.228	-.969	.453
Subjective-Externalizing Strain	.372	.228	-.584	.453	.270	.228	-1.040	.453
Social Support	NA	NA	NA	NA	.755	.228	-.506	.453
Expected Benefit of Engagement in Mental Health Services	-1.423	.228	1.984	.453	-1.030	.228	.553	.453
Mental Health Social Norms	-.157	.228	-1.235	.453	-.463	.228	.257	.453
Minutes of School-Based Counseling	NA	NA	NA	NA	.262	.228	-.541	.453
Minutes of Consultation	NA	NA	NA	NA	4.399	.228	24.303	.453
Resource Index	.895	.228	.819	.453	NA	NA	NA	NA

^a Reflects the recoded variable to adjust for the outlying case. Skewness and kurtosis values for income were 5.896 (SE=.237) and 46.204 (SE=.469), respectively, prior to recoding the variable.

Findings from the assessment of normality revealed statistically significant Shapiro-Wilk tests for all but three study variables (see Table 7). An examination of skewness and kurtosis values for all study variables revealed that nearly all of the study variables had acceptable values of skewness and kurtosis (both below 2.0). However, two study variables, minutes of consultation between service providers and caregivers and annual household income, displayed skewness and kurtosis values that were indicative of non-normality (see Table 6). A closer examination of the consultation variable revealed that large percentage of caregivers (69.6%, $n=78$) had values of 0 for this variable. For this reason, the determination was made to dichotomize this variable for analyses.

An examination of the income variable revealed an outlying case; the value of income for this case was therefore recoded to be the same as the next highest observed value for income in the dataset. This adjustment resulted in skew and kurtosis values for this variable that fell within an acceptable range (see Table 6). Analyses conducted using the original value for the income variable and then using the recoded values for this variable revealed nearly identical results, suggesting that the analyses were not sensitive to changes in this variable. Notably, the statistical methodology employed for this study is generally fairly robust to violations of non-normality.

Linearity and Homoscedasticity. To assess the presence of non-linearity, linear relationships among pairs of measured variables were assessed through a visual inspection of scatterplots. This inspection did not reveal any notable issues pertaining to non-linearity. Additionally, an examination of the residuals scatterplot from multiple regression analyses conducted as part of the current study indicated no violations of the assumptions of linearity or homoscedasticity of residuals.

Table 7.

Results from Shapiro-Wilk tests for normality

	<i>Time 1</i>			<i>Time 2</i>		
	Statistic	df	<i>p</i>	Statistic	df	<i>p</i>
Age at Interview	.929	112	.000	NA	NA	NA
Years in Special Education	.983	105	.187	NA	NA	NA
Annual Household Income Recoded ^a	.836	112	.000	NA	NA	NA
Total Problems	.972	112	.019	.961	112	.002
Emotional Symptoms	.951	112	.000	.958	112	.001
Conduct Problems	.972	112	.017	.973	112	.021
Hyperactivity	.913	112	.000	.913	112	.000
Peer Problems	.957	112	.001	.962	112	.003
Mental Health Services Efficacy	.974	112	.027	.979	111	.075
Global Strain	.982	112	.145	.964	112	.004
Objective Strain	.971	112	.016	.924	112	.000
Subjective-Internalizing Strain	.952	112	.001	.961	112	.002
Subjective-Externalizing Strain	.959	112	.002	.939	112	.000
Social Support	NA	NA	NA	.897	112	.000
Expected Benefit of Engagement in Mental Health Services	.819	112	.000	.875	112	.000
Mental Health Social Norms	.920	112	.000	.944	112	.000
Minutes of School-Based Counseling	NA	NA	NA	.961	112	.002
Minutes of Consultation	NA	NA	NA	.438	112	.000
Resource Index	.941	112	.000	NA	NA	NA

^a Reflects the recoded variable to adjust for the outlying case. The Shapiro-Wilk value for income was .505 (df=104, *p*=.000) prior to recoding the variable.

Homogeneous Variances. For analyses using ANOVA, the homogeneous variances assumption was assessed using Levene's test for equality of variances. A significant finding for this test suggests the data do not meet the equality of variances assumption (Tabachnick & Fidell, 2007). Levene's tests for all ANOVAs conducted for the current study were non-significant, which suggests that the data meet the equality of variances assumption.

Multicollinearity. While not an assumption of multiple regression, multicollinearity can increase the standard error of regression weights, which can result in less powerful tests. Multicollinearity was therefore assessed for multiple regression analyses through an examination of VIF and Tolerance values. If predictors in a regression model are un-related, VIF values will equal 1. As they become more related, VIF increases. Additionally, if predictors are unrelated, tolerance will equal 1. As tolerance approaches 0, the variables are multicollinear. To support the absence of problems with multicollinearity, VIF values should be less than 10 and tolerance values should be greater than .10. An examination of tolerance and VIF values obtained through multiple regression analyses conducted as part of the current study revealed no problems with multicollinearity (i.e., all VIF values less than 10 and all Tolerance values greater than .30).

Results for Aim 1

RQ 1: What is the level of reported strain in the sample? Basic descriptive statistics were run to describe the level of the strain in the sample. Results from these analyses indicated that the mean global strain score for participants in the sample was 8.28 ($SD=2.59$). Of the three types of strain, participants reported the highest levels of subjective-internalizing strain ($M = 3.28, SD = 1.08$), followed by objective strain ($M = 2.61, SD = 1.00$) and subjective-externalizing strain ($M = 2.38, SD = 0.91$).

RQ 2: Are there differences in the level of different types of strain reported by individuals in the sample? Paired samples t-tests were conducted to examine differences in the different types of strain. Results revealed that, of all three types of caregiver strain, the level of subjective-internalizing strain in the sample was significantly higher than both the level of objective strain, $t(111) = -8.53, p = .000, 95\% \text{ CI } [-0.83, -0.52]$, and the level of subjective-externalizing strain, $t(111) = 11.02, p = .000, 95\% \text{ CI } [0.74, 1.06]$. Additionally, the level of reported objective strain was significantly higher than the level of subjective-externalizing strain, $t(111) = 2.56, p = .012, 95\% \text{ CI } [0.40, 2.56]$.

RQ 3: Is the level of strain in the sample stable over time? Independent samples t-tests were conducted to compare the means for each of the different types of strain measured at time 1 versus time 2 (representing about a 9-month interval) to determine if the level of strain in the sample was stable over time. Overall, reported levels of all of the different types of caregiver strain were higher at time 1 compared to time 2. However, results from these analyses revealed that the difference between time 1 and time 2 was only significant for subjective-internalizing strain, $t(111) = 2.07, p < .05, 95\% \text{ CI } [0.01, 0.40]$ (See Table 8).

Table 8.

Results from dependent samples t-tests assessing the stability of caregiver strain over time

	<u>Time 1</u>	<u>Time 2</u>	<i>t</i>	<i>df</i>	<i>p</i>	95% CI	
	<i>M (SD)</i>	<i>M (SD)</i>				<i>Lower</i>	<i>Upper</i>
Global Strain	8.28 (.245)	7.84 (0.27)	1.928	111	.056	-.012	.892
Objective Strain	2.61 (1.00)	2.43 (1.11)	1.909	111	.059	-.007	.362
Subjective-Internalizing Strain	3.28 (1.08)	3.08 (1.08)	2.069	111	.041	.009	.399
Subjective-Externalizing Strain	2.38 (0.91)	2.33 (0.99)	0.667	111	.506	-.114	.231

RQ 4: Does the level of each of the different types of strain differ according to child and family demographic characteristics? Separate one-way ANOVAs were conducted to examine potential differences in the different types of strain based on: (1) youth gender; (2) caregiver type; and (3) youth race/ethnicity. Findings from analyses examining differences according to youth gender revealed that for each of the different types of strain, caregivers of male youth reported higher levels of strain compared to caregivers of female youth. However, these differences were not statistically significant (see Table 9).

An examination of caregiver strain among parents (i.e., biological parents, adoptive parents, and step-parents) and other caregivers (i.e., grandparents, other relatives, foster parents, and other), revealed a general trend (not statistically significant) in which parents reported higher levels of strain compared to other caregivers. This was the case for global strain, subjective-internalizing strain, and subjective-externalizing strain (see Table 10).

Overall, results revealed that caregivers of White/Non-Hispanic youth reported the highest levels of global strain in the sample and caregivers of Black/Non-Hispanic youth reported the lowest levels of global strain in the sample. For the different sub-types of strain, caregivers of White/Non-Hispanic youth reported the highest levels of both objective strain and subjective-externalizing strain compared to all other race/ethnicity groups. Caregivers of Black/Non-Hispanic youth reported the lowest levels of both objective strain and subjective-internalizing strain compared to all other race/ethnicity groups. Caregivers of Hispanic youth reported the lowest levels of subjective-externalizing strain in the sample (see Table 11). However, these differences were only statistically significant for one of the caregiver strain subscales.

Results from one-way ANOVAs to assess differences in caregiver strain based on race/ethnicity revealed a significant difference between groups only for subjective-externalizing strain, $F(3, 108) = 3.06, p = .031$ (see Table 11). Follow up analyses (Tukey HSD) to this significant main effect revealed no statistically significant differences between any groups for subjective-externalizing strain. However, the level of subjective-externalizing strain reported by caregivers of White/Non-Hispanic children was higher than that reported by caregivers of Black/Non-Hispanic children (mean difference = 0.48, $p = .070$) and Hispanic children (mean difference = 0.78, $p = .080$).

Bivariate correlation analyses were conducted to examine the relationship between the different types of caregiver strain and continuously measured demographic characteristics. These analyses revealed no significant relationships among any of the types of caregiver strain and youth age, number of years youth had been in special education, or annual household income. See Table 12 for correlations among these variables.

RQ 5 and RQ 6: What is the relationship between caregiver strain and youth functioning, perceptions, and resources; and is race/ethnicity related to caregiver strain, perceptions, and resources? Structural Equation Modeling analyses were conducted to examine the relationships between Caregiver Strain, a latent variable with three indicators (objective strain, subjective-internalizing strain, and subjective-externalizing strain), Resources, a latent variable with two indicators (annual household income and social support), and Perceptions, a latent variable with three indicators (mental health services efficacy, expected benefit of engagement, and Mental Health Social Norms Questionnaire total score). The factor loadings for one indicator of each latent variable (i.e., objective strain subscale for Caregiver Strain; income for Resources; and mental health services efficacy for Perceptions) was set to one. Also included

in the analysis were measured indicators of youth functioning and race/ethnicity. Maximum likelihood estimation was employed to estimate this hypothesized model, presented in Figure 1.

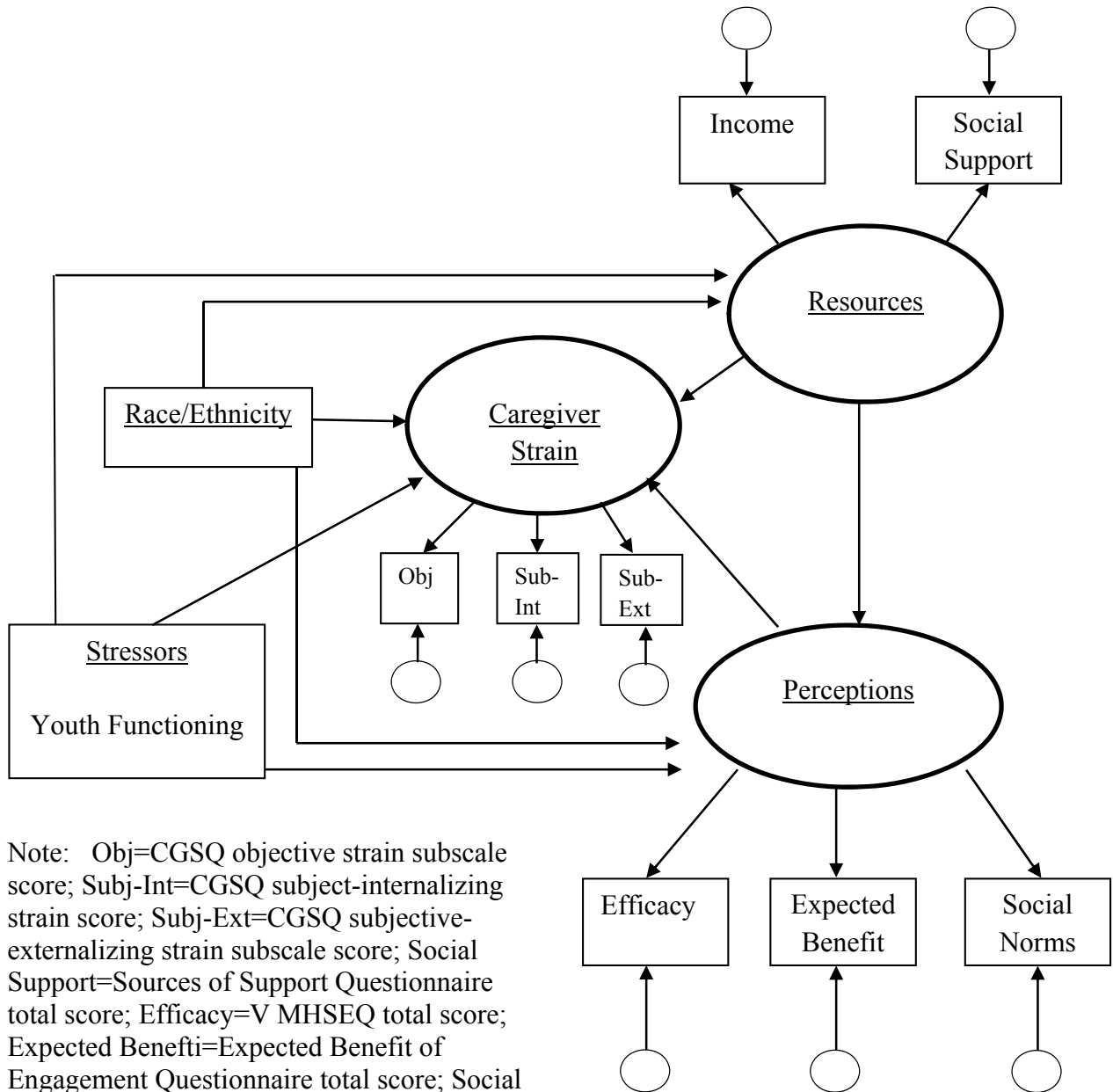


Figure 1. Initial hypothesized model

Table 9.

Descriptive statistics for caregiver strain by gender and results from ANOVA examining differences in caregiver strain based on gender

					ANOVA Table					
Descriptive Statistics by Gender		<i>n</i>	<i>M</i>	<i>SD</i>	<i>Source</i>	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>p</i>
Global Strain	Male	93	8.372	2.534	Between Groups	5.086	1	5.086	0.758	.386
	Female	19	7.804	2.863	Within Groups	738.316	110	6.712		
Objective Strain	Male	93	2.632	1.006	Between Groups	0.325	1	0.325	0.322	.571
	Female	19	2.488	0.993	Within Groups	110.786	110	1.007		
Subjective-Internalizing Strain	Male	93	3.348	1.063	Between Groups	2.207	1	2.207	1.907	.170
	Female	19	2.974	1.139	Within Groups	127.273	110	1.157		
Subjective-Externalizing Strain	Male	93	2.393	0.902	Between Groups	0.040	1	0.040	0.048	.828
	Female	19	2.342	0.983	Within Groups	92.326	110	0.839		

Table 10.

Descriptive statistics for caregiver strain by caregiver type and results from ANOVA examining differences in caregiver strain based on caregiver type

Descriptive Statistics by Caregiver Type					ANOVA					
					<i>n</i>	<i>M</i>	<i>SD</i>	<i>Source</i>	<i>Sum of Squares</i>	<i>df</i>
Global Strain	Parent	89	8.390	2.654	Between Groups	5.730	1	5.730	0.854	.357
	Other Caregiver	23	7.830	2.316	Within Groups	737.672	110	6.706		
Objective Strain	Parent	89	2.605	1.048	Between Groups	0.003	1	0.003	0.003	.960
	Other Caregiver	23	2.617	0.811	Within Groups	111.108	110	1.010		
Subjective- Internalizing Strain	Parent	89	3.378	1.092	Between Groups	3.834	1	3.834	3.356	.070
	Other Caregiver	23	2.920	0.972	Within Groups	125.646	110	1.142		
Subjective- Externalizing Strain	Parent	89	2.407	0.930	Between Groups	0.237	1	0.237	.283	.596
	Other Caregiver	23	2.294	0.852	Within Groups	92.129	110	0.838		

Table 11.

Descriptive statistics for caregiver strain by race/ethnicity and results from ANOVA examining differences in caregiver strain based on race/ethnicity

Descriptive Statistics by Race/Ethnicity		<i>n</i>	<i>M</i>	<i>SD</i>	ANOVA					
					<i>Source</i>	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>p</i>
Global Strain	White/Non-Hispanic	32	8.967	2.224	Between Groups	27.982	3	9.327	1.408	.244
	Black/Non-Hispanic	63	7.877	2.684	Within Groups	715.421	108	6.624		
	Hispanic	10	8.153	2.503						
	Other	7	8.877	3.137						
Objective Strain	White/Non-Hispanic	32	2.849	0.962	Between Groups	3.037	3	1.012	1.012	.391
	Black/Non-Hispanic	63	2.473	0.968	Within Groups	108.074	108	1.001		
	Hispanic	10	2.636	1.206						
	Other	7	2.662	1.170						
Subjective-Internalizing Strain	White/Non-Hispanic	32	3.391	0.959	Between Groups	2.815	3	0.938	0.800	.496
	Black/Non-Hispanic	63	3.153	1.142	Within Groups	126.665	108	1.173		
	Hispanic	10	3.567	1.089						
	Other	7	3.571	1.054						

Table 11 (continued)

				ANOVA						
Descriptive Statistics by Race/Ethnicity	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Source</i>	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>p</i>	
Subjective-Externalizing Strain	White/Non-Hispanic	32	2.72 7	0.714	Between Groups	7.239	3	2.413	3.061	.031
	Black/Non-Hispanic	63	2.25 0	0.955	Within Groups	85.127	108	0.788		
	Hispanic	10	1.95 0	0.715						
	Other	7	2.64 3	1.171						

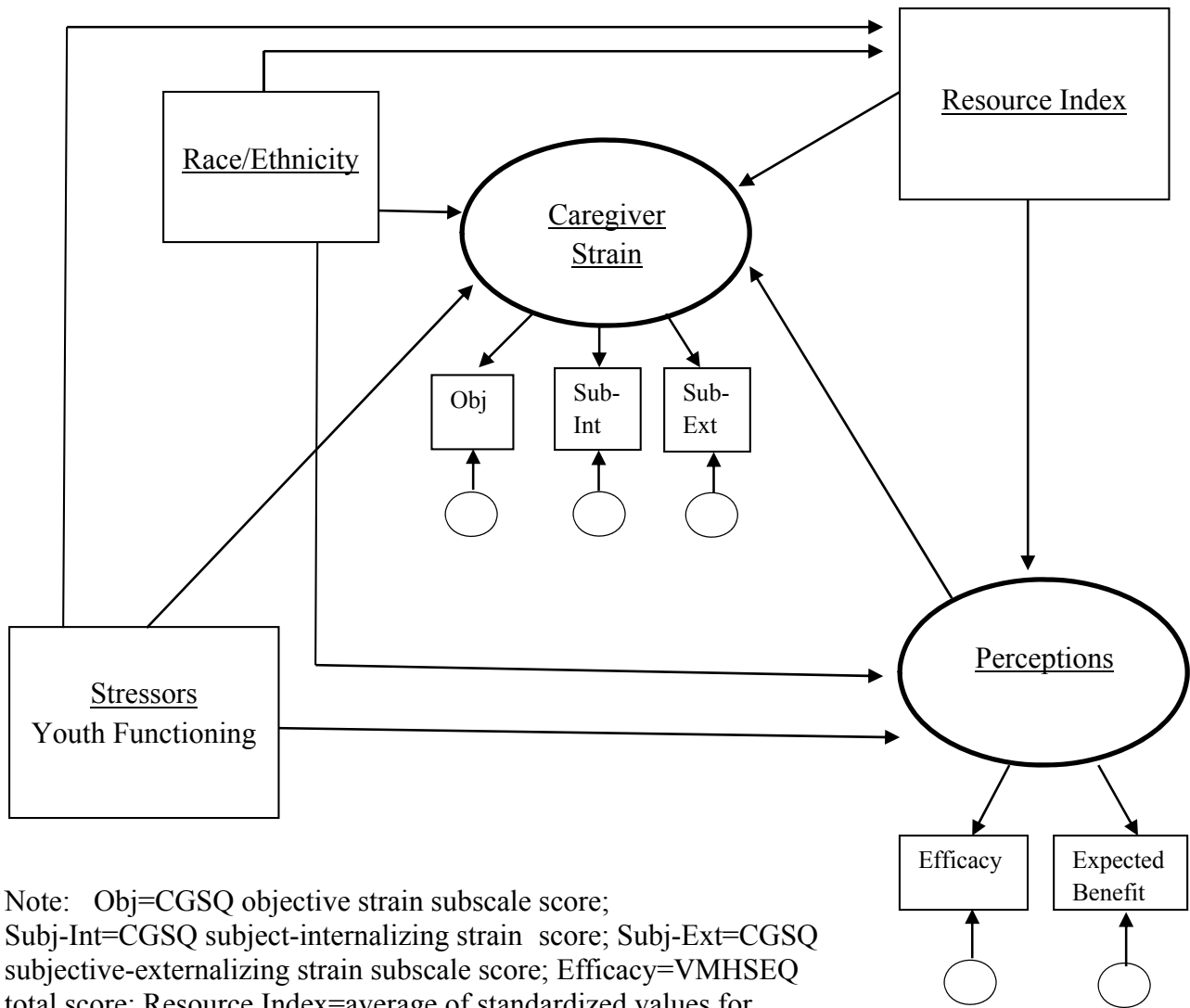
Table 12.

Correlations between caregiver strain and continuously measured demographic characteristics

	Global Strain	Objective Strain	Subjective-Internalizing Strain	Subjective-Externalizing Strain
	<i>r (p)</i>	<i>r (p)</i>	<i>r (p)</i>	<i>r (p)</i>
Youth Age	-.068 (.476)	-.089 (.350)	-.102 (.285)	.025 (.791)
Number of years in Special Education	.086 (.380)	.147 (.136)	.035 (.723)	.042 (.670)
Annual Household Income	.002 (.981)	.078 (.415)	-.044 (.644)	-.027 (.781)

Results from this analysis revealed that the model demonstrated fair fit to the data ($\chi^2=52.107$ (27, $n=111$), $p=.003$; SRMR=.074; CFI=.928; GFI=.915; RMSEA=.092), though a negative error variance resulted in a covariance matrix that was not positive definite. An examination of the measurement model revealed path coefficients that pointed to potential problems with the income and social norms variables. Specifically, for the latent construct of Resources, one of the indicator variables (income) had a low parameter estimate and a low standard error ($\beta=.159$, $SE=.005$) and the other indicator variable (social support) had a parameter estimate greater than 1.0 and a relatively high standard error ($\beta=1.277$, $SE=.446$). For the latent variable Perceptions, one of the indicator variables (mental health social norms) demonstrated virtually no relationship with the latent construct ($\beta=.046$, $SE=.111$).

Based on these findings, the model was modified to be consistent both theoretically and empirically. First, an index variable for Resources was created by multiplying the standardized values for the income and social support variables. Second, the decision was made to remove the social norms variable from the model completely. The modified model (presented in Figure 2) includes Caregiver Strain, a latent variable with three indicators (objective strain, subjective-internalizing strain, and subjective-externalizing strain), Perceptions, a latent variable with two indicators (mental health services efficacy and expected benefit of engagement), and the resource index variable. Again, the factor loadings for one indicator of each latent variable (i.e., objective strain for Caregiver Strain and mental health services efficacy for Perceptions) was set to one. Also included in the hypothesized model were measured indicators of youth functioning and race/ethnicity. Table 13 presents the correlation matrix for all variables included in this model.



Note: Obj=CGSQ objective strain subscale score; Subj-Int=CGSQ subject-internalizing strain score; Subj-Ext=CGSQ subjective-externalizing strain subscale score; Efficacy=VMHSEQ total score; Resource Index=average of standardized values for income and total scores on the Sources of Support Questionnaire; Expected Benefit=Expected Benefit of Engagement Questionnaire total score; and Youth Functioning=SDQ Total Problem score.

Figure 2. Modified Model

Table 13.

Correlation matrix of variables included in the SEM analyses

	2	3	4	5	6	7
1 Objective Strain	.772**	.701**	.548**	-.194*	-.338**	.302**
2 Subjective-Internalizing Strain		.742**	.461**	-.208*	-.365**	.187*
3 Subjective-Externalizing Strain			.490**	-.359**	-.354**	.086
4 Total Problems				-.266**	-.318**	.200*
5 Mental Health Service Efficacy					.523**	.207*
6 Expected Benefit of Engagement						.081
7 Resource Index						1.0

*p<.05; **p<.01

Maximum likelihood estimation was employed to estimate the modified model and results indicated improved model fit, $\chi^2=25.162$ (13, $n=111$), $p=.022$; SRMR=.046; CFI=.962; GFI= .944; RMSEA=.092. The SRMR is below .06 and the CFI is above .95, indicating good fit. Additionally, the GFI exceeds .90, indicating that the model fits the data. While the RMSEA is above the recommended cutoff of .06, this could be due to small sample size; the RMSEA tends to over-reject true-population models at small samples (Hu & Bentler, 1999).

Table 14 presents the standardized path coefficients and associated standard errors and p-values for all estimated parameters in the model. Regarding the measurement model, parameter estimates indicate significant positive relationships between all of the included indicator variables and their associated latent constructs. Regarding the full structural model, the pathways from youth functioning to caregiver strain ($\beta=.363$, $SE=.101$) and from resources to caregiver strain ($\beta=.227$, $SE=.088$) were both positive and significant. The pathway from perceptions to

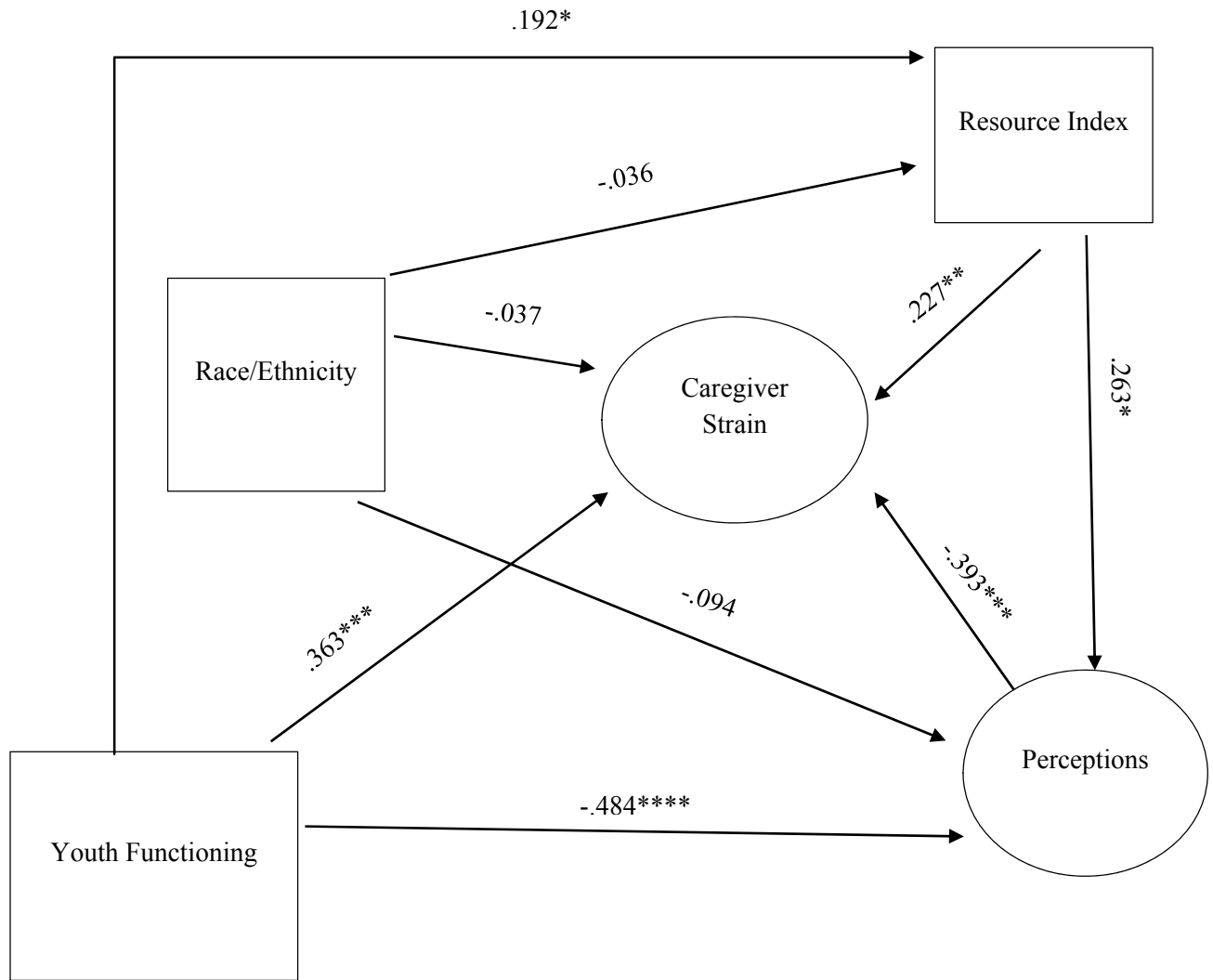
caregiver strain was also significant, but negative ($\beta=-.393$, $SE=.113$), thus indicating that higher or more positive perceptions were related to lower caregiver strain. Youth functioning had a significant positive effect on resources ($\beta=.192$, $SE=.095$), whereby more child problems was associated with greater resources, and a significant negative effect on perceptions ($\beta= -.484$, $SE=.100$), indicating that more youth problems were related to lower or more negative perceptions. There was a significant direct effect from resources to perceptions that was also positive ($\beta=.263$, $SE=.104$). Though all were negative, none of the hypothesized paths from race/ethnicity to any of the other variables in the model were significant (see Figure 3).

Table 14.

Standardized parameter estimates.

Measurement Model	β	<i>S.E.</i>	<i>p</i>
<u>Indicators for Caregiver Strain</u>			
Objective Strain	.877	.031	<.0001
Subjective-Internalizing Strain	.886	.030	<.0001
Subjective-Externalizing Strain	.827	.037	<.0001
<u>Indicators for Perceptions</u>			
Mental Health Services Efficacy	.674	.083	<.0001
Expected Benefit of Engagement	.777	.084	<.0001
Structural Paths	β	<i>S.E.</i>	<i>p</i>
Race/ethnicity → Caregiver strain	-.037	.084	.662
Youth functioning → Caregiver strain	.363	.101	.000
Resources → Caregiver strain	.227	.088	.010
Perceptions → Caregiver strain	-.393	.113	.001
Race/ethnicity → Resource Index	-.036	.096	.711
Youth functioning → Resource Index	.192	.095	.043
Race/ethnicity → Perceptions	-.094	.107	.381
Youth functioning → Perceptions	-.484	.100	<.0001
Resource Index → Perceptions	.263	.104	.011

$\chi^2=25.162$ (13, $n=111$), $p=.022$; SRMR=.046; CFI=.962; GFI= .944; RMSEA=.092



*p<.05; **p<.01; ***p<.001; ****p<.0001

$\chi^2=25.162$ (13, $n=111$), $p=.022$; SRMR=.046; CFI=.962; GFI=.944; RMSEA=.092

Figure 3. Standardized path coefficients for modified model

Results for Aim 2

RQ1: Do caregiver strain and other theoretically related variables predict the amount of school-based mental health services received by youth? Multiple linear regression analysis was used to determine if the amount of school-based counseling services received by students during the school year could be predicted from the following: objective strain, subjective-internalizing strain, subjective-externalizing strain, mental health services efficacy, youth conduct problems, youth hyperactivity problems, youth peer problems, youth emotional symptoms, social support, expected benefit of engagement, mental health social norms, youth age, income, number of years in special education, youth race/ethnicity, youth gender, and caregiver type. Analyses also included a predictor variable in the model to control for group assignment as part of the RCT. Table 15 presents the correlation matrix for all predictor variables included in this analysis.

Overall, the majority of youth in the sample received school-based counseling services at some time during the school year (86.6%, $n = 97$). On average, youth in the sample received 521.36 minutes ($SD = 361.28$, range = 0 to 1,575 minutes) of school-based counseling services during the school year.

Results from the multiple regression analysis indicate that collectively, the predictors included in the model did not account for a significant percentage of the variance in amount of school-based counseling services received by youth, $R^2 = .119$, $F(18,86) = 0.647$, $p = .852$. An examination of the regression coefficients revealed none of the predictor variables included in the model reliably predicted the outcome (see Table 16).

Further analyses were conducted to determine if any of the predictor variables included in the model were related to the outcome when other variables were not controlled for, including bivariate correlations and independent samples t-tests. Bivariate correlations between minutes of school-based counseling services and the predictor variables revealed no statistically significant relationships between any of the predictor variables and the outcome. In addition, independent samples t-tests for the difference in mean number of minutes of school-based counseling services received based on the categorical predictors in the model also indicated no significant differences between groups based on these predictor variables (see Table 17).

RQ 2: Do caregiver strain and other theoretically related variables predict whether or not caregivers consulted with their child’s school-based mental health services provider during the school year? Multiple logistic regression analysis was conducted to determine if parent consultation with their child’s school-based mental health service provider could be predicted from the following: objective strain, subjective-internalizing strain, subjective-externalizing strain, mental health services efficacy, youth conduct problems, youth hyperactivity problems, youth peer problems, youth emotional symptoms, social support, expected benefit of engagement, mental health social norms, youth age, income, number of years in special education, youth race/ethnicity, youth gender, and caregiver type. Analyses also included a predictor variable in the model to control for group assignment as part of the RCT.

Table 15.

Correlation matrix of all predictor variables for regression analyses

	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Objective Strain	.677* *	.539* *	.373**	.583**	.391**	.221*	.243* *	-.152	-.180	.001	.078	.147	-.089
2 Subjective-Internalizing Strain		.635* *	.304**	.428**	.354**	.080	.177	-.031	-.169	.086	-.044	.035	-.102
3 Subjective-Externalizing Strain			.319**	.481**	.253**	.196*	.062	-.204*	-.354**	.065	-.027	.042	.025
4 Emotional Symptoms				.323**	.337**	.498* *	.174	-.060	-.116	-.118	-.031	.226*	.005
5 Conduct Problems					.395**	.264* *	.122	-.161	-.159	.013	.026	-.088	-.049
6 Hyperactivity						.235*	.143	.002	-.020	.110	-.096	.123	-.170
7 Peer Problems							.172	-.098	-.089	-.136	.149	.058	-.088
8 Social Support								.155	.182	.144	.195* *	.113	-.024
9 Mental Health Service Efficacy Expected									.544**	.167	.134	-.077	-.169
10 Benefit of Engagement										.238* *	.122	.072	-.080

Table 15 (continued)

	2	3	4	5	6	7	8	9	10	11	12	13	14
11 Social Norms Mental Health Annual											.049	-.002	-.095
12 Household Income Years in												-. .247*	-.178
13 Special Education													.362* *
14 Youth Age													
15 Minutes of Counseling													

*p<.05; **p<.01

Table 16.

Results from multiple regression analysis of minutes of school-based counseling received by youth.

Continuous Predictor Variables			<i>B</i>	<i>S.E. B</i>	β	<i>p</i>
Objective Strain			-25.036	58.203	-.072	.668
Subjective-Internalizing Strain			-29.064	54.176	-.090	.597
Subjective-Externalizing Strain			8.492	56.524	.022	.881
Mental Health Services Efficacy			0.607	3.448	.024	.861
Youth Conduct Problems			-5.107	20.412	-.035	.803
Youth Hyperactivity Problems			-4.185	20.500	-.027	.839
Youth Peer Problems			-3.593	18.562	-.025	.847
Youth Emotional Symptoms			30.129	18.443	.227	.106
Social Support			1.462	2.970	.057	.624
Expected Benefit of Engagement			-6.467	16.165	-.056	.690
Mental Health Norms			9.300	6.516	.162	.157
Youth Age			-.533	39.183	-.002	.989
Annual Household Income			.001	.002	.035	.769
Number of Years in Special Education			21.490	19.299	.145	.269
Categorical Predictor Variables		<i>n</i>	<i>B</i>	<i>S.E. B</i>	β	<i>p</i>
Youth Race/Ethnicity	NHBlack	63	67.702	82.607	.096	.415
	Other	49				
Youth Gender	Female	19	117.694	103.548	.127	.259
	Male	93				
Caregiver Type	Parent	89	-61.385	107.012	-.066	.568
	Other	23				
Group Assignment	Intervention	56	31.246	79.182	.045	.694
	Comparison	56				

$R^2 = .119$, $F(18,86) = 0.647$, $p = .852$

Table 17.

Descriptives and correlations for predictor variables and minutes of school-based counseling

Continuous Predictor Variables	Minutes of School-Based Counseling (<i>r</i>)	<i>p</i>		
Objective Strain	-.052	.588		
Subjective-Internalizing Strain	-.061	.520		
Subjective-Externalizing Strain	.030	.756		
Mental Health Services Efficacy	-.003	.978		
Youth Conduct Problems	-.014	.881		
Youth Hyperactivity Problems	-.034	.721		
Youth Peer Problems	.072	.448		
Youth Emotional Symptoms	.148	.119		
Social Support	.054	.572		
Expected Benefit of Engagement	-.061	.522		
Mental Health Norms	.072	.449		
Youth Age	.082	.389		
Annual Household Income	-.005	.955		
Number of Years in Special Education	.133	.176		
Categorical Predictor Variables	<i>n</i>	<i>M</i>	<i>SD</i>	
Youth Race/Ethnicity	NHBlack	63	538.76	389.353
	Other	49	498.98	324.201
Youth Gender	Female	19	576.37	260.113
	Male	93	510.12	378.793
Caregiver Type	Parent	89	510.66	359.264
	Other	23	562.74	374.158
Group Assignment	Intervention	56	559.79	371.585
	Comparison	56	482.93	349.756

Overall, 30.4% ($n=34$) of caregivers in the sample consulted with their child's school-based mental health service provider during the course of the school year. Caregivers who did consult with their child's school-based mental health services provider spent between 8 minutes and 333 minutes in consultation with the service provider during the course of the school year, for an average of 56.32 minutes ($SD = 65.092$, Median=27.50). See Table 18 for complete descriptive statistics on all predictor variables for caregivers who consulted with their child's service provider and caregivers who did not consult with their child's service provider.

A test of the full logistic regression model with all predictor variables against a constant-only model was not statistically significant, $\chi^2 = 20.145$ (18, $N = 105$), $p = .325$, indicating that the predictors as a set did not reliably distinguish between caregivers who consulted with their child's mental health services providers and those who did not. Table 19 shows regression coefficients and 95% confidence intervals for odds ratios for each of the predictors included in the model. According to these findings, two predictor variables were significantly related to the likelihood of a caregiver consulting with their child's school-based mental health service provider during the school year: youth conduct problems and youth gender. Holding all other predictor variables constant, increases in youth conduct problems were associated with a lower likelihood of consultation, $\text{Exp}(B) = .679$, CI [.517, .892], $p = .005$; and caregivers of female youth were more likely to consult with their child's service provider compared to caregivers of male youth, $\text{Exp}(B) = 3.948$, CI [1.103, 14.131], $p = .035$.

Table 18.

Descriptives for logistic regression analysis for parent consultation with service provider

Continuous Predictor Variables		Consulted (<i>n</i>=39)		Did not Consult (<i>n</i>=73)	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Objective Strain		2.641	0.929	2.589	1.042
Subjective-Internalizing Strain		3.252	1.084	3.301	1.085
Subjective-Externalizing Strain		2.308	0.880	2.425	0.932
Mental Health Services Efficacy		97.128	13.356	96.343	14.456
Youth Conduct Problems		5.051	2.417	5.932	2.335
Youth Hyperactivity Problems		7.026	2.020	7.493	2.322
Youth Peer Problems		4.051	2.406	4.000	2.410
Youth Emotional Symptoms		4.539	2.383	4.397	2.742
Social Support		12.431	13.911	15.943	13.196
Expected Benefit of Engagement		17.256	3.250	16.904	3.359
Mental Health Norms		28.615	6.671	29.206	5.859
Youth Age		13.564	1.021	13.658	1.181
Annual Household Income ^a		29025.000	17610.876	28547.040	39282.832
Youth Race/Ethnicity	NHBlack	24	38.1	39	61.9
	Other	15	30.6	34	69.4
Youth Gender	Female	10	52.6	9	47.4
	Male	29	31.2	64	68.8
Caregiver Type	Parent	28	31.5	61	68.5
	Other	11	47.8	12	52.2
Group Assignment	Intervention	20	35.7	36	64.3
	Comparison	19	33.9	37	66.1

^a *n* for Consulted = 36; *n* for Did not Consult = 68^b *n* for Consulted = 36; *n* for Did not Consult = 69

Table 19.

Results from logistic regression analysis of consultation between caregivers and service providers

	<i>B</i>	<i>S.E.</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Exp(B)</i>	<u>95% CI for Exp(B)</u>	
							<i>Lower</i>	<i>Upper</i>
Objective Strain	.469	.381	1.514	1	.219	1.598	.757	3.372
Subjective-Internalizing Strain	.243	.356	.469	1	.494	1.276	.635	2.562
Subjective-Externalizing Strain	-.056	.372	.023	1	.880	.945	.456	1.961
Mental Health Services Efficacy	.012	.024	.247	1	.619	1.012	.966	1.059
Youth Conduct Problems	-.387	.139	7.756	1	.005	.679	.517	.892
Youth Hyperactivity Problems	-.025	.125	.040	1	.841	.975	.764	1.246
Youth Peer Problems	.053	.122	.193	1	.660	1.055	.831	1.339
Youth Emotional Symptoms	.101	.124	.657	1	.418	1.106	.867	1.410
Social Support	-.032	.020	2.527	1	.112	.968	.931	1.008
Expected Benefit of Engagement	.049	.111	.192	1	.661	1.050	.844	1.306
Mental Health Norms	.014	.042	.116	1	.734	1.014	.934	1.101
Youth Age	.105	.258	.165	1	.685	1.111	.669	1.843
Annual Household Income ^a	.000	.	.653	1	.419	1.000	.	.
Number of Years in Special Education ^b	.003	.132	.000	1	.983	1.003	.774	1.300
Youth Race/Ethnicity	.777	.580	1.792	1	.181	2.175	.697	6.784
Youth Gender	1.373	.651	4.456	1	.035	3.948	1.103	14.131
Caregiver Type	-.759	.669	1.285	1	.257	.468	.126	1.739
Group Assignment	.044	.512	.007	1	.932	1.045	.383	2.851

$\chi^2 = 20.145$ (18, $n = 105$), $p = .325$

Chapter Five

Discussion

Findings for Aim 1: Explore the construct of caregiver strain and its relationship with theoretically related constructs in caregivers of youth in special education for ED.

Description of Caregiver Strain in the Study Sample. Overall, findings related to the level of caregiver strain reported by caregivers in the current study are similar to those observed for caregivers whose children were receiving mental health services outside of special education. For example, caregivers in the current study reported a mean level of global caregiver strain of 8.28 on a scale ranging from 3-15. Notably, the level of global caregiver strain reported by caregivers in the current sample is similar to that reported by more than 9,000 caregivers of youth entering services as part of a large federally funded children's mental health program (Kutash, Garraza, Ferron, Duchnowski, Walrath, & Green, 2012). Such findings underscore the fact that caregivers of youth receiving special education services for ED experience caregiver strain as a result of their child's emotional behavioral problems to a similar degree as caregivers of youth receiving community-based mental health services.

Whether or not the level of caregiver strain observed in this and other samples is indicative of "high strain" is unclear, as the measure of caregiver strain used for the current study (the Caregiver Strain Questionnaire; CGSQ) does not identify specific cutoffs for identifying caregivers with high versus low strain. However, previous research has repeatedly demonstrated that higher levels of caregiver strain are related to service seeking and initiation of mental health

services (Angold, et al., 2002). The fact that caregivers of youth in the current sample, who had been receiving special education services for an average of more than 6 years, reported levels of caregiver strain similar to caregivers of youth just entering mental health services provides some indication that the level of caregiver strain was elevated for caregivers in the current study.

Of the three types of caregiver strain, caregivers in the current study reported the highest levels of subjective-internalizing strain. Subjective-internalizing strain is characterized by caregivers' feelings related to negative occurrences that result from their child's emotional and behavioral problems that are directed inward toward the caregiver. Feelings of guilt, sadness, or worry, for example would be characterized as aspects of subjective-internalizing strain (Brannan & Heflinger, 2001). Similar findings have been observed in samples of caregivers of youth receiving mental health services as part of a demonstration (Brannan, et al., 2003), caregivers of youth receiving behavioral health services through Medicaid, and caregivers of youth receiving substance abuse treatment services (Heflinger & Brannan, 2006), whereby the level of reported subjective-internalizing strain was higher than both the reported levels of objective strain and subjective-externalizing strain. An explanation for these findings cannot be discerned given the data available for the current study, though the observation that caregivers report relatively high levels of strain directed inward toward themselves is reflective of the blame and shame that parents of youth with mental disorders often report feeling (Spencer, et al., 2010).

Findings from the current study demonstrate a reduction in the level of all three types of caregiver strain over an approximately 9-month period of time, though only changes in subjective-internalizing strain were statistically significant. This could be a product of the fact that caregivers reported the highest levels of subjective-internalizing strain at time 1, allowing more room for downward movement on this measure compared to the other types of strain that

started at lower levels. Other studies have demonstrated a decrease in caregiver strain over time when youth and their families receive services (Kutash, et al., 2013). Given the continuous process of stress and coping reflected in the Modified Double ABCX Model, it is reasonable to expect that changes in stressors, resources, and perceptions over time will have an impact on the level of caregiver strain experienced by caregivers over time. Additional research is necessary to more fully examine this construct over time, particularly in relationship to changes in perceptions and resources following mental health service utilization.

Differences in Caregiver Strain Based on Demographic Characteristics

For the most part, findings from analyses examining differences in the level of strain reported by caregivers based on various child and family demographic variables revealed few differences based on demographic characteristics. Consistent with previous research (Chavira, et al., 2009), caregivers of males reported higher levels of all types of strain compared to caregivers of females, though these differences were not statistically significant. Similarly, findings that suggest caregivers who identified themselves as parents reported higher levels of caregivers strain compared to other caregiver types (e.g., grandparents, other relatives) are also consistent with findings from other studies (Villagrana, 2010), though again, these differences were not statistically significant. It is possible that the demographic makeup of the sample (i.e., large majority male and large majority parents) made it difficult to detect statistical significance between groups.

Regarding differences in the level of strain based on race/ethnicity, results generally support the widespread observation in the literature that African American caregivers tend to report lower levels of strain compared to White caregivers (e.g., Shin & Brown, 2009; McCabe, et al., 2003). In the current study, Non-Hispanic Black caregivers reported lower levels of all

types of strain compared to Non-Hispanic White caregivers; these observed differences were only statistically significant for subjective-externalizing strain. Subjective-externalizing strain is characterized by caregivers' feelings related to negative occurrences that result from their child's emotional and behavioral problems that are directed outward toward the child. Feelings of anger, embarrassment, or resentment, for example would be characterized as aspects of subjective-externalizing strain (Brannan & Heflinger, 2001). Similar to other studies that have examined differences in caregiver strain based on race/ethnicity, findings from the current study provide support for the fact that such differences exist, and highlight the need for additional research to more fully understand the reasons for these differences.

Relationship between Caregiver Strain and Other Related Constructs

Findings from SEM analyses on initial hypothesized model revealed several issues with the measurement component of the model, which resulted in some modifications to the model, including the removal of the mental health social norms scale as an indicator of perceptions. While the inclusion of mental health social norms is theoretically justified, the absence of a relationship between this indicator and the latent construct of perceptions suggested issues with the measurement of this variable. The mental health social norms scale used in this study involved complex scoring procedures that could have resulted in unreliable or invalid findings. In light of the problems with this measure observed in the current study, and the lack of availability of a well-tested measure of mental health social norms, the need for additional work to develop a reliable and useful tool for assessing social norms related to mental health is highlighted.

Consistent with an abundance of literature that supports an association between child problems and caregiver strain, results from the current study indicate a positive relationship

between youth functioning and caregiver strain, whereby more youth problems was associated with higher levels of caregiver strain. Notably, however, where previous research has suggested that youth functioning is the strongest predictor of caregiver strain (Brannan & Heflinger, 2001), findings from the current study suggest that perceptions may be even more strongly related to caregiver strain than youth functioning. Specifically, a significant negative path from perceptions to caregiver strain suggests that lower perceptions (including mental health services efficacy and expected benefit of engagement) were related to higher levels of caregiver strain.

Findings from the current study revealed that resources were significantly related to caregiver strain, where more resources were associated with higher levels of caregiver strain. This finding is similar to findings from a study by Kang and colleagues (2005), who found that resources such as higher education and income were related to higher levels of caregiver strain. They suggested that cultural considerations may provide some explanation for the counterintuitive relationship they observed. This may be true for the current study as well. While not directly assessed as part of the specific aims and research questions for the current study, a cursory examination of income data revealed significant differences in income based on race/ethnicity for participants in the current study.

Youth functioning was found to have a significant positive effect on resources, such that having more youth problems was associated with having greater resources. It is likely that this observed relationship is a function of social support, as caregivers of youth with more problems may be more likely to seek out social support. Youth functioning was also found to have a significant, negative effect on perceptions, meaning that more youth problems were associated with more negative perceptions. Notably, this relationship between youth functioning and perceptions was the strongest of all of all of the paths estimated for this model. This finding is

consistent with literature that demonstrates a relationship between past negative experiences and lower expectations for treatment (Baker-Ericzen, et al., 2010). Caregivers of youth who demonstrate more problems with behavioral and emotional functioning are likely to have a history of negative experiences with the school and mental health service systems, leading to low mental health services efficacy and low expectations about the benefit of engaging with these service systems. Resources also had a direct effect on perceptions, whereby more resources was related to more positive perceptions, though this effect was not as strong as that observed for youth functioning on perceptions.

Because race/ethnicity has been shown to be an important factor in determining caregiver strain, one of the objectives of the SEM analysis was to determine if race/ethnicity was associated with caregiver strain, resources, or perceptions. Findings from this analysis do not support any of these hypothesized relationships. All of the direct paths from race/ethnicity to caregiver strain, resources, and perceptions were non-significant. In light of previously described findings from univariate analyses examining the effect of race/ethnicity on caregiver strain, whereby caregivers of non-Hispanic Black youth generally reported lower levels of strain compared to other caregivers, it is worth noting that the relationships between race/ethnicity and the other variables in this model (while not significant) were all negative. As such, caregivers of non-Hispanic Black youth demonstrated a trend of having lower caregiver strain, fewer resources, and more negative perceptions. This general observation suggests the need for additional studies to more fully capture the potential impact of race/ethnicity on caregiver strain, particularly through potential relationships between race/ethnicity and resources and perceptions.

Findings for Aim 2: Examine the factors, including caregiver strain, that predict school-based mental health services utilization and parent engagement in services.

Caregiver Strain and Amount of Services Received by Youth. Because a large body of literature supports a relationship between caregiver strain and mental health services utilization, and because the majority of youth who receive mental health services receive them through the school system, the current study sought to determine if caregiver strain and other theoretically related variables predicted the amount of school-based counseling services received by youth. Overall, youth in the sample received an average of 8.5 hours of school-based counseling during an approximately 9-month period, which is a relatively low intensity of services compared to what might be expected in clinical settings where youth see service providers on a weekly basis.

As outlined in the Modified Double ABCX Model, caregiver strain is a crisis that results from a caregiver's interpretation of stressors through his or her perceptions and resources. Seeking out and participating in child mental health services, in this model, is a coping response that is subsequent to the experience of caregiver strain. The relationship between higher levels of caregiver strain and child mental health service use is evident in multiple studies and for services obtained in multiple different settings (e.g., Burnett-Zeigler & Lyons, 2010; Brannan & Heflinger, 2005). The current study is one of only a few studies that have examined this relationship for school-based mental health services, and findings from these studies are mixed. Findings from the current study do not provide support for a relationship between school-based mental health service use and caregiver strain or any of the other variables assessed.

Fundamentally, school-based mental health services differ from other community-based mental health services. This is particularly true for youth in the current study who were receiving

special education services for ED. In the school district from which data for the current study were collected, school-based mental health counseling services are offered to all students in this category of special education. Unlike other community based services, school-based mental health services for these students reflects a supply-driven rather than demand-driven model of service delivery. As a result, the role of parents in accessing and obtaining these services for their children is limited. For these reasons, caregiver strain and other parent-centered factors such as those examined in the current study may not be as important to determining the utilization of school-based services for students with ED as they are for services obtained in other sectors.

Notably, in the Modified Double ABCX Model depicted by Brannan and colleagues (2003; Figure 1), child mental health service utilization is hypothesized to be directly affected by not only caregiver strain, but also service and system factors. Because of the nature of school-based services in general, and because counseling services were provided to youth in the current study across 22 different schools/centers, it is likely that service and system factors not assessed as part of the current study can account for much of the variance in the amount of school-based counseling received by youth in this study. Service provider characteristics, teacher attitudes toward mental health, and school culture could have a significant impact on school-based service utilization. For example, some schools may resist the provision of school-based counseling services due to the belief that these services are medical or psychological, and not educational (Minow, 2001). Future studies should consider these and other service and system factors and assess the relationship between these factors, school-based mental health service use, and other factors in the Modified Double ABCX Model, including caregiver strain.

Caregiver Strain and Caregiver Consultation with Service Providers

Findings from the current study support the observation that caregivers of youth in special education for ED are the least involved in their child's education and mental health services compared to caregivers of youth with other disability classifications (Wagner, et al., 2005). Overall, less than one-third of caregivers in the current study consulted with their child's school-based mental health service provider at least once during the school year. That fact that the majority of caregivers in the current study did not consult with service providers is consistent with evidence from previous research indicating few caregivers of youth with ED take advantage of support services offered through the schools (Duchnowski, et al., 2012), and could be reflective of the fact that caregivers of youth with ED tend to report low satisfaction with school-based services (Wagner, et al., 2005).

Findings from the current study do not support a role for caregiver strain in determining the likelihood of caregiver consultation with school-based service providers. Of all of the predictor variables examined, including caregiver strain, only youth gender and youth conduct problems were predictive of whether or not caregivers consulted with their child's service provider. Study findings related to youth gender indicated that caregivers of males were less likely to consult with service providers compared to caregivers of females. A specific explanation for this finding is not evident given the data available for the current study, however, it is possible that caregivers of males are less inclined to engage with service providers due to different expectations of behavior for male youth compared to female youth. There is evidence to suggest that youth demographic characteristics, such as race/ethnicity, can differentially impact the identification of mental disorders, where youth in demographic groups expected to demonstrate more problem behaviors are less likely to be identified as having a mental disorder

(Pottick, Kirk, Hsieh, & Tian, 2007). A similar observation may hold true for youth gender. If caregivers of males do not identify their child's emotional or behavioral problems as "mental disorders," but rather normal behaviors for males, they may be less inclined to engage with mental health service providers due to a perception that their child is not in need of mental health services.

There are several potential explanations for why caregivers whose youth display more conduct problems would be less likely to engage with service providers at school. As measured in the current study, youth conduct problems are exemplified by such behaviors as loss of temper, fighting with or bullying other youth, lying or cheating, and stealing. It is well documented that parents of youth with mental disorders experience stigma and report feeling ashamed and blamed for their child's problems (Angold, et al., 2002). When mental disorders are accompanied by conduct problems, it stands to reason that feelings of shame and fear of being blamed might be exacerbated for caregivers of youth who demonstrate more conduct problems. It could be that this embarrassment or fear prevents caregivers from engaging with service providers, particularly school-based service providers, as violations of behavioral expectations are especially pronounced in school settings. Because youth with conduct problems are likely to experience disciplinary actions at school that result in repeated negative interactions with school staff, it also follows that past negative interactions with school personnel related to their child's conduct problems might create an expectation that all interactions with schools will be negative, making caregivers less likely to engage with service providers. Similarly, if conduct problems are persistent, caregivers may reach a point where they give up, or lose hope that services will have a benefit for their child at all, making caregivers less likely to engage with providers.

One of the advantages of the current study was that service provider reports of consultation with caregivers served as an objective measure of parent engagement. However, from the available data, it is not known who initiated these interactions (the caregiver or the service provider) and what the nature of these interactions was (positive or negative, for example). Better measures of parent involvement in services are needed (Duchnowski & Kutash, 2011) in order to more fully understand what factors influence engagement in services.

Conclusions

The current study provides a description of caregiver strain in caregivers of youth receiving special education services for ED, an examination of the Modified Double ABCX Model with this population, and an investigation of the impact of caregiver strain on the utilization of school-based mental health services and parent engagement in these services. Collectively, findings from this study demonstrate that caregivers of youth in special education for ED experience caregiver strain to a similar degree as caregivers of youth receiving services through mental health systems. Just as youth in special education for ED demonstrate mental disorders to a degree similar to youth in mental health care settings, caregivers of these youth experience burden related to caring for their children in the same way caregivers of youth in mental health care settings do.

Further, findings from SEM analyses provide evidence for the usefulness of the Modified Double ABCX Model in studying and understanding caregiver strain in this population. This is one of few studies that has simultaneously examined constructs of this model, and is the first to do so with a sample of caregivers of youth in special education for ED. That the findings provide initial support for the usefulness of this model in this population is encouraging, and provides the rationale for future studies to more fully examine the relationships among the constructs of this

model. Additional work is needed to more fully explicate the variables within the constructs of this model and develop reliable and valid measures to assess these variables.

While findings from this study provide support for the relationships among the constructs of this model, findings from this study also suggest that this model may not hold up in terms of predicting the amount of school-based services received by youth or the likelihood of parent engagement with their child's school-based mental health service provider. Given the inherent differences in school-based mental health services and services delivered in other settings, it is possible that caregiver strain in and of itself will not drive service use or engagement. Rather, the provision of targeted support services to caregivers may be necessary to promote service use and engagement in the school setting, as evidenced by studies that have demonstrated a positive effect of parent support interventions on increasing service use and parents' expectations about the benefit of engagement.

Limitations

Limitations related to the study sample. There are several limitations to the current study related to the study sample. To begin, the sample size is relatively small. While a small sample size has little to no impact on findings obtained from basic descriptive statistics and simple univariate analyses, problems can occur with multivariate analyses that are sensitive to sample size. Small sample size can decrease the power of an analysis to detect significant findings, and can also lead to findings of statistical significance in the absence of practical significance (Royall, 1986). It is therefore important that sample size be considered when interpreting findings from this study.

A second limitation is related to the fact that most analyses for the current study assume independence of observations, that is, observations are not influenced by an outside factor

common to several of the observations. Participants in the current study were not independently sampled from a well-defined population. As a result, there is some possibility of clustering by school. Because participants for the current study were recruited from 22 different schools, the data were nested within schools. While nesting may not be a significant issue for variables such as child functioning, school-related variables, such as school-based mental health service use might be more affected. The possibility of a design effect for the current study is particularly notable, as this can reduce the effective sample size, reducing power (Kutash, Banks, Duchnowski, & Lynn, 2007).

Additionally, all of the participants for the current study attended schools within a single school district and youth included in the sample represent only one special education classification. Findings from the current study are therefore limited to students in special education for ED in one school district, and do not generalize to youth attending schools in other school districts or youth receiving special education services for a primary disability classification other than ED.

Finally, as previously described, that data for the current study were collected as part of an RCT for a parent support intervention. While regression analyses examining predictors of school-based mental health service included group assignment in the analysis to control for the impact of the intervention on the outcome, SEM analysis did not account for group assignment. The objective of the SEM analysis was to gain an understanding of how the different constructs of the Modified Double ABCX Model relate to each other and to caregiver strain at a single point in time, with an understanding that caregivers in this population receive varying levels of support from multiple different sources. Nevertheless, the potential impact of the intervention on these relationships is important to note, and is a topic that warrants further research.

Limitations related to measurement. There are several limitations to the current study related to measurement. First, while data for the current study were selected because they offered several advantages, including the inclusion of multiple variables from the Modified Double ABCX Model, many of the limitations inherent in analyzing secondary data are of note for the current study. Because the data were not collected to address the specific aims and research questions for the current study, many potentially important aspects of the constructs of this model were not measured, limiting this study in terms of its scope in assessing the theoretical model.

One of the factors of particular interest for the current study was race/ethnicity, as many studies have demonstrated a differential effect of race/ethnicity on caregiver strain and mental health service use. While findings from the current study do support the general trends that are frequently cited in the literature with regard to differences in strain based on race/ethnicity, it is important to note a limitation in the data with regard to the measurement of race/ethnicity. Namely, data for the current study reflect the race/ethnicity of youth in the study, not that of caregivers. While youth race/ethnicity can reasonably serve as a proxy for caregiver race/ethnicity, it is important to consider this nuance in the data when interpreting study findings related to race/ethnicity.

Finally, some of the measures used as part of the current study were developed as part of the original RCT, and have therefore not undergone extensive psychometric testing. Results from the SEM analyses provide some evidence that at least one of these measures, the Mental Health Social Norms Questionnaire, may present some measurement issues that adversely affect the reliability and validity of this measure. Additional studies are needed to describe the

psychometric properties of these measures and provide evidence of their utility in assessing specified constructs.

Implications for Children's Mental Health

Implications for Research. Within children's mental health research, findings from the current study provide researchers with preliminary support for understanding caregiver strain through the Modified Double ABCX Model, and the justification for the use of this model to guide research. However, given the previously mentioned limitations of the current study, future research should include larger, more representative samples of caregivers and measures for the full range of variables included in the theoretical model. For example, future studies might include measures of family functioning or youth strengths as variables for resources, and measures of parent perceptions of mental disorders as a variable for perceptions. To be able to conduct more comprehensive examinations of the Modified Double ABCX Model, psychometric studies are also needed to identify, develop, and test measures of important variables. This is particularly true for perceptions variables. While perceptions have been identified as potentially playing a key role in the experience of caregiver strain, they are among the least studied and least understood constructs of this model. Future studies that employ qualitative methods could prove very useful in gaining a better understanding of perceptions and other constructs of this model, which could aid in the identification of theoretically relevant variables that should be included in empirical tests of the model. It is also possible that such qualitative studies could begin to shed some light on the observed racial/ethnic differences in caregiver strain through a more in-depth examination of culturally related perceptions.

Regarding school-based mental health services utilization and parent engagement in services, findings from the current study do not support the predictive value of caregiver strain

for school-based services. This suggests that caregiver strain may not be a motivator to obtain services at school in the same way that it appears to be a motivator to obtain services in other settings. One possible explanation for this is that caregivers may believe that emotional and behavioral disorders are outside the purview of schools. It is also possible that youth and their families are receiving services elsewhere in the community, and thus do not seek services from the school. For whatever reason, it is apparent that additional research is needed that utilizes more informative measures of service use and engagement and includes a more complete representation of the constructs of the Modified Double ABCX Model, including service and system factors (e.g., training for school-based service providers on parent engagement), in order to determine if this model holds for school-based service use and engagement.

Implications for Practice. The fact that parents of youth in special education for ED report levels of strain similar to parents of youth in mental health settings suggests the need for schools to recognize not only the mental health needs of these youth, but also the needs of their caregivers. Within the school setting, it is important for teachers, school-based mental health service providers, and other school personnel to understand that caregivers of youth in special education for ED are strained and may be in need of support. This is particularly important in light of racial/ethnic differences in strain. Without an understanding of caregiver strain and how caregivers of different racial/ethnic backgrounds may experience strain, teachers and providers may incorrectly assume that an absence of reported strain equates with an absence of child problems, and therefore not offer needed services to the child or support to family. It is also possible that in the absence of reported strain, providers or teachers might assume disinterest or disengagement on the part of the caregiver, and attribute this to parenting flaws, thereby straining (a potentially already strained) family-provider relationship. Such a scenario could fuel a

negative cycle by which a negative relationship results in disengagement of the family, further strengthening a provider's misconceptions. As research suggests, caregivers in the racial/ethnic minority tend to report lower levels of strain; it is plausible that this sort of cycle may be partially responsible for racial/ethnic disparities in service use, and indeed, poor mental health outcomes. A better understanding of caregiver strain, particularly as it relates to race/ethnicity, could lead to the development of interventions aimed at educating teachers and providers about strain and how it is experienced by youth and families in their care. Ideally, such interventions would result in more positive collaborative relationships with families, more engagement in services, and more proportionate opportunities for positive outcomes.

Findings from the current study revealed a small percentage of caregivers in the current study consulted with their child's school-based mental health service provider, and for those who did, the amount of time spent in consultation was very brief. Engaging caregivers in their child's mental health and education services is an important objective. Utilization of and engagement in mental health services is important to prevent the negative outcomes associated with unmet mental health needs. Despite the potential of efficacious treatments for improving outcomes for these youth, if families do not engage in services, positive treatment outcomes are unlikely to be realized. An understanding of caregiver strain, particularly as it relates to parents' expectations about treatment, could provide some insights into how to tailor efforts to improve parent engagement in their child's services. When families are involved in care, youth are likely to receive more appropriate and effective services (Brannan, et al., 2003), and therefore stand a greater chance of overcoming some of the negative outcomes so often experienced by this population. Findings from the current study related to the experience of caregiver strain in this population have the potential to inform future research and development of interventions to

improve engagement in services and foster positive family-provider relationships and ultimately improve outcomes for youth and their families.

Implications for Policy. In the past several decades, schools have become the most common service system for the delivery of mental health services for those youth who do receive services (Burns, et al., 1995). However, findings from the current study suggest that caregivers may not think of schools as providers of mental health services, possibly making caregivers less likely to engage in school-based services. Similarly, schools may not view themselves as mental health service providers, making them less likely to embrace mental health as part of the educational mission. It is therefore important that school policies reflect the value of mental health in education and demonstrate a priority focus on promoting parent engagement. Such a focus would be evident in policies that provide for parent support services for youth in special education, for example, or in policies that provide the training and support necessary for teachers to effectively communicate and engage with caregivers. Such policies at the school and district levels could have a significant impact on the service and system factors hypothesized to impact mental health services utilization as part of the Modified Double ABCX Model.

Similarly, federal policies related to the provision of mental health services in schools are also likely to have an impact on school-based mental health services for students and their families. For example, among the key objectives outlined as part of the President's New Freedom Commission Report is the improvement and expansion of school mental health. School-based mental health services have the potential to reach a significant portion of youth who may not otherwise have access to mental health services. However, the simple provision of mental health services within schools is alone not sufficient to produce positive outcomes. A shared agenda between the education and mental health systems, one that embraces the

importance of parent involvement, is necessary to realizing positive outcomes of school-based mental health services for youth and their families.

Implications for Public Health

Public health has been defined as “the science and art of preventing disease, prolonging life, and promoting physical health and efficiency through organized community efforts...which will ensure to every individual in the community a standard of living adequate for the maintenance of health...to enable every citizen to realize his [and her] birthright of health and longevity” (Winslow, 1920, pp. 6-7). As defined by the Institute of Medicine’s (IOM) Committee for the Future of Public Health, the mission of public health is to assure conditions in which people can be healthy through organized community efforts aimed at disease prevention and health promotion (IOM, 1988).

As evidenced by the prevalence of mental disorders in youth, the negative outcomes often experienced by youth with mental disorders, and high rates of co-morbid mental and physical health problems, the mental health of youth has been identified as a public health concern. And, in fact, those in the public health field have been identified as being “uniquely positioned” to help promote mental health in youth (Adelman & Taylor, 2006). In doing so, it is necessary to consider youth within the contexts where they live and function, including their families and their schools. Public health efforts aimed at improving the health and well-being of youth must therefore be intentional in their focus on both school and caregiver related factors with a theoretical and/or empirical basis for a relationship with youth outcomes. Studies such as the current study that examine caregiver strain and related constructs have the potential to inform public health efforts, particularly those within the schools, aimed at addressing the overall health needs of youth.

Finally, the complexity of mental health services for children and their families necessitates partnerships at multiple levels in order to realize improvements in children's mental health (Druss & Satcher, 2010). This is particularly true for youth in special education for ED, who demonstrate complex needs and often require a wide array of services and supports from multiple different sectors, including the education, mental health, and primary care service sectors. Many of these youth may also receive services through the child welfare and juvenile justice systems. Public health agencies are uniquely positioned to facilitate partnerships and collaborate with service providers to develop comprehensive plans to enhance access to services and improve coordination of care for youth with mental health problems and their families.

References

- 34 C. F. R. §300.8(4)(i) (2015).
- Adelman, H.S., & Taylor, L. (2006). Mental health in schools and public health. *Public Health Reports, 121*, 294-298.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Process, 50*(2), 179-211.
- Angold, A., Erkanli, A., Farmer, E.M.Z, Fairbank, J.A., Burns, B., Keeler, G., & Costello, J. (2002). Psychiatric disorder, impairment, and service use in rural African American and White youth. *Archives of General Psychiatry, 59*(10), 893-901. Doi: 10.1001/archpsyc.59.10.893
- Angold, A., Messer, S. C., Stangl, D., Farmer, E. M. Z., Costello, E. J., & Burns, B. J. (1998). Perceived parental burden and service use for child and adolescent psychiatric disorders. *American Journal of Public Health, 88*(1), 75-80. doi: Doi 10.2105/Ajph.88.1.75
- Armbruster, P. & Fallon, T. (1994). Clinical, sociodemographic, and systems risk factors for attrition in a children's mental health clinic. *American Journal of Orthopsychiatry, 64*(4), 577-585.
- Baker-Ericzen, M.J., Jenkins, M.M., & Brookman-Fraze, L. (2010). Clinician and parent perspectives on parent and family contextual factors that impact community mental health services for children with behavior problems. *Child Youth Care Forum, 39*(6), 397-419.
- Bannon, W. M., Jr., & McKay, M. M. (2005). Are Barriers to Service and Parental Preference Match for Service Related to Urban Child Mental Health Service Use? *Families in Society, 86*(1), 30-34.
- Bettinger, T.L., Levin, B.L., & Hanson, A. (2008). Behavioral health. In B.L. Levin, P.D. Hurd, & A. Hanson (Eds.), *Introduction to public health in pharmacy* (pp. 101-118). Sudbury, MA: Jones & Bartlett.
- Bickman, L., Earl, E., & Klindworth, L. (1991). *The Vanderbilt Mental Health Services Self-Efficacy Questionnaire*. Nashville, TN: Vanderbilt University.

- Bickman, L., Heflinger, C., Northrup, D., Sonnichsen, S., & Schilling, S. (1998). Long term outcomes to family caregiver empowerment. *Journal of Child and Family Studies*, 7(3), 269–282. doi:10.1023/a:1022937327049
- Bickham, N.L., Pizarro, J., Warner, B.S., Rosenthal, B., & Weist, M.D. (1998). Family involvement in expanded school mental health. *Journal of School Health*, 68, 10, 425-428.
- Blackorby, J., & Wagner, M. (1996). Longitudinal postschool outcomes of youth with disabilities: Findings from the national longitudinal transition study. *Exceptional Children*, 62(5), 399–414.
- Blau, G.M., Huang, L.N., & Mallery, C.J. (2010). Advancing Efforts to Improve Children’s Mental Health in America: A Commentary. *Administration and Policy in Mental Health and Mental Health Services Research*, 37, 140-144. DOI 10.1007/s10488-010-0290-3
- Brannan, A.M. (2013, March). *Research base on caregiver strain in children’s mental health services research*. Paper presented at the 26th Annual Children’s Mental Health Research and Policy Conference, Tampa, FL.
- Brannan, A.M. (2003). Ensuring effective mental health treatment in real-world settings and the critical role of families. *Journal of Child and Family Studies*, 12(1), 1-10.
- Brannan, A. M., Athay, M. M., & de Andrade, A. R. V. (2012). Measurement Quality of the Caregiver Strain Questionnaire-Short Form 7 (CGSQ-SF7). *Administration and Policy in Mental Health and Mental Health Services Research*, 39(1-2), 51-59. doi: DOI 10.1007/s10488-012-0412-1
- Brannan, A. M., & Heflinger, C. A. (2001). Distinguishing Caregiver Strain from Psychological Distress: Modeling Relationships Among Child, Family, and Caregiver Variables. *Child and Family Studies*, 10(4), 405-418. doi: 1062-1024/01/1200-040510
- Brannan, A. M., & Heflinger, C. A. (2005). Child Behavioral Health Service Use and Caregiver Strain: Comparison of Managed Care and Fee-For-Service Medicaid Systems. *Mental Health Services Research*, .7(4), pp. doi: 10.1007/s11020-005-7452-z
- Brannan, A. M., & Heflinger, C. A. (2006). Caregiver, child, family, and service system contributors to caregiver strain in two child mental health service systems. *Journal of Behavioral Health Services & Research*, 33(4), 408-422. doi: DOI 10.1007/s11414-006-9035-1
- Brannan, A. M., Heflinger, C. A., & Bickman, L. (1997). The caregiver strain questionnaire: Measuring the impact on the family of living with a child with serious emotional disturbance. *Journal of Emotional and Behavioral Disorders*, 5(4), 212-222.

- Brannan, A. M., Heflinger, C. A., & Foster, E. M. (2003). The role of caregiver strain and other family variables in determining children's use of mental health services. *Journal of Emotional and Behavioral Disorders, 11*(2), 77-91. doi: Doi 10.1177/106342660301100202
- Bringewatt, E., & Gershoff, E. (2010). Falling through the cracks: Gaps and barriers in the mental health system for America's disadvantaged children. *Child Youth Services Review, 32*, 1291-1299.
- Browne, M. W. & Cudeck, R. (1993). Alternative ways of assessing model fit. In: Bollen, K. A. & Long, J. S. (Eds.) *Testing Structural Equation Models*. pp. 136–162. Beverly Hills, CA: Sage
- Burnett-Zeigler, I., & Lyons, J.S. (2010). Caregiver factors predicting service utilization among youth participating in a school-based mental health intervention. *Journal of Child and Family Studies, 19*(5), 572-578. DOI 10.1007/s10826-009-9331-5
- Burns, B. J., Costello, E. J., Angold, A., Tweed, D., Stangl, D., Farmer, E. M., & Erkanli, A. (1995). Children's mental health service use across service sectors. *Health Affairs, 14*(3), 147-159.
- Bruns, E., Walrath, C., Glass-Siegel, M., & Weist, M.D. (2004). School-based mental health services in Baltimore: Association with school climate and special education referrals. *Behavior Modification, 28*(4), 491-512.
- Bussing, R., Zima, B.T., & Belin, T.R. (1998). Differential access to care for children with ADHD in special education programs. *Psychiatric Services, 49*(9), 1226-1229.
- Bussing, R., Zima, B. T., Gary, F. A., Mason, D. M., Leon, C. E., Sinha, K., & Garvan, C. W. (2003). Social networks, caregiver strain, and utilization of mental health services among elementary school students at high risk for ADHD. *Journal of the American Academy of Child and Adolescent Psychiatry, 42*(7), 842-850. doi: Doi 10.1097/01.Chi.0000046876.27264.Bf
- Bussing, R., Zima, B.T., Mason, D.M., Porter, P.C., & Garvan, C.W. (2011). Receiving treatment for attention deficit/hyperactivity disorder: Do adolescents' perspective matter? *Journal of Adolescent Health, 49*(1), 7-14.
- Centers for Disease Control and Prevention (CDC; 2011). *Public health action plan to integrate mental health promotion and mental illness prevention with chronic disease prevention, 2011-2015*. National Center for Chronic Disease Prevention and Health Promotion, Division of Adult and Community Health, Centers for Disease Control and Prevention. Retrieved from: http://www.cdc.gov/mentalhealth/docs/11_220990_Sturgis_MHMIActionPlan_FINAL-Web_tag508.pdf

- Chavira, D.A., Garland, A., Yeh, M., McCabe, K., & Hough, R.L. (2009). Child anxiety disorders in public systems of care: Comorbidity and service utilization. *Journal of Behavioral Health Services and Research*, 36(4), 492-504.
- Chou, C.-P., & Bentler, P. M. (1995). Estimates and tests in structural equation modeling. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 37– 54). Thousand Oaks, CA: Sage.
- Cook, J.R. & Kilmer, R.P. (2010). The importance of context in fostering responsive community systems: Supports for families in systems of care. *American Journal of Orthopsychiatry*, 80(1), 115-123.
- Cummings, J.R., Ponce, N.A., & Mays, V.M. (2010). Comparing racial/ethnic differences in mental health service use among high-need subpopulations across clinical and school-based settings. *Journal of Adolescent Health*, 46(6), 603-606.
- Curran, P. J., West, S. G., & Finch, G. F. (1996). The robustness of test statistics to nonnormality and specification error in confirmatory factor analysis. *Psychological Methods*, 1, 16 –29.
- Donenberg, G.R., & Pao, M. (2005). Youths and HIV/AIDS: Psychiatry’s role in a changing epidemic. *Journal of the American Academy of Child and Adolescent Psychiatry*, 44(8), 728–747.
- Donovan, M.S. & Cross, C.T. (Eds.). (2002). *Minority students in special and gifted education. Committee on Minority Representation in Special Education. Division of Behavioral and Social Sciences and Education.* Washington, DC: National Research Council, National Academy Press. Accessible at:
http://www.nap.edu/openbook.php?record_id=10128&page=R1
- Druss, B.G., & Satcher, D. (2010). Bridging mental health and public health. *Preventing Chronic Disease*, 7(1), A03.
- Duchnowski, A.J. & Kutash, K. (2011). School reform and mental health services for students with emotional disturbances educated in urban schools. *Education and Treatment of Children*, 34(3), 323-346.
- Duchnowski, A.J. & Kutash, K. (2007). School-based mental health services – Meeting the challenge, realizing the potential. (pp. 24-1 to 24-13) In S.W. Evans, M.D. Weist, & Z.N. Serpell (Eds.). *Advances in school-based mental health interventions: Best practices and program models.* Volume II. Civic Research Institute, Kingston, NJ.
- Duchnowski, A.J., Kutash, K., Green, A.L., Ferron, J.M., Wagner, M., & Vengrofski, B. (2012). Parent support services for families of children with emotional disturbances served in elementary school special education settings: Examination of data from the Special Education Elementary Longitudinal Study. *Journal of Disability Policy Studies*, 24(1), 36-52.

- Evans, S.W. & Weist, M.D. (2004). Implementing empirically supported treatments in the schools: What are we asking? *Clinical Child and Family Psychology Review*, 7(4), 263-267.
- Farmer, E. M. Z., Burns, B. J., Angold, A., & Costello, E. J. (1997). Impact of Children's Mental Health Problems on Families: Relationships with Service Use. *Journal of Emotional and Behavioral Disorders*, 5(4), 230-238. doi: 10.1177/106342669700500406
- Farmer, E. M., Burns, B. J., Phillips, S. D., Angold, A., & Costello, E. J. (2003). Pathways into and through mental health services for children and adolescents. *Psychiatric Services*, 54(1), 60–66.
- Farmer, E.M.Z., Stangl, D.K., Burns, B.J., Costello, E.J., & angold, A. (1999). Use, persistence, and intensity: Patterns of care for children's mental health across one year. *Community Mental Health Journal*, 35(1), 31-46.
- Forness, S. R., Freeman, S. F., Paparella, T., Kauffman, J. M., & Walker, H. M. (2012). Special education implications of point and cumulative prevalence for children with emotional or behavioral disorders. *Journal of Emotional and Behavioral Disorders*, 20(1), 4-18.
- Ford, T. (2008). Practitioner review: How can epidemiology help us plan and deliver effective child and adolescent mental health services? *Journal of Child Psychology and Psychiatry*, 49, 900-914.
- Foster, E.M. (1998). Does the continuum of care influence time in treatment?: Evidence from the Fort Bragg evaluation. *Evaluation Review*, 22(4), 447-469.
- Foster, S., Rollefson, M., Doksum, T., Noonan, D., & Robinson, G. (2005). *School mental health services in the United States, 2002-2003*. DHHS Pub. No. (SMA) 05-4068. Rockville, MD: Center for Mental Health Services, Substance Abuse and Mental Health Services Administration.
- Friesen, B. J., & Huff, B. (1996). Family perspectives on systems of care. In B. A. Stroul (Ed.), *Children's mental health: Creating systems of care in a changing society* (pp. 41-67). Baltimore: Paul H. Brookes.
- Friesen, B., & Koroloff, N. (1990). Family-centered services: Implications for mental health administration and research. *The journal of mental health administration*, 17(1), 13-25. doi: 10.1007/BF02518576
- Friesen, B.J., & Stephens, B. (1998). Expanding family roles in the system of care: Research and practice. In M.H. Epstein, K. Kutash, & A. Duchnowski (Eds.), *Outcomes for Children and Youth with Behavioral and Emotional Disorders and their Families: Programs and Evaluation Best Practices* (pp.231-259). Austin, TX: Pro-Ed.

- Garland, A.F., Aarons, G.A., Brown, S.A., Wood, P.A., & Hough, R.L. (2003). Diagnostic profiles associated with use of mental health and substance abuse services among high-risk youths. *Psychiatric Services, 54*(4), 562-564.
- Garland, A.F., Lau, A.S., Yeh, M., McCabe, K.M., Hough, R.L., & Landsverk, J.A. (2005). Racial and ethnic differences in utilization of mental health services among high-risk youths. *American Journal of Psychiatry, 162*(7), 1336-1343.
- Goodman, R. (2001). Psychometric properties of the Strengths and Difficulties Questionnaire. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*(11), 1337-1345. doi:10.1097/00004583-200111000-00015
- Greenberg, M.T., Weissberg, R., O'Brien, M., Zins, J.E., Fredericks, L., Resnik, H., & Elias, M.J. (2003). Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. *American Psychologist, 58*(6/7), 466-474.
- Green-Hennessy, S. (2010). Children and adolescents. In B.L. Levin, K.D. Hennessy, & J. Petrilla (Eds.), *Mental health services: A public health perspective* (3rd Edition) (pp. 201-225). NY, NY: Oxford University Press.
- Healthy People.gov. Leading Health Indicators. Retrieved on January 2, 2014 from: <http://healthypeople.gov/2020/LHI/default.aspx>.
- Heflinger, C. A., & Brannan, A. M. (2006). Differences in the experience of caregiver strain between families caring for youth with substance use disorders and families of youth with mental health problems. *Journal of Child & Adolescent Substance Abuse, 15*(3), 83-104. doi: Doi 10.1300/J029v1503_06
- Heflinger, C.A., Northrup, D.A., Sonnichsen, S.E., & Brannan, A.M. (1998). Including a family focus in research on community-based services for children with serious emotional disturbance: Experiences from the Fort Bragg Evaluation Project. In M.H. Epstein, K. Kutash, & A. Duchnowski (Eds.), *Outcomes for Children and Youth with Behavioral and Emotional Disorders and their Families: Programs and Evaluation Best Practices* (pp.261-293). Austin, TX: Pro-Ed.
- Heflinger, C.A., & Taylor-Richardson, K.D. (2004). Caregiver strain in families of children with serious emotional disturbance: Does relationship to the child make a difference? *Journal of Family Social Work, 8*(1), 27-45.
- Hennessy, K.D. (2010). Quality improvement. In B.L. Levin, K.D. Hennessy, & J. Petrilla (Eds.), *Mental health services: A public health perspective* (3rd Edition) (pp. 201-225). New York: Oxford University Press.
- Hill, R. (1949). *Families under stress*. New York, NY: Harper & Row.

- Hinojosa, M.S., Knapp, C., & Woodworth, L. (2014). Family strain among white and latino parents of children with mental and behavioral health disorders. *Journal of Child and Family Studies*. Advance online publication. doi: 10.1007/s10826-014-9961-0
- Hoagwood, K.E. (2005). Family-based services in children's mental health: A research review and synthesis. *Journal of Child Psychology and Psychiatry*, 46(7), 690-713.
- Hoagwood, K.E., & Johnson, J. (2003). School psychology: A public health framework I. From evidence-based practices to evidence-based policies. *Journal of School Psychology*, 41, 3-21.
- Hoagwood, K.E., Cavaleri, M.A., Olin, S.S., Burns, B.J., Slaton, E., Gruttadaro, D., & Hughes, R. (2010). Family support in children's mental health: A review and synthesis. *Clinical Child and Family Psychology Review*, 13, 1-45. doi: <http://dx.doi.org/10.1007/s10567-009-0060-5>
- Hu, L.-t., & Bentler, P. M. (1995). Evaluating model fit. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications*. Thousand Oaks, CA: Sage Publications, Inc.
- Hu, L. & Bentler, P.M. (1999). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods*, 3(4), 424-453.
- Ingoldsby, E.M. (2010). Review of interventions to improve family engagement and retention in parent and child mental health programs. *Journal of Child and Family Studies*, 19, 629-645.
- Institute of Medicine, Committee for the Study of the Future of Public Health, Division of Health Care Services (1988). *The future of public health*. Washington, DC: National Academy Press.
- Jans, L., Stoddard, S., & Kraus, L. (2004). Chartbook on mental health and disability in the United States. *An InfoUse Report*.
- Jorm, A.F., Barney, L.J., Christensen, H., Highet, N.J., Kelly, C.M., & Kitchener, B.A. (2006). Research on mental health literacy: What we know and what we still need to know. *Australian and New Zealand Journal of Psychiatry*, 40, 3-5.
- Kang, E., Brannan, A. M., & Heflinger, C. (2005). Racial differences in responses to the Caregiver Strain Questionnaire. *Journal of Child and Family Studies*, 14(1), 43-56. doi:10.1007/s10826-005-1112-1.
- Kessler, R.C., Nelson, C.B., McGonagle, K.A., Edlund, M.J., Frank, R.G., & Leaf, P.J. (1996). The epidemiology of co-occurring addictive and mental disorders: Implications for prevention and service utilization. *American Journal of Orthopsychiatry*, 66(1), 17-31.

- Kessler, R.C., Berglund, P., Demler, O., Jin, R., Merikangas, K.R., Walters, E.E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62, 593-602.
- Kline, R.B. (1998). *Principles and practice of structural equation modeling* (1st ed.). New York, NY: The Guilford Press.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York, NY: The Guilford Press.
- Knitzer, J. (1982). *Unclaimed children: The failure of public responsibility to children and adolescents in need of mental health services*. Children's Defense Fund.
- Koroloff, N. M., Friesen, B. J., Reilly, L., & Rinkin, J. (1996). The role of family members in systems of care. In B. A. Stroul (Ed.), *Children's mental health: Creating systems of care in a changing society*. Baltimore, MD: Paul H. Brookes
- Kutash, K., Banks, S., Duchnowski, A. J., & Lynn, N. (2007). Implications of nested designs in school-based mental health services research. *Evaluation and Program Planning*, 30(2), 161-171.
- Kutash, K., Garraza, L. G., Ferron, J. M., Duchnowski, A. J., Walrath, & Green, A. L. (2012). The relationship between family education and support services and parent and child outcomes over time. *Journal of Emotional and Behavioral Disorders*, 21(4), 264-276. Advance online publication. doi: 10.1177/1063426612451329
- Kutash, K., & Duchnowski, A.J. (2013). Understanding the complexity of the children and families we serve. In S. Barrett, L. Eber, & M. Weist (Eds.). *Advancing education effectiveness: Interconnecting school mental health and school-wide positive behavior support*. Retrieved January 12, 2014 from: <http://www.pbis.org/common/pbisresources/publications/Final-Monograph.pdf>
- Kutash, K., Duchnowski, A.J., & Green, A.L. (2011). School-based mental health programs for students who have emotional disturbances: Academic and social-emotional outcomes. *School Mental Health*, 3, 191-208.
- Kutash, K., Duchnowski, A.J., & Green, A.L. (2015, in press). Meeting the mental health needs of children who have emotional and behavioral disorders. *Beyond Behavior*.
- Kutash, K., Duchnowski, Green, A.L., & Ferron, J.M. (2013). Effectiveness of the Parent Connectors program: Results from a randomized controlled trial. *School Mental Health*. Advance online publication. Doi: 10.1007/s12310-013-9106-4

- Kutash, K., Duchnowski, A.J., Green, A.L., & Ferron, J. (2011). Supporting parents who have youth with emotional disturbances through a parent-to-parent support program: A proof of concept study using random assignment. *Administration and Policy in Mental Health and Mental Health Services Research*, 38(5), 412-427. doi: 10.1007/s10488-010-0329-5
- Kutash, K., Duchnowski, A.J., & Lynn, N. (2006). *School-based mental health: An empirical guide for decision makers*. Tampa, FL: University of South Florida, the Louis de la Parte Florida Mental Health Institute, Department of Child and Family Studies, Research and Training Center for Children's Mental Health.
- Kutash, K., Duchnowski, A. J., & Madias, A. (2011). Clinical Functioning of Youth Served in Special Education due to Emotional and Behavioral Challenges. Unpublished manuscript. Tampa, FL: Florida Mental Health Institute, University of South.
- Lasser, K., Boyd, J.W., Wooljandler, S., Himmelstein, D.U., McCormick, D., & Dor, D.H. (2000). Smoking and mental illness: A population-based prevalence study. *Journal of the American Medical Association*, 284(20), 2606-2610.
- Lavee, Y., McCubbin, H.I., & Patterson, J.M. (1985). The Double ABCX Model of family stress and adaptation: An empirical test by analysis of structural equations with latent variables. *Journal of Marriage and the Family*, 47(4), 811-825.
- Leaf, P.J., Schultz, D., Kiser, L.J., & Pruitt, D.B. (2003). School mental health in systems of care. In: M.D. Weist, S.W. Evans, & N.A., Lever, (Eds.) *Handbook of School Mental Health: Advancing Practice and Research*, New York, NY: Kluwer Academic/Plenum Publisher.
- Levin, B.L.L., Hanson, A., Hennessy, K.D., & Petrilla, J. (2010). A public health approach to mental health services. In B.L. Levin, K.D. Hennessy, & J. Petrilla (Eds.), *Mental health services: A public health perspective* (3rd Edition) (pp. 5-11). New York, NY: Oxford University Press.
- Manderscheid, R.W. (2010). Evolution and integration of primary care services with specialty services. In B.L. Levin, K.D. Hennessy, & J. Petrilla (Eds.), *Mental health services: A public health perspective* (3rd Edition) (pp. 389-400). New York: Oxford University Press.
- Mark, T.L., Levit, K.R., Buck, J.A., Coffey, R.M., & Vandivort-Warren, R. (2007). Mental health treatment expenditure trends, 1986-2003. *Psychiatric Services*, 58(8), 1041-1048.
- Marsh, D.T. (1996). Families of children and adolescents with serious emotional disturbance: Innovations in theory, research, and practice. In C.A. Heflinger & C.T. Nixon (Eds.), *Families and the mental health system for children and adolescents: Policy, services, and research* (pp. 75-95). Thousand Oaks, CA: Sage.

- Mayberry, L. S., & Heflinger, C. A. (2013). How caregivers make meaning of child mental health problems: Toward understanding caregiver strain and help seeking. *Families in Society-the Journal of Contemporary Human Services*, 94(2), 105-113. doi: 10.1606/1044-3894.4286
- McCabe, K. M., Yeh, M., Lau, A., Garland, A., & Hough, R. (2003). Racial/ethnic differences in caregiver strain and perceived social support among parents of youth with emotional and behavioral problems. *Mental Health Services Research*, 5(3), 137-147.
- McCubbin, H. I., & Patterson, J. M. (1983). The family stress process. *Marriage and Family Review*, 6(1-2), 7-37.
- McCubbin, H.I., Joy, C.B., Cauble, A.E., Comeau, J.K., Patterson, J.M., & Needle, R.H. (1980). Family stress and coping: A decade review. *Journal of Marriage and Family*, 42(2), 855-871.
- McDonald, T.P., Gregoire, T.K., Poertner, J., & Early, T.J.. (1997) Building a model of family caregiving for children with emotional disorders. *Journal of Emotional and Behavioral Disorders*, 5, 138–148. doi: 10.1177/106342669700500302.
- Mellor, D. (2004). Furthering the use of the strengths and difficulties questionnaire: Reliability with younger child respondents. *Psychological Assessment*, 16(4), 396–401. doi:10.1037/1040-3590.16.4.396
- Meltzer, H., Ford, T., Goodman, R., & Vostanis, P. (2011). The burden of caring for children with emotional or conduct disorders. *International Journal of Family Medicine*, 2011, 1-8.
- Mendenhall, A.N. & Mount, K. (2011). Parents of youth with mental illness: a look at caregiver strain & caregiver-focused interventions. *Families in Society*, 92(2), 183-190.
- Merikangas, K.R., He, J., Brody, D., Fisher, P., Bourdon, K., & Koretz, D.. (2010). Prevalence and treatment of mental disorders among US children in the 2001-2004 NHANES. *Pediatrics*, 125(1), 75-81.
- Merikangas, K. R., He, J. P., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., ... & Swendsen, J. (2010b). Lifetime prevalence of mental disorders in US adolescents: results from the National Comorbidity Survey Replication–Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*, 49(10), 980-989.
- Merikangas, K.R., He, J.P., Burstein, M., Swendsen, J., Avenevoli, S., Case, B., ... & Olsson, M. (2011). Service utilization for lifetime mental disorders in US adolescents: Results of the National Comorbidity Survey-Adolescent Supplement (NCS-A). *Journal of the American Academy of Child and Adolescent Psychiatry*, 50(1), 32-45.

- Merikangas, K.R., Calkins, M.E., Burstein, M., He, J., Chiavacci, R., Lateef, T.,... & Gur, R.E. (2015). Comorbidity of physical and mental disorders in the neurodevelopmental genomics cohort study. *Pediatrics*, 135(4), e927-e938. doi: 10.1542/peds.2014-1444
- Miles, J., Espiritu, R., Horen, N., Sebian, J., & Waetzig, E. (2010). *A public health approach to children's mental health: A conceptual approach*. Washington, DC Georgetown University Center for Child and Human Development.
- Minow, M. L. (2001). Update on implementation of IDEA: early returns from state studies. Wakefield, MA: National Center on Accessing the General Curriculum. Retrieved 9/20/08 from http://www.cast.org/publications/ncaac/ncaac_update.html.
- Murray, C.L., & Lopez, A.D. (Eds.) (1996). The global burden of disease and injury series. Vol. 1: A comprehensive assessment of mortality and disability from diseases injuries and risk factors in 1990 and projected to 2020. Cambridge, MA: Harvard University Press.
- National Academy of Sciences (2009). Preventing mental, emotional, and behavioral disorders among young people: Progress and possibilities. *Report Brief for Researchers*.
- National Advisory Mental Health Council Workgroup on Child and Adolescent Mental Health Intervention Development and Deployment (2001). Blueprint for change: Research on child and adolescent mental health. (DHHS Publication No. CG 031-591). Washington, DC: National Institute of Mental Health. Retrieved from <http://www.apps.nimh.nih.gov/ecb/archives/nimhblueprint.pdf>
- Nock, M. K., & Kazdin, A. E. (2001). Parent expectancies for child therapy: Assessment and relation to participation in treatment. *Child and Family Studies*, 10(2).
- Olin, S.S., Hoagwood, K.E., Rodriguez, J., Ramos, B., Birton, G., Penn, M. ... Jensen, P.S. (2010). The application of behavior change theory the family-based services: Improving parent empowerment in children's mental health. *Journal of Child and Family Studies*, 19, 462-470. doi: 10.1007/s10826-009-9317-3
- Osher, T.W., Osher, D., & Blau, G. Families matter. In: T Gullotta & G. Blau (eds.). *Family influences on childhood behavior and development evidence-based prevention and treatment approaches*. New York: Routledge; 2008. pp. 39-61.
- Owens, P.L., Hoagwood, K., Horwitz, S.M., Leaf, P.J., Poduska, J.M., Kellam, S.G., & Ialongo, N.S. (2002). Barriers to children's mental health services. *Journal of the American Academy of Child and Adolescent Psychiatry*, 41(6), 731-738.
- Pomerantz, E.M., Moorman, E.A., & Litwack, S.D. (2007). The how, whom, and why of parents' involvement in children's academic lives: More is not always better. *Review of Educational Research*, 77, 373-410. doi:10.3102/00346530305567

- Pottick, K.J., Kirk, S.A., Hsieh, D.K., & Tian, X. (2007). Judging mental disorder in youths: Effects of client, clinician, and contextual differences. *Journal of Consulting and Clinical Psychology, 75*(1), 1-8. doi: <http://dx.doi.org/10.1037/0022-006X.75.1.1>
- Power, A.K. (2010). Ensuring the nation's mental health: The role of federal agencies. *Preventing Chronic Disease, 7*(1), A05.
- President's New Freedom Commission on Mental Health (2003). *Achieving the promise: Transforming mental health care in America* (DHHS Pub. No. SMA-03-3832). Rockville, MD: U.S. Department of Health and Human Services.
- Primm, A.B., Vasquez, M.J.T., Mays, R.A., Sammons-Posey, D., McKnight-Eily, L.R., Presley-Cantrell, L.R., McGuire, L.C.,...Perry, G.S. (2010). The role of public health in addressing racial and ethnic disparities in mental health and mental illness. *Preventing Chronic Disease, 7*(1), A20.
- Reich, S., Bickman, L., & Heflinger, C.A. (2004). Covariates of self-efficacy: Caregiver characteristics related to mental health services efficacy. *Journal of Emotional and Behavioral Disorders, 12*(2), 99-108.
- Rockhill, C., Violette, H., Vander Stoep, A., Grover, S., & Myers, K. (2013). Caregivers' distress: Youth with attention-deficit/hyperactivity disorder and comorbid disorders assessed via telemental health. *Journal of Child and Adolescent Psychopharmacology, 23*(6), 379-385.
- Rones, M., & Hoagwood, K. (2000). School-based mental health services: A research review. *Clinical Child and Family Psychology, 3*(4), 223-241.
- Rothi, D.A., & Leavey, G. (2006). Mental health help-seeking and young people: A review. *Pastoral Care, 24*, 4-13.
- Royall, R.M. (1986). The effect of sample size on the meaning of significance tests. *The American Statistician, 40*(4), 313-315.
- Scheel, M.J., & Rieckmann, T. (1998). An empirically derived description of self-efficacy and empowerment for parents of children identified as psychologically disordered. *The American Journal of Family Therapy, 26*(1), 15-27. doi: 10.1080/01926189808251083
- Shapiro, S. S., & Wilk, M. B. (1965). An analysis of variance test for normality (complete samples). *Biometrika, 52*(3 and 4), 591-611.
- Shin, S. H., & Brown, T. A. (2009). Racial and Ethnic Disparities in Caregiver Strain and the Use of Child Mental Health Services: A Structural Equation Model. *Psychiatric Services, 60*(8), 1039-1045.

- Smith, B.H., Molina, B.S.G., Massetti, G.M., Waschbusch, D.A., & Pelham, W.E. (2007). School wide interventions – The public health approach to school-based mental health. (pp. 7-1 to 7-21) In S.W. Evans, M.D. Weist, & Z.N. Serpell (Eds.). *Advances in school-based mental health interventions: Best practices and program models*. Volume II. Civic Research Institute, Kingston, NJ.
- Snell-Johns, J., Mendez, J., & Smith, B. (2004). Evidence-based solutions for overcoming access barriers, decreasing attrition, and promoting change with underserved families. *Journal of Family Psychology, 18*, 19-35.
- Spencer, S.A., Blau, G.M., & Mallery, C.J. (2010). Family-driven care in America: More than a good idea. *Journal of the Canadian Academy of Child and Adolescent Psychiatry, 19*(3), 176-181.
- Stueve, A., Vine, P., & Struening, E.L. (1997). Perceived burden among caregivers of adults with serious mental illness: Comparison of Black, Hispanic, and White families. *American Journal of Orthopsychiatry, 67*(2), 199-209. doi: 10.1037/h0080223
- Substance Abuse and Mental Health Services Administration (2013). *Results from the 2012 National Survey on Drug Use and Health: Summary of National Findings*, NSDUH Series H-46, HHS Publication No. (SMA) 13-4795. Rockville, MD: Substance Abuse and Mental Health Services Administration.
- Tabachnick, B.G., & Fidell, L.S. (2001). *Using multivariate statistics* (5th ed.). Needham Heights, MA: Allyn & Bacon.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson Education Inc.
- Taylor-Richardson, K.D., Heflinger, C.A., & Brown, T. (2006). Experience of strain among types of caregivers responsible for children with serious emotional and behavioral disorders. *Journal of Emotional and Behavioral Disorders, 14*(3), 157-168.
- The White House (2013). *Now is the time: The President's plan to protect our children and our communities by reducing gun violence*. Retrieved January 27, 2014 from: http://www.whitehouse.gov/sites/default/files/docs/wh_now_is_the_time_full.pdf
- Tsai, K.H., Yeh, M., & Slymen, D. (2015). Strain in caring for youths meeting diagnosis for disruptive behavior disorders. *Journal of Emotional and Behavioral Disorders, 23*(1), 40-51.
- U.S. Department of Education (2014). 36th Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act, 2014. Office of Special Education and Rehabilitative Services, U.S. Department of Education. Accessible at <http://www.ed.gov/about/reports/annual/osep>.

- U.S. Department of Health and Human Services. Office of Disease Prevention and Health Promotion. Healthy People 2020. Washington, DC. Available at http://www.cdc.gov/nchs/data/hpdata2010/hp2010_final_review.pdf . Accessed October 18, 2013.
- U.S. Department of Health and Human Services. (USDHHS, 1999). Mental health: A report of the Surgeon General. Rockville, MD: Author, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, National Institute of Health, National Institute of Mental Health. Retrieved from <http://profiles.nlm.nih.gov/ps/access/NNBBHS.pdf>.
- US Government. (2004). Code of federal regulation, title 34, Section 300.8.
- Vaughan, E.L., Feinn, R., Bernard, S., Brereton, M., & Kaufman, J.S. (2013). Relationships between child emotional and behavioral symptoms and caregiver strain and parenting stress. *Journal of Family Issues*, 34(4), 534-556.
- Villagrana, M. (2010). Mental health services for children and youth in the child welfare system: A focus on caregivers as gatekeepers. *Child Youth Services Review*, 32(5), 691-697.
- Wagner, M., & Newman, L. (2012). Longitudinal transition outcomes of youth with emotional disturbances. *Psychiatric Rehabilitation Journal*, 35(3):199-208.
- Wagner, M., Kutash, K., Duchnowski, A.J., Epstein, M.H., & Sumi, W. (2005). The children and youth we serve: A national picture of the characteristics of students with emotional disturbances receiving special education. *Journal of Emotional and Behavioral Disorders*, 13, 79-96.
- Wan, J.J., Morabito, D.J., Khaw, J., Knudson, M.M., & Dicker, R.A. (2006). Mental illness as an independent risk factor for unintentional injury and injury recidivism. *Journal of Trauma*, 61(6), 1299-1304.
- Weist, M.D. (1997). Expanded school mental health services: A national movement in progress. In T.H. Ollendick & R.J. Prinz, (Eds), *Advances in Clinical Child Psychology, Vol. 19* (PP. 319-352). New York, NY: Plenum.
- Winslow, C.E.A. (1920). The untilled fields of public health. *Modern medicine*, 2, 1-9.
- World Health Organization (2001). The world health report 2001: Mental health: new understanding, new hope. Genva, Switzerland: World Health Organization.
- Yatchmenoff, D.K., Koren, P.E., Friesen, B.J., Gordon, L.J., & Kinney, R.F. (1998). Enrichment and stress in families caring for a child with a serious emotional disorder. *Journal of Child and Family Studies*, 7, 129-145.

Zhang, D., Hsu, H., Kwok, O., Benz, M., & Bowman-Perrott, L. (2011). The impact of basic-level parent engagements on student achievement: Patterns associated with race/ethnicity and socioeconomic status (SES). *Journal of Disability Policy Studies*, 22(1), 28-39.

Appendix A: IRB Designation of Non-Human Subjects Research



RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-7091

May 28, 2015

Amy Green

RE: **NOT Human Research Activities Determination**

IRB#: Pro00022334

Title: Examination of Caregiver Strain and School-Based Mental Health Services Utilization and Parent Engagement in Services

Dear Ms. Green:

The Institutional Review Board (IRB) has reviewed the information you provided regarding the above referenced project and has determined the activities do not meet the definition of human subjects research. Therefore, IRB approval is not required. If, in the future, you change this activity such that it becomes human subjects research, IRB approval will be required. If you wish to obtain a determination about whether the activity, with the proposed changes, will be human subjects research, please contact the IRB for further guidance.

All research activities, regardless of the level of IRB oversight, must be conducted in a manner that is consistent with the ethical principles of your profession and the ethical guidelines for the protection of human subjects. As principal investigator, it is your responsibility to ensure subjects' rights and welfare are protected during the execution of this project

Also, please note that there may be requirements under the HIPAA Privacy Rule that apply to the information/data you will use in your activities. For further information about any existing HIPAA requirements for this project, please contact a HIPAA Program administrator at 813-974-5638.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

A handwritten signature in black ink, appearing to read "Kristen Salomon", written over a horizontal line.

Kristen Salomon, Ph.D., Vice Chairperson USF
Institutional Review Board