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SOYOUN KIM

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MENTAL HEALTH SERVICES AND THE WELL-BEING OF
MALTREATED CHILDREN

by

SOYOUN KIM

A Dissertation submitted to the
Graduate School-New Brunswick
Rutgers, The State University of New Jersey
in partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

Graduate Program in Social Work

written under the direction of

Chien-Chung Huang, Ph.D.

and approved by

New Brunswick, New Jersey

May, 2010

ABSTRACT OF THE DISSERTATION
MENTAL HEALTH SERVICES AND THE WELL-BEING OF
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By SOYOUN KIM

Dissertation Director:

Dr. Chien-Chung Huang

This dissertation investigated factors influencing maltreated children's accessibility to mental health services, based on Andersen's behavioral model. This study also examined whether these mental health services ultimately improved the well-being of maltreated children. Using the longitudinal national dataset, the National Survey of Child and Adolescent Well-being (NSCAW), 1,559 children aged 5-14 years were selected for this study. Logistic and linear regression analyses were conducted using sampling weights.

The results of the study indicated that children's age and gender, maltreatment type, placement type, caregiver's race, insurance coverage, and perceived need were significant predictors of mental health service use. Specifically, mental health service use increased with age, male gender, physical abuse, foster care placement, and Caucasian

caregivers. With respect to insurance coverage, children with Medicaid received significantly more mental health care than did children without insurance coverage. Children with perceived need received more mental health care than did children with no perceived need. In regard to the effects of mental health services on child well-being, the results of this study found that mental health services did improve the well-being of maltreated children, but the amount of improvement was not as large as the amount of well-being improvement of the untreated children. In three developmental areas, children who had received mental health treatment at Wave 3 were less improved than children who had not received any mental health treatment.

The findings from this study have implications for practice, policy, and future research on the well-being of maltreated children. This study suggests that further research is needed to examine why the mental health services in this study had muted effects in improving child well-being in the real-world and to help design effective intervention programs for maltreated children. The findings suggest that guidelines are needed to implement the most appropriate treatment for each child.

Acknowledgements

This dissertation would not have existed without my committee members. I would like to gratefully thank my advisor, Dr. Chien-Chung Huang for his guidance and contribution to this dissertation and his support throughout the years. I have been amazingly fortunate to have my advisor, Dr. Chien-Chung Huang, who believed in this project at the beginning and encouraged me to overcome many difficult situations and finish this dissertation.

I would also like to thank Dr. Cassandra Simmel for her guidance, patience, and most importantly, her emotional support during my graduate study. Her comments helped me to clarify my ideas and much of my knowledge on child mental health and welfare is from her advice and guidance.

I would like to thank my committee member, Dr. Jeonghee Kim and Dr. Lynn Warner, for their valuable comments and contribution to this dissertation.

I would like to dedicate this dissertation to my husband Jae Won Lee. I thank for his endless love, support, encouragement, and patience. I also thank my parents, Yong Kwan Kim and Jung Soon Park, for their faith in me and endless support throughout my life. Also, I would like to thank Jae Won's parents, Hong Lee and Youngsook Hong, for the encouragement and support. I thank my brother, Jin Bum Kim, for his support throughout my undergraduate and graduate study.

Finally, I would like to thank the New York Foundling Vincent J. Fontana Center for providing the financial support.

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CHAPTER 1

INTRODUCTION

While the prevalence of mental health problems among maltreated children has been widely studied (Howe & Parke, 2001; Maughan & Cicchetti, 2002; Schields & Cicchetti, 1998; Toth, Maly, Cicchetti, 1992), fewer studies have investigated why a substantial number of maltreated children fail to receive proper mental health services and what factors might affect the use of such services (Burns et al., 2004; Landsverk & Garland, 1999). Moreover, although there are several studies that have investigated the effects of mental health treatment on specific areas of child development, there is virtually no study that has examined the effects on children's general well-being. Therefore, the current study investigated two distinct yet related questions: (a) What factors influence maltreated children's accessibility to mental health services, and (b) does use of mental health services improve well-being of maltreated children? Both questions have implications for maltreated children's well-being.

The current study used the data from the National Survey of Child and Adolescent Well-being (NSCAW). The NSCAW is the longitudinal national dataset and the sample of the data was selected among children received the investigation by the child welfare system due to child abuse and neglect. This study intends to provide a basis to develop better policies that ultimately improve the welfare of maltreated children by enhancing knowledge on the access of mental health services and its effects on well-being of maltreated children.

Overview of Child Maltreatment and Mental Health Difficulties

Child maltreatment can be defined as “behavior towards a child...which is outside the norms of conduct, and entails a substantial risk of causing physical or emotional harm” (Christoffel et al., 1992; Cicchetti & Toth, 2000). Although maltreatment is a very broad phenomenon, it is often categorized into four main types: (a) physical abuse, (b) sexual abuse, (c) neglect, and (d) emotional abuse. Physical abuse involves assault and infliction of bodily injury. Sexual abuse includes incest and sexual assault. Neglect includes both the failure to provide minimal care and a lack of supervision. Emotional abuse occurs through a variety of parent or caregiver acts that thwart a child’s basic emotional needs. Each of these maltreatment subtypes represents a clear difference from what would be considered a normal home environment, and many maltreated children experience mixed types of abuse and neglect (McGee & Wolfe, 1991; Toth, Manly, & Cicchetti, 1992).

The number of American children who are victims of child maltreatment is substantial. The total number of reported victims in the United States increased from 826,000 (a rate of 11.8 per 1,000 children) in 1999 to 906,000 (a rate of 12.4 per 1,000) in 2003 (Child Maltreatment Annual Reports, 2003). Although the number of victims decreased slightly in 2004 to 872,000 children (a rate of 11.9 per 1,000), prevalence increased again in 2005 to 899,000 (a rate of 12.1 per 1,000).

Many studies have documented that child maltreatment has deleterious consequences for children and that these consequences have long-term effects on their adult lives (Bolger, Patterson, & Kupersmidt, 1998; Maughan & Cicchetti, 2002; Shields & Cicchetti, 1998; Toth, Manly, Cicchetti, 1992). For instance, maltreated children have

been found to have difficulties coping with stress, regulating emotions, and benefiting from social support in the attachment process (Howe and Parke, 2001). Additionally, maltreated children have been shown to have higher rates of externalizing problem behaviors such as aggression, impulsivity, and noncompliance (Okun, Partker, & Levendosky, 1994; Shields & Cicchetti, 1998). Finally, compared to non-maltreated children, maltreated children tend to experience more internalizing problems such as difficulties in emotion regulation (Maughan & Cicchetti, 2002) and depressive symptoms (Toth, Manly, & Cicchetti, 1992).

Although maltreated children experience high rates mental health problems, only a small proportion of them tend to receive health care services (Staudt, 2003). For instance, one study of 3,803 children (Burns et al., 2004) found that only one fourth of the youth in the child welfare system who had significant emotional and or/behavioral problems had received any mental health services in the 12 months preceding the survey. The participants of this study were 2 to 14 years old with completed child welfare investigations for child maltreatment and were selected from the National Survey of Child and Adolescent Well-Being (NSCAW) baseline data. The lack of access to treatment can make the maltreatment and related outcomes even worse for these children.

Factors Related to Mental Health Service Use

Since only a small portion of maltreated children have access to mental health services, researchers have begun to investigate factors related to the use of such services. According to previous studies, maltreated children's demographic factors, maltreatment type (Leslie et al., 2000), placement type (Burns et al., 2004), and parental mental health

problems (Cunningham & Freiman, 1996) are related to their mental health service use. However, most of the previous studies did not investigate the abovementioned factors all together. Also, mental health service uses of a child are commonly decided by caregivers. Thus, caregiver's characteristics such as age, race/ethnicity, and education need to be considered as predictors for child mental health service uses.

To better identify predictors of service use, this study included a broader set of factors such as children's age, gender, race, maltreatment type, placement type, parental/caregiver characteristics, family income, and child insurance coverage. More specifically, based on behavioral model, the present study examined (a) children's demographic factors (Chow et al., 2003; Cohen & Hesselbart, 1993), maltreatment type (Garland et al., 1996), placement type (Burns et al.), and parental/caregiver's mental health status (Cunningham & Freiman, 1996) and demographic characteristics (Burns et al.) as predisposing factors; (b) family income (Reading, 1997) and child insurance coverage (Chow et al., 2003) as enabling factors; and (c) perceived need as need factors.

Mental Health Service Use & Child Well-being

As studies began to reveal the negative influences that child maltreatment has on children and their continuances, national concern over the mental health treatment of maltreated children grew rapidly. There is a general consensus that mental health treatment improves children's developmental functioning (Bagley & LaChance, 2000; Culp, Heide, & Tichardson, 1987; Culp, Little, Letts, & Lawrence, 1991). For instance, one experimental study (Culp et al., 1991) found that a comprehensive treatment program was able to improve maltreated children's self-concept. Consistent with this finding,

another experimental study found that a family-based treatment program enhanced the self-esteem of sexually abused children. Also, this program was effective in decreasing the depression and behavioral problems of treated children. Although research has increasingly focused on the effects of mental health treatment, these previous studies have only concentrated on specific child development outcomes and not the general well-being of children (Sullivan et al., 1992; Culp et al., 1991; Cohen & Mannarino, 1998; Deblinger & Lippman, 1996). “Well-being” is an elusive notion and there is no consensus on defining it. Wulczyn and colleagues (2005) point out that well-being can be explained as a developmental process in children. Specifically, based on bioecological and life-course perspectives, Wulczyn et al. see well-being as “a relative estimate of how a child is doing given certain assumptions and prior knowledge about her or his developmental path or trajectory.” In order to effectively examine the effects of children’s mental health treatment on child well-being, an analysis of various areas of child development is needed. This study, therefore, examined aspects of cognitive, social, emotional, and behavioral functioning to comprehensively measure child well-being.

CHAPTER 2

LITERATURE REVIEW

This chapter discusses the theoretical framework of this study and examines the empirical research that assists in understanding factors associated with mental health service use and the effects of mental health services on the child well-being. Following the literature review, the conceptual model, research questions, and hypotheses are offered.

Theoretical Framework

In the present study, two major goals are to identify factors influencing access to mental health services and to examine the effects of services on the well-being of maltreated children. This study borrowed from the behavioral model to explore the factors related to mental health service use and the effects of services on the well-being of maltreated children. Since child well-being cannot be understood outside of the developmental process, Bronfenbrenner's bioecological theory also contributed to the general framework of the current study.

Mental Health Service Use

The behavioral model was initially developed by Andersen in the late 1960s and was modified in 1995 (Andersen, 1995). The original behavioral model was developed to explain why families used health services and to help develop policies to enhance equitable access to such services. Individuals' health service use can be explained as a

function of their predisposition to use services, factors that enable use, and their need for care. The behavioral model suggests a process by which health service use can be understood. The model includes three different sets of variables that influence the use of health services: predisposing factors, enabling resources, and need. Although the model specifies a causal order, each component also might influence the use of services directly. First, predisposing characteristics include demographic factors, social structure, and health beliefs. Age and gender are demographic factors. Social structure includes education, race and ethnicity, occupation, and religion. Health beliefs are made up of the attitudes, values, and knowledge that individuals have about health and health services that might affect their subsequent perceptions of their need for and use of health services. In the modified model, Andersen added social networks, cultural aspects, and psychological factors into the predisposing factors. Second, enabling resources include family and community factors. Family factors consist of income, health insurance, access to regular source of care, and travel and waiting times. Community factors include the ratio of health professionals and facilities to the population. In the modified model, Andersen added the extent and quality of social relationships in the family and community networks. Finally, Andersen includes both perceived need and evaluated need as need factors. Perceived need represents a social phenomenon that can be explained by social structures and health beliefs. Evaluated need is representative of a professional's judgment about an individual's health status and her or his need for health services.

Based on the behavioral model, the present study examined the mental health service use of maltreated children and several predictors of such use such as predisposing, enabling factors, and need factors as described below.

Predisposing factors. Children's demographic characteristics, such as age, gender, and race, were included. The current study also included maltreatment type and placement type as a predisposing factor. Placement type was included in the category of predisposing factors as a proxy for children's social status. Finally, Parental/caregiver characteristics, such as parents' psychological instability, age, race and ethnicity, and education level might influence service use as predisposing factors.

Enabling factors. For the current study, family income and child insurance coverage were included in the category of enabling factors. Family income was also considered a primary resource that can help children receive mental health services.

Need factors. The present study included children's perceived need as need factors.

Well-being of Maltreated Children

The second question of this study investigated whether mental health service use improves child well-being. In the modified model, Andersen examines the multiple influences on health service use and, in turn, on health status and consumer satisfaction by including health status outcomes in the model (Andersen, 1995). Andersen emphasizes the recursive nature of the health service use model. Outcomes affect not only subsequent predisposing factors and need factors but also an individual's health behaviors (Andersen, 1995). In terms of the mental health services for maltreated children, researchers assume that such services lead to better outcomes. However, little is known about the extent to which these services are effective for the well-being of maltreated children in the real world as opposed to controlled research settings (Weisz et

al., 1995). While the primary purpose of the child welfare system is to protect children and enhance their well-being, most previous studies have only focused on the determinants as opposed to the effects of the mental health service use of maltreated children (Burns et al., 2004; Chow et al., 2003; Cohen & Hesselbart, 1993; Garland et al., 1996; James et al., 2004; Leslie et al., 2000). Therefore, the current study explored the effects of mental health services on the well-being of maltreated children.

Well-being is a continuous developmental process influenced by both biological and environmental factors (Bronfenbrenner, 1979; Bronfenbrenner, 2004; Wulczyn et al., 2005). According to the bioecological theory, child well-being is understood to be a product of the interactions between the child, parents, and the context in which the family is situated (Bronfenbrenner, 1979). Therefore, bioecological theory helps to clarify how these factors are related to each other and how they influence child development. The major premise of the bioecological model is that children's development is influenced by their biological characteristics, by their immediate environment, and by the larger circumstances in which they grow up (Bronfenbrenner, 1979).

Bioecological theory is useful for studying child welfare because it encourages us to view child well-being in a broader context that includes the child's biological characteristics and prenatal experiences as well as the surrounding familial, social, cultural, and political environments (Wulczyn et al., 2005). Specifically, this theory defines four interconnected systems, each having unique effects on child development. The microsystem includes the structures with which the child has direct interaction. This includes family, school, the childcare environment, and the neighborhood. The mesosystem is comprised of relationships between the structures in the microsystem. The

relationship between the child's parents and teacher or the parents' involvement in school committees are two examples. The larger social system in which the child does not participate directly also affects the child's development. This larger social system is defined as the exosystem, which influences the child's development by interacting with the structures in the microsystem. For example, although a child has no direct contact with a parent's employer, she or he might influence the parent's behavior at home, which in turn affects the child. Finally, the macrosystem is comprised of cultural ideologies, attitudes, customs, and laws that people in a particular society tend to share (Berk, 2000; Bronfenbrenner, 1979).

The bioecological theory is helpful in understanding child well-being in connection with child development and maltreatment. For maltreated children, the microsystem may consist of abusive parents, unstable home environments, foster parents, and child welfare workers. The mesosystem may include the relationships between biological parents and foster parents and between biological parents and child welfare workers. Maltreated children may be influenced by settings defined in the exosystem such as services designed to intervene with maltreating parents. For example, parenting education programs and mental health treatment programs may affect child development by treating parents' mental problems and/or changing their attitudes. Finally, the macrosystem also plays an important role in the well-being of maltreated children. Policies to prevent child maltreatment may affect the development of maltreated children and, in turn, enhance their well-being (Wulczyn et al., 2005).

As this theory suggests, child well-being is a developmental process influenced by multilevel systems involving biological, familial, social, cultural, and political

circumstances. In order to explore how maltreatment influences children's development and how mental health services can moderate adverse consequences on child well-being, researchers need to take all of the abovementioned individual characteristics and environmental levels into account when they examine child well-being. The current study, therefore, included both individual and environmental factors in the analyses.

Empirical Evidence

Determinants of Mental Health Services among Maltreated Children

Although the behavioral model has not been applied to research that investigates the effects of mental health services on children's well-being, the model has been used in studies of predictors of the health service use of foster children.

Predisposing Factors. A number of studies have investigated various predisposing factors that influence the mental health service use of children. Among such factors, children's demographic characteristics such as age, gender, and race were investigated as predisposing factors related to mental health service use (Cohen & Hesselbart, 1993; Garland et al., 1996; Leslie et al., 2000). Cohen and Hesselbart (1993) examined whether children's mental health service use differed by age and sex, compared the prevalence of mental disorders in children in these groups, and identified the extent to which differences in service use were consistent with prevalence differences. The study sample consisted of 760 children aged 11 to 21 from the Children in the Community Study. Mental health services were defined as one or more consultations with a psychiatrist, psychologist, or social worker. The authors made a distinction between consultation only and consultation plus treatment by defining treatment as four or more visits in a year to a

single provider. Logistic regression analyses were used.

The Cohen and Hesselbart (1993) study concluded that age had an impact on the rates of mental health service use. Specifically, youths aged 18 to 21 were less likely to receive mental health services than youths aged 11 to 17. These service use differences paralleled differences in diagnostic rates. After controlling for diagnostic rates, the service use differences were not significantly changed. This study showed that older adolescents were less likely to receive services than their younger counterparts.

In contrast, Garland and colleagues (1996), in a sample of 702 children aged 2 to 17, found that increased age was a significant predictor of mental health service use. Mental health service use was defined as the frequency of outpatient visits. The result showed that older children were more likely to receive mental health services than younger children. Consistent with Garland et al.'s finding, Leslie and colleagues (2000) found that age was an important factor for mental health visits, indicating that mental health services increased with age.

These conflicting findings can be explained by using the different age group of children. In Cohen and Hesselbart's study, they sampled children whose ages were 11 to 21 years old and found that children aged 11 to 17 more likely to get the treatments than children aged 18 and older. However, both Garland et al. and Leslie et al. studies used the sample of children, aged 2 to 17. Therefore, it may be supposed that mental health treatments are increased with age among children aged 2 to 17, while children of this age group were more likely to receive treatments than children aged 18 to 21.

Besides age, Leslie et al. revealed that gender, race, placement type, and the presence of clinically significant behavioral problems influenced the use of outpatient

mental health services. For this study, detailed survey and administrative data were collected on 480 children aged 2 to 17 who entered long-term foster care in San Diego County between 1990 and October 1991. These data were linked with claims data from the Medicaid and San Diego County Mental Health Services information systems. Using a Poisson regression model, the analyses found that the number of mental health visits increased with age, male gender, non-relative foster care, and Child Behavior Checklist (CBCL) scores of 60 or greater. In terms of race/ethnicity, visits were lower for Latinos and Asians, and those of “other” racial backgrounds compared to Caucasians and African-Americans. However, there was no significant difference between Caucasian and African American children. Disparities in using mental health services were also found in another study by Burns and colleagues’ (2004); particularly, White children were more likely to receive mental health services than African American children among school aged children (ages 6-10). Consistent with Burns and colleagues (2004) study, Kataoaka and colleagues (2002) also indicated that African American children and Hispanic children were less likely to receive mental health services than White children. On the other hand, Chow and colleagues’ (2003) found that African Americans used more mental health services than Caucasians, and Caucasians received more mental health services than Hispanics.

The discrepancy between the findings of these previous studies may be explained that each study used different samples. While Chow and colleagues’ (2003) study was limited to poverty areas for the study sample, other studies were not limited to children from poverty areas. It may be that children living in poverty may have less time to attend mental health treatments and lack insurance coverage. However, African American

children were more likely to be referred to mental health services by law enforcement officials, compared to White children. Therefore, African American children may receive more mental health services than White children.

In terms of maltreatment type, there is conflicting evidence regarding its relationship to mental health service use. Whereas Leslie et al. (2000) found that maltreatment type was not an important factor for mental health service use, except for caretaker absence, Garland and colleagues (1996) found that there were significant differences in the rates of mental health service use among foster children by maltreatment group. Foster children who had experienced sexual and/or physical abuse had received more mental health treatments than foster children who had experienced neglect and caretaker absence. The disparate findings can be explained by the different definitions of mental health service use and categorizations of maltreatment. Specifically, whereas Leslie et al. defined mental health service use by the number of outpatient mental health visits, Garland et al. defined mental health service use as whether children had ever received any type of mental health services at all.

In Leslie et al.'s (2000) study, child maltreatment was categorized by sexual abuse, physical abuse, emotional abuse, caregiver absence, and neglect, whereas Garland et al. (1996) categorized child maltreatment as sexual abuse, physical abuse, neglect/caretaker absence, sexual/physical/emotional abuse (at least two types of abuse), and protective issues only. The Garland et al. study sample consisted of 662 children aged 2 to 17 who were in foster care for at least 5 months between May 1990 and October 1991 in San Diego, CA. According to this study, children removed from their homes due to sexual and/or physical abuse were more likely to receive services (e.g., a

higher number of outpatient visits) than those who were removed due to neglect and caretaker absence. Clinically significant behavioral problems were associated with a greater likelihood of receiving services, except for children in the sexually abused group, who were very likely to receive services regardless of their behavioral problem scores. Sexually abused youth also received a higher number of outpatient visits than did neglected youth. The authors concluded that children who had experienced physical/sexual abuse were more likely to receive mental health services than those who had experienced neglect and caretaker absence. Burns and her colleagues (2004) supported the Garland et al. findings. Specifically, they found that sexual abuse increased mental health service use for children aged 2 to 5.

With regard to placement type, previous studies have shown that placement type significantly predicted mental health service use (Burns et al., 2004; Halfon, Berkowitz, & Klee, 1992; Hurlburt, M. S. et al., 2004). For example, Burns and colleagues (2004) found that school-aged children (6-10) and adolescents (11-14) who remained in their homes were significantly less likely to receive services than those who were placed out of home, even after controlling for clinical need. Consistent with this finding, Halfon, Berkowitz, and Klee (1992) found that children in foster care were disproportionately more likely to use both outpatient and inpatient mental health services than the non-foster-care children. The study by Hurlburt et al. (2004) also showed that mental health service use increased with out-of-home placement (N=2823).

Finally, parental characteristics are considered to be a determinant for the mental health service use of children (Burns et al., 2004; Tessler & Mechanic, 1978; Zimmerman, 2005). For example, Tessler and Mechanic (1978) discovered that maternal psychological

instability influenced the health service use of children. Mothers who experienced higher levels of distress were more likely than their less stressed counterparts to acquire medical services for their children. Consistent with this finding, Burns et al. found that children whose parents had a severe mental illness were more likely to use mental health services than children whose parents did not suffer from a mental illness.

With regard to caregiver's education, few studies have been conducted.

Zimmerman (2005) investigated whether social and economic factors influenced child mental health service utilization for any mental health problems, and for depression and behavior problems, using National Longitudinal Survey of Youth 1979 children and Young adults (NYSY-Child). The sample was consisted of 2,487 children aged 7-14 years old. This study found no significant difference of mental health service use between children whose mother received more education and children whose mother received less education. Wu and colleagues (2001) also found that mother education was not a significant predictor of getting professional help for depressive symptoms among depressed children, with a sample of 206 children aged 9 to 17 years. However, this study showed that mother education was significantly related to receiving medication among these children. Although these two studies showed that mother's education was not a significant predictor of mental health service use of children, these studies used education (years) variable as a continuous variable. However, the proposed study will include education as a categorical variable. Also, according to bioecological theory, a caregiver plays an important role for a child. Thus, the proposed study will explore the relationship between caregiver's education and child mental health service use.

In terms of a caregiver's race/ethnicity, most research has focused on children's

race/ethnicity. However, if a child is placed in out-of-home care, the caregiver's race/ethnicity will not be consistent with the child's race/ethnicity. Thus, it is needed to examine if caregiver's race/ethnicity has related to mental health service use of children. In addition, previous studies have investigated if mental health service uses were differed by children's age. The caregiver's age has not been examined. Yet, the decisions for child mental health services are usually made by caregivers not children themselves. The caregiver's perspective of seeking treatment for children can be changed by age. Therefore, caregiver's age also need to be considered.

Therefore, based on these earlier studies, the current study included children's demographic characteristics, maltreatment type, placement type, and parental/caregiver's characteristics as predisposing factors in the model.

Enabling Factors. While many researchers have focused on various predisposing factors, few studies have investigated the effects of enabling factors on mental health services. After controlling for mental health need, Cohen and Hesselbart (1993) found that children in middle income families experienced the least amount of mental health treatment, even less than children from poorer families. This result may have been due to the fact that middle-class children are often not eligible for subsidized services. However, Reading (1997) found that children in poor families were less likely to receive health services than children in higher income families. This finding was also supported in Kataoaka and colleagues (2002) study, indicating that children in poor families received less mental health services, compared to children in not poor families. Poor was defined when family income was below the poverty level, based on the U.S. Census poverty ratio. Although there were conflicting findings among the previous studies, poverty may

decrease mental health service use of children through financial limitation and lack of insurance coverage. Zimmerman (2005) indicated that poverty decreased the likelihood of getting mental health services, while Medicaid increase the likelihood of getting mental health services among children in poor families.

Finally, child health insurance coverage is considered as an enabling factor, whereas many previous studies have focused only on family income variable. Cunningham and Freiman (1996) examined whether health care coverage influenced ambulatory mental health services for children aged 6 to 17. For this study, they used the 1987 National Medical Expenditure Survey. Cunningham and Freiman found that children with public funded health care coverage were more likely to receive mental health treatments than uninsured children. However, there were no significant differences between children with private health coverage and uninsured children. Whereas this study compared children receiving public health coverage with uninsured children, the present study examined mental health service use between children with public health coverage and children with private insurance or no insurance. Consistent with this finding, Zimmerman (2005) found that children whose parents have government insurance were associated with higher odds of mental health treatments than children with no insurance.

Need factor. In Behavioral model, Andersen (1995) suggested that perceived need better indicate care-seeking and health service use while clinical need is related to the type and amount of treatments. Costello and Janiszewski (1990) examined that what factors associated with specialist treatment with 215 children aged 7 to 11. The children were screened for severe behavior problems. The study showed that teacher's perception significantly predicted mental health treatments of children, indicating that children

whose teacher perceived behavior problems were more likely to receive treatments than children whose teacher did not feel discomfort with children's behavior problems.

Consistent with this finding, Sayal et al. (2003) also reported that parental perception was the strongest predictor of specialty mental health treatments among 5 to 11 year old children with pervasive hyperactivity. Zahner and Daskalakis (1997) examined factors associated with service use for child psychopathology. In the sample of 2519 children (ages 6 to 11), they found that parental perception that the child needed mental health treatments was most strongly associated with mental health service use.

Effects of Mental Health Service Use on the Well-being of Maltreated Children

According to bioecological theory, child well-being is influenced by his/her biological characteristics as well as interactions with family members, peers, schools, neighborhoods, and society. In other words, not only familial, social, cultural, and political environments but also children's biological characteristics have impacts on maltreated children's mental health service use, which, in turn, may influence their well-being. Although bioecological theory highlights the effects of various environments, it also emphasizes that a child's biological characteristics play an important role in her or his development. Therefore, the current study examined whether both children's characteristics and their environmental factors influence their mental health service use and by association their well-being. Previous studies have shown that maltreated children who receive mental health treatment show improvements in various developmental outcomes compared with control groups drawn from the same population (Bagley & LaChance, 2000; Kolko, 1996; Skowron & Reinemann, 2005; Sullivan et al., 1992).

Moreover, the treatment effect has been found to vary by the type of abuse or neglect from which the child suffers. For instance, treatment for child sexual abuse has been found to be more effective in reducing children's behavioral problems than treatments for other types of maltreatment (Skowron & Reineman, 2005). Additionally, Sullivan et al. examined the effects of a broad-based psychotherapeutic intervention with 72 children who had been sexually abused at a residential school for the deaf. The subjects were randomly assigned to either a treatment group or a control group. The children in the control group did not receive any treatment. The CBCL was used to measure children's behavioral problems. Children receiving treatment had significantly fewer behavior problems than children not receiving treatment.

In a similar study, Deblinger and colleagues examined the effects of a cognitive behavioral therapy program for children and non-offending mothers on 7-to 13-year-old children's PTSD symptoms as well as other behavioral and emotional problems with 100 families that had contacted the Center for Children's Support. The participants were randomly assigned to a child intervention, non-offending parent intervention, combined child and parent interventions, or a community control group. The children in the community control group did not receive a cognitive behavioral treatment. Participants assigned to the intervention groups participated in 12 weekly treatment sessions. Consistent with Sullivan et al.'s findings, Deblinger et al. found that, according to mothers who were receiving interventions, the cognitive behavioral therapy for sexually abused children significantly reduced their children's externalizing behavior problems, depression, and Posttraumatic Stress Disorder symptoms.

Similar results were also found in two studies by Bagley and LaChance (2000).

Specifically, Bagley and LaChance examined the effects of a treatment program on psychological and behavioral outcomes for children who had experienced intra-family sexual abuse. The participants, who had been screened by child protection workers, were assigned to either the treated group (n = 27) or the untreated group (n = 30). The participants in the treatment group participated in the Child Sexual Abuse Treatment Program (CSATP) for over two years. The results indicated that after two years the CSATP had significantly increased levels of self-esteem and reduced depression and behavioral problems in the treated children compared to the untreated children.

While the studies reviewed above have evaluated treatment in terms of its role in decreasing child behavioral and emotional problems, Culp et al.(1987) investigated whether treatment improved maltreated children's outcomes in five developmental areas such as fine motor, cognitive, gross motor, social/emotional, and language skills. The study sample consisted of 70 maltreated children who were under the authority of state protective services. The participants were assigned to a treatment group and a control group. The mean age of the participants was 36.06 months for the treatment group and 36.11 months for the control group. Most of the participants had experienced neglect. Based on a cognitive developmental model, the treatment program aimed to facilitate self-esteem building, to develop caring peer relationships, and to help children deal with their own feelings through strong teacher-child relationships. The children who received treatment acquired significantly higher developmental scores in the five developmental areas than the children who did not receive treatment. The largest differences between the treatment group and the control group were in the areas of cognitive and social/emotional development, whereas the smallest difference was in the area of language skills.

There is also evidence that community-based, resilient peer treatment is effective for withdrawn, maltreated preschool children (Fantuzzo et al., 1996). Resilient peer treatment is a peer-mediated classroom intervention based on a developmental ecological model. The study sample consisted of 46 socially withdrawn Head Start children who were randomly assigned to a treatment group and a control group. The children in the resilient peer treatment group significantly increased their levels of positive interactive peer play and decreased their levels of social isolation.

The results of the studies reviewed above have shown that various treatment approaches were successful in improving maltreated children's behavioral and emotional problems, cognitive development, and social development (Culp et al., 1987; Sullivan et al., 1992; Deblinger et al., 1996; Bagley and LaChance, 2000). The results of these studies support examining the effects of mental health treatment on the general well-being of maltreated children.

The literature review further indicates that the targeted outcomes of treatments can vary by the maltreatment type. Most studies that have examined the effects of psychological treatment for sexually abused children have focused on behavioral and emotional problems (Sullivan et al., 1992; Deblinger et al., 1996; Bagley and LaChance, 2000), while the one study targeting neglected children evaluated the treatment's effects on several developmental areas (Culp et al., 1987). In order to better understand the effects of the mental health treatment on the well-being of maltreated children, research needs to examine both developmental areas and behavioral problems as outcomes of mental health services.

Summary

The following is a discussion of differences as well as similarities between existing literatures and the present study. First, the current study belongs to a large set of literature that studies predictors for mental health service use of children. Some of the previous studies include Cohen Hesselbart (1993), Garland et al. (1996), and Leslie et al. (2000). Cunningham and Freiman (1996) also investigated factors related to mental health services. The current study, however, adds to the literature on the effects of mental health service uses on child well-being as well as determinants for mental health service use.

Second, most previous studies that have examined the predictors of mental health service use have focused on children who are placed in out-of-home care (Garland et al., 1996; James et al., 2004; and Leslie et al., 2000). However, the current study examines child welfare children including both out-of-home care and children who remain home. Among maltreated children, approximately 22 percent were placed in foster care services after an investigation of child abuse and neglect while the rest of the maltreated children still remained at home (Child Maltreatment Annual Reports, 2005). Thus, in order to better understand the patterns of service use and ultimately to enhance maltreated children's access to mental health services, both out-of-home and in-homecare children should be included in analyses of this population.

Third, previous studies using Medicaid claims have been limited to certain outcome area such as California (Halfon, Berkowitz, & Klee; 1992). Therefore, it is not certain that the results from these previous studies would carry over to other U.S. populations. These studies also only considered the services provided in traditional

mental health settings and were thus unable to identify services that might not have been covered by Medicaid (Halfon, Berkowitz, & Klee; 1992; Halfon et al., 2002; and James et al., 2004). Thus, the present study includes various geographic areas and children's placement types. The data used in the current study are from the National Survey of Child and Adolescent Well-Being (NSCAW). The NSCAW is a longitudinal study that has been conducted to identify the experiences of children and families who came into contact with the child welfare system between 1999 and 2000.

Forth, while there have been several studies indicating the effects of treatments for maltreated children, these studies have been limited to a small number of children and have been conducted in controlled research settings (Weisz, Donenberg, Han, & Weiss, 1995). There is virtually no study that has investigated the effects of mental health treatment on the well-being of maltreated children using a nationally representative sample. Also, most previous studies have examined a limited range of outcomes. Therefore, the current study tests whether mental health treatments improve child well-being in terms of various outcomes such as cognitive, social, and emotional and behavioral development with the NSCAW dataset.

Fifth, previous studies did not control the uses of psychotropic medications while they investigated the effects of treatments for children. However, in the United States, the uses of psychotropic medications in children have been increased. Especially, psychotropic medications are often used to treat children who have attention-deficit/hyperactivity disorder (ADHD) (Hazell, 2007; Zito, Safer, dosReis, Magder, Gardner, & Zarin, 1999). Hazell (2007) showed that atypical antipsychotics such as risperidone and quetiapine were effective in reducing attention and hyperactivity

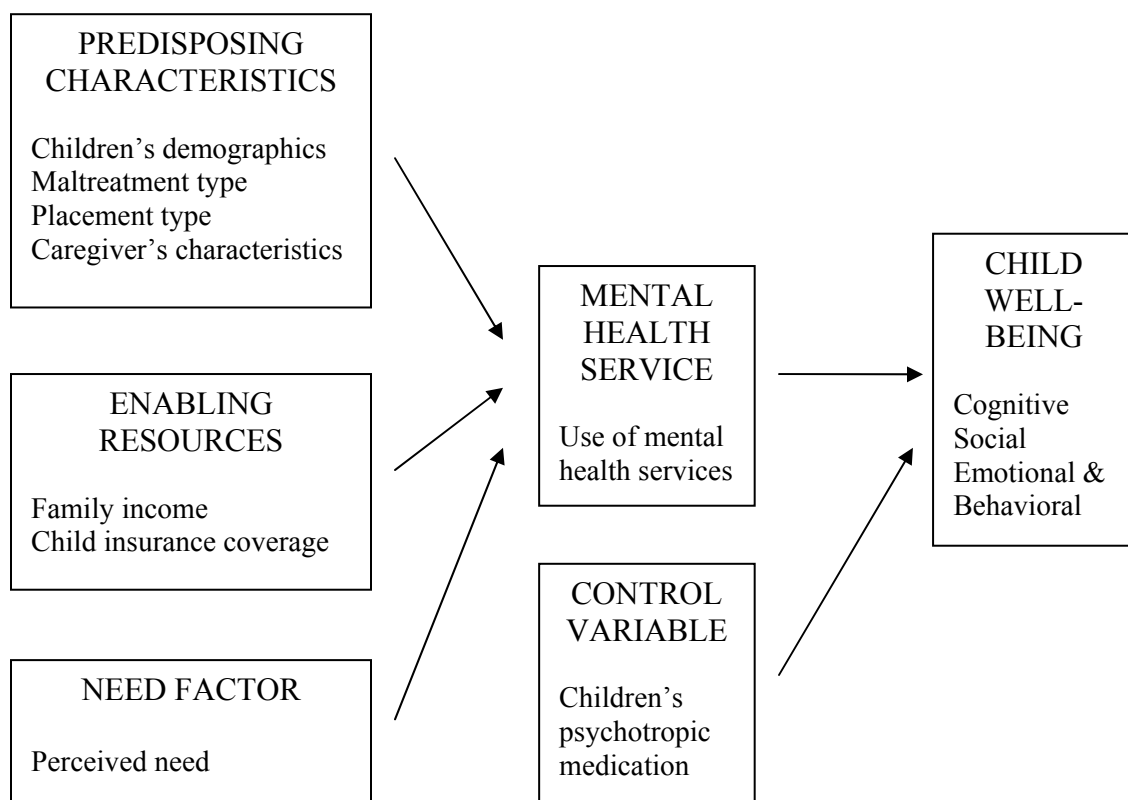
symptoms. In order to better identify the effects of mental health service use on the child well-being, psychotropic medication uses should be controlled. Thus, this study contributes to child welfare research and policy by investigating the long-term effects of mental health services on child well-being with a NSCAW dataset, while controlling psychotropic medication uses.

Conceptual Model

The current study is conceptualized by both Andersen's behavioral model (Andersen, 1995) and Bronfenbrenner's bioecological theory (Bronfenbrenner, 1979; Bronfenbrenner, 2004). Andersen's behavioral model (1995) was developed to understand the process of health service use. The Andersen's behavioral model has been used as a conceptual framework to examine mental health service use for a variety of populations (Arcia et al., 1993; Long et al., 2002; Padget et al., 1993). The initial premise of the model is that the use of health services is a function of an individual's predisposing characteristics to use services, of enabling resources, and of need for care (Andersen, 1968). In the modified model, Andersen added an outcome category to explore the effects of health service use and content of health services (Andersen, 1995).

Bronfenbrenner's Bio-ecological theory of development, on the other hand, is also employed because the current study examines factors related to children's well-being and the bioecological theory provide a framework to understand how mental health services affect well-being of maltreated children within developmental context. The figure 1 presents the conceptual model of mental health services and well-being of maltreated children.

Figure 1.

Conceptual Model**Research Questions and Hypotheses**

The central goals of this study are as follows: (a) to examine factors influencing the accessibility to mental health services and (b) to test the effects of mental health services on well-being of maltreated children.

Specific research questions include:

(1) Factors contributing to mental health service use

(a) Do children's demographic characteristics contribute to the mental health service use of maltreated children?

Hypothesis 1A: It is hypothesized that mental health service use would increase with older age, male gender, or Caucasian children than younger age, female children, or children with other types of ethnicity.

(b) Does maltreatment type contribute to the mental health service use of maltreated children?

Hypothesis 1B: It is hypothesized that children with physical or sexual abuse would be more likely to use mental health services than children with neglect, emotional abuse, or other abuse.

(c) Does placement type contribute to the mental health service use of maltreated children?

Hypothesis 1C: It is hypothesized that children in non-relative foster care would be more likely to receive mental health services than children in home with biological parents.

(d) Do caregiver's characteristics contribute to the mental health service use of maltreated children?

Hypothesis 1D: It is hypothesized that children whose caregivers are older, higher educated, Caucasian, or who have severe mental health problems would significantly receive more mental health services than children whose caregivers are younger, less educated, other ethnicity, or have relatively fewer mental health problems.

(e) Does family income contribute to the mental health service use of maltreated children?

Hypothesis 1E: It is hypothesized that children in higher income families would significantly receive more mental health services than children in lower income families.

(f) Does child insurance coverage contribute to the mental health service use of maltreated children?

Hypothesis 1F: It is hypothesized that children with Medicaid would be more likely to receive mental health services than children with other types of insurance such as private insurance or self-pay.

(g) Does perceived need contribute to the mental health service use of maltreated children?

Hypothesis 1G: It is hypothesized that children who are viewed as needing mental health services by caseworker would be more likely to receive those services than children without perceived need.

(2) Effects of mental health services on child well-being

(a) Do mental health treatments for maltreated children at Wave 3 improve child well-being at Wave 4, controlling psychotropic medication uses?

Hypothesis 2A: It is hypothesized that maltreated children with more mental health treatments would display better outcomes of child well-being compared with maltreated children with little treatments or no treatment.

(b) Does the continued mental health treatment for maltreated children improve child well-being at Wave 4 of data collection?

Hypothesis 2B: It is hypothesized that maltreated children with continued access to mental health services between Wave 3 and Wave 4 would display better outcomes of child well-being at Wave 4 compared with maltreated children with fewer services or no service.

CHAPTER 3

METHODOLOGY

This chapter presents the methods of the current study. The dataset, sample, measures, and analytic strategies are discussed in the chapter.

Data

The current study is a secondary data analysis of the longitudinal national data set, National Survey of Child and Adolescent Well-Being (NSCAW). The NSCAW is a nationally surveyed data aiming to investigate relationships between child well-being and various environmental factors such as characteristics of children and families, child welfare system, community environment, and others. For collecting data, children, former caregivers, current caregivers, caseworkers, and teachers were interviewed across the five waves. Since children were investigated for child abuse and neglect, the five data collections have been conducted from 1999 through present as the following. The baseline interview was conducted at 2 to 6 months after the initial investigation of abuse and neglect. The second wave data were collected at 12 months and the third wave data were collected at 18 months after the investigation. The fourth wave data selection was conducted at 36 months and the fifth wave data have been collected at 59-96 months post investigation. The NSCAW contains derived variables which were constructed by combining information from either two or more variables or two or more interview.

The NSCAW cohort consists of 6,228 children aged 0 -14 years when they were selected as a sample. The NSCAW sample was selected among children who had been

investigated for child abuse and neglect by the child welfare system between October, 1999 and December, 2000, by using a stratified sample design. First, the United States was divided into nine sampling strata based on the scale of caseloads. Eight states that had the largest child welfare caseloads were assigned to eight strata and other states were assigned to the ninth stratum. Among these nine strata, primary sampling units (PSUs), referring to geographic areas that served by single child protective services (CPS) agency, were made. By using a probability-proportionate-to size (PPS) method, the NSCAW cohort was selected from 92 PSUs. PSUs with larger caseloads had a higher chance to be selected. So, for equal chance of selection, the same number of children was selected from each PSU, regardless of the different size of PSUs. The final NSCAW cohort consisted of two groups: 1) CPS sample group contained 5,501 children who had experienced child abuse or neglect investigation by CPS between October, 1999 and December, 2000; 2) long-term foster care (LTFC) sample included 727 children who had resided in out-of-home care for approximately one year at the time of sampling and whose investigation of child abuse or neglect had preceded their placement (www.ndacan.cornell.edu).

This study aims to investigate the factors related to accessing mental health services and the effects of mental health services on well-being of maltreated children. In order to examine factors related to mental health service use, this study included predictors collected at baseline and outcome variables collected at Wave 3. More specifically, for testing effects of mental health service use on child well-being, the variables of “mental health service use” collected at Wave 3, and well-being measures such as the CBCL, collected at Wave 4, was used. For investigating effects of continued

mental health service use, this study computed a new variable, continued mental health service use, by combining information collected at both Wave 3 and Wave 4. The current study included continued mental health service use as an independent variable and included well-being of children at Wave 4 as dependent variables. Therefore, the current study used the data surveyed at the baseline, wave 3, and wave 4. Since wave 5 data are still collecting, the current study did not use wave 5 data.

Sample

The sample of children for the current study was drawn from a cohort of 6,228 children, consisting of 5,501 CPS sample participants and 727 LTFC sample participants. For the proposed study, only the CPS sample is appropriate since the LTFC sample had resided in out-of-home care for more than one year whereas CPS sample had not experienced long-term foster care at the time of sampling. In addition, for this study, 2,675 children less than 5 years of age were excluded because this age group is unlikely to display significant levels of mental health problems and receive mental health services. Thus, the eligible cohort of children at baseline became 2,826 CPS children. Among these children, 678 children were excluded because these children were not interviewed at either Wave 3 or Wave 4. And, subjects with missing information were excluded. This left the final study cohort of 1,559 children.

Measures

Mental Health Service (Wave 3).

Mental health services at Wave 3 were completed by either the permanent

caregiver or current caregiver (e.g., foster parent; kin caregiver). Mental health service use was measured in dummy variable. As a dummy variable, caregivers responded whether or not the study child had received mental health treatments for mental health problems or substance abuse problems during the past 6 months. Mental health service use included any of the following services: specialty mental health (either in-patient or out-patient), mental health services provided by community, private professionals, or schools, day treatment, in-home counseling services, and general medical doctor. The information about quality and intensity of the mental health services was not available from the dataset.

Continued Mental Health Service Use (Wave 3 & Wave 4).

In order to examine the influence of continued mental health treatment on child well-being, continued mental health service use was computed by using mental health service use from Wave 3 and mental health service use from Wave 4. At both Wave 3 and Wave 4, mental health service use was asked of either permanent caregivers or current caregivers whether or not the child had received mental health services for emotional, behavioral, learning, attentional, or substance abuse problems since last interview. If a child received no mental health services at both Wave 3 and Wave 4, a child was recoded into not treated (=0). If a child receive mental health services only at Wave 3, a child was recoded into treated at W3 only (=1). If a child received mental health services only at Wave 4, a child was recoded into treated at W4 only (=2). Last, if a child received mental health services at both Wave 3 and Wave 4, a child was recoded into continuously treated at W3 & W4 (=3).

Well-being of Children.

Child well-being is composed of cognitive development, social development, and emotional and behavioral development of children. Child well-being can be measured within developmental context of a child. In this study, thus, child well-being was measured by examining cognitive, social, and emotional and behavioral functioning of each child. For the present study, well-being of children was measured as follows: (1) cognitive development was examined by using Kaufman Brief Intelligence Test (K-BIT) for children; (2) social development was measured with Social Skills Rating System (SSRS); and (3) emotional and behavior functioning was measured by using Child Behavior Checklist (CBCL). These well-being measures were measured at Wave 4. In order to examine the effect of mental health service use on well-being, each of well-being measures was computed by subtracting W1 scores from W4 scores.

Cognitive Development: Kaufman Brief Intelligence Test (K-BIT).

The K-BIT was designed to assess intelligence of individuals ages 4 and older. K-BIT is standardized assessment tool comprised of two subtests: vocabulary (expressive vocabulary and definitions) and matrices (ability to perceive relationships and complete analogies (Kaufman & Kaufman, 1990). The K-BIT was administered to children directly. This measure is a two point scale: 0 for incorrect and 1 for correct. This measurement yields standards scores, percentile ranks, as well as IQ Composite. The current study used IQ Composite scores. It has been standardized on 2,022 individuals ages 4 to 92 years. The Cronbach's alpha coefficients for the subscales range was .76 for Verbal and was .79 for Matrices. Test-retest reliability coefficients were .96 and .80, respectively (Kaufman

& Kaufman, 1990).

Social Development: Social Skills Rating Systems (SSRS).

The SSRS was designed by Gresham and Elliott (1990) to measure how child, parent, and teacher perceive children's social skills. This study used the parent report. The SSRS assesses children's social skills in four domains: cooperation, assertion, responsibility, and self-control. Different questionnaires were used for each of three age groups: age 3-5, age 6-10, and age 11 and older. This measure was scored on a 3-point scale: 1 = never, 2 = sometimes, and 3 = very often. For the current study, the continuous scores of SSRS were used. The test-retest reliability was .87 (Gresham & Elliott, 1990). SSRS consists of 38 items for children aged 6 to 10 and 40 items for children aged 11 and older.

Emotional & Behavioral Status: Child Behavior Checklist (CBCL).

Emotional and behavioral status was measured by using the CBCL that is a widely used measure of emotional and behavior problems. The CBCL was completed by caregivers. The instrument includes 113 items, each of which is scored on a 3-point scale: 0 = not true; 1 = somewhat or sometimes true; and 2 = very true or often true. For this study, internalizing and externalizing subscales were used as measures of emotional and behavioral status. The internalizing scale characterized by depressed mood and inhibition, includes social withdrawal, anxiety/depression, and somatic complaints while the externalizing scale is characterized by disruptive behaviors and contains oppositional and aggressive conduct. The standardized continuous T-scores of this measure were used.

Test-retest reliability coefficient was .87 for internal and .84 for external subscales.

Children's Demographic Characteristics.

Age was divided into two groups: (1) 5 to 10 years and (2) 11 to 14 years at the time of sampling. Gender of children was recoded into male (=0) and female (=1).

Race/ethnicity was categorized as follows: (1) Caucasian, (2) African American, (3) Hispanic, and (4) other.

Maltreatment Type.

Child maltreatment was categorized by the type of maltreatment. Maltreatment type is a derived variable that combined information from caregivers and children. Maltreatment type was reported as follows: physical maltreatment, sexual maltreatment, emotional maltreatment, physical neglect-failure to provide, neglect-failure to protect, abandonment, moral/legal maltreatment, educational maltreatment, exploitation, and mixed maltreatment. Due to the low frequency of the occurrence of some of these latter types of maltreatment, moral/legal maltreatment is combined into neglect-no supervision. Educational maltreatment is integrated into physical neglect-did not provide while exploitation is integrated into sexual maltreatment. Thus, maltreatment type was finally categorized as follows: (1) physical maltreatment, (2) sexual maltreatment, (3) emotional maltreatment, (4) neglect, and (5) other.

Placement Type.

Placement type represents the type of home environment in which the child is

living. Placement type is a derived variable that combines information from children, caregivers, and caseworkers. If discrepancies were found, the data used the response from the caregiver, then the child, and then caseworker. Placement type was categorized into in-home-care (with parent), foster care, kin-care, group home, and other type of out-of-home care.

Caregivers' Demographic Characteristics.

Caregivers reported on their age, race/ethnicity, and highest level of education. Caregivers' age was measured as four age groups: (1) less than 35 years, (2) 35 to 44 years, (3) 45 to 54 years, and (4) older than 54 years. Caregiver's race/ethnicity was categorized as follows: (1) Caucasian, (2) African American, (3) Hispanic, and (4) other. Caregivers' education level will be recoded as follows: (1) less than high school, (2) high school, and (3) above high school education.

Caregivers' Mental Health.

Caregivers' mental health was measured by using Short-Form Health Survey (SF-12). SF-12 was a short version of SF-36 developed by Ware, Kosinski, and Keller (1996). SF-12 contains 12 items in terms of physical functioning, role limitations due to physical health problems, bodily pain, general health, vitality, social functioning, role limitations due to emotional problems, and mental health. Standardized mental scores were computed for caregivers. Test-retest reliability for mental health was .76.

Family Income.

Family annual income was reported by caregivers. Family income was measured

as a 11 point scale: (1) less than \$5,000, (2) \$5,000-\$9,999, (3) \$10,000-\$14,999, (4) \$15,000-\$19,999, (5) \$20,000-\$24,999, (6) \$25,000-\$29,999, (7) \$30,000-\$34,999, (8) \$35,000-\$39,999, (9) \$40,000-\$44,999, (10) \$45,000-\$49,999, and (11) \$50,000 or more. For this study, family income was recategorized as follows: (1) less than \$15,000, (2) \$15,000-29,999, and (3) \$30,000 and more.

Child Insurance Coverage.

Child insurance status is a derived variable that combines information from both permanent and current caregivers. Caregivers reported on their insurance coverage for children. Child insurance status was categorized as follows: (1) Medicaid or another state-funded program, (2) private insurance, and (3) No insurance.

Perceived Need.

Perceived need was measured by caseworker's perception of children's mental health service need. This variable was measured as a dichotomous variable whose possible values are 0 and 1. The values,1, indicates the children who were viewed as needing mental health services by their caseworkers.

Children's Psychotropic Medication.

Children's psychotropic medication use was reported by either current caregivers or permanent caregivers. Caregivers responded whether or not a child is currently taking any prescription medication for emotional, behavioral, learning, attentional, or substance abuse problems. This variable was measured as a dichotomous variable whose possible

values are 0 and 1. The value, 1, indicates the children were taking medication.

Analytic Strategies

Determinants of Mental Health Services among Maltreated Children

For mental health service use, descriptive, bivariate and multivariate analyses were conducted to examine the factors for mental health service use. Descriptive analysis was conducted to present descriptive information on characteristics of children and mental health service use. The bivariate analyses were done to test the association between each of independent variables and mental health service use. Also, the bivariate analyses were conducted to test the association between independent variables and continued mental health service use between Wave 3 and 4. Then, multivariate analyses were used to test the unique contribution of each independent variable when the other variables are held constant. Logistic regression was used to test the factors related to mental health service use.

Effects of Mental Health Service Use on the Well-being of Maltreated Children

For well-being of children at the fourth wave, each of four analyses was conducted in terms of sub-measures of well-being such as the K-BIT, the SSRS, internalizing subscales of the CBCL, and externalizing subscale of the CBCL, to detect differences of child well-being based on the use of mental health treatments. For these analyses, linear regression was employed, controlling for medication and factors related to mental health services, because these three measures were measured as a continuous variable. In addition, for the effects of continued treatments at the fourth wave, separate

linear regression analyses were employed to test differences of well-being among not treated, previously treated, currently treated, and continuously treated children.

Robustness check

In addition to the analyses outlined above, this study applied propensity score matching method for a robustness check. It is well recognized that evaluating treatment effects with nonrandomized observational data is a difficult task due to selection bias. In principle, this bias can be eliminated (or at least reduced) if researchers pair treatment and control groups that are similar in terms of their observable characteristics so that the two groups are comparable in terms of the propensity of treatment participation. Propensity score matching (PSM), first proposed by Rosenbaum and Rubin (1983), provides a useful tool to pair the two groups especially when the dimensionality of the observable characteristics is high.

Following the convention in the literature, this study conducted PSM in three steps. First, I constructed a propensity score for each subject using logistic regression based on certain observable characteristics. Second, treated and untreated subjects were matched based on the propensity scores assigned in the first step. Many different ways of implementing matching were proposed. This study primarily used kernel matching algorithms. The results were robust to different kernels employed. In the final step, this study compared the mean improvement in overall well-being of treated children to that of untreated children and reported t statistics to indicate whether the difference in means was statistically significant.

CHAPTER IV

RESULTS

The primary purposes of this study were to (a) examine factors influencing maltreated children's accessibility to mental health services, (b) investigate the effects of mental health service use at Wave 3 on three developmental areas of child well-being at Wave 4, and (c) examine the effects of continued mental health service use between Waves 3 and 4 on child well-being at Wave 4. This chapter presents the findings of analyses conducted to investigate answers to these research questions.

Characteristics of the Study Sample

Table 4.1 presents descriptive statistics of the variables used in the study. The predisposing, enabling, and need factors were measured at Wave 1, and the control variable was measured at Wave 3. First, in terms of predisposing factors, approximately two thirds of the sample (63.8%) was 5 to 10 years old. Males and females were equally represented. Approximately, half of the children were Caucasian (51.4%), almost one third were African American (26.9%), and the rest were Hispanic (13.6%) or of another race (8.1%). The most common type of child maltreatment was neglect (50.4%), and a substantial proportion of children also reported physical abuse (28.3%). For placement type, the majority of children (91.7%) remained in their homes, 3% of children were placed in foster care, and 4.2 % were placed in kin care at baseline.

Table 1 displays caregivers' characteristics. The most predominant characteristics were being less than 35 years old (50.1%), Caucasian (56.3%), or high-school educated

(40.6 %). Almost one third of caregivers disclosed poor mental health status.

With regard to enabling factors, two thirds of the children (58.8%) had Medicaid or publicly funded insurance, and the largest cohort had less than \$15,000 (39.6%) in annual income. Regarding the characteristics of the need factors, 26 % of children were identified as having behavior problems by their caseworkers and 36.2 % had received mental health services at Wave 3. Additionally, almost half of children (49.6%) had not received mental health treatments at all between Waves 3 and 4, 13.4 % had received treatments at Wave 3 only, 14.3% had received treatments at Wave 4 only, and 22.8% had received treatments at Waves 3 and 4.

Finally, regarding the child's well-being, four areas of child development were measured. The standardized score of each of these measures was used. Child cognitive development was assessed with the Kaufman Brief Intelligence Test (KBIT), with higher scores representing better outcomes. The mean scores of the KBIT were 94.4 and 95.1 for Wave 1 and Wave 4, respectively. Mean scores of changes between Wave 1 and 4 was 0.7. Child social development was measured by the Social Skills Rating Systems (SSRS), with higher scores indicating better outcomes. The mean scores of the SSRS were 91.9 and 94.4 for Wave 1 and Wave 4, respectively. Mean scores of changes between Wave 1 and 4 was 2.5. Both internalizing behavior problems and externalizing behavior problems were assessed with the Child Behavior Checklist (CBCL), with higher scores representing more severe problems. The mean scores of internalizing behavior problems were 54.7 and 53.0 for Wave 1 and Wave 4, respectively. Mean scores of changes between Wave 1 and 4 was -1.7. The mean scores of externalizing behavior problems were 57.8 and 56.4 for Wave 1 and Wave 4, respectively. Mean scores of changes

between Wave 1 and 4 was -1.4.

Table 4.1

Characteristics of Study Cohort

Characteristics	Weighted Mean (S.D.)
<u>Predisposing Factors</u>	
Child Age Group (yr) [%]	
5-10	63.8
11-14	36.2
Child Gender [%]	
Male	50.5
Female	49.5
Child Race/Ethnicity [%]	
Caucasian	51.4
African American	26.9
Hispanic	13.6
Other Race	8.1
Child Maltreatment [%]	
Physical Abuse	28.3
Sexual Abuse	10.0
Emotional Abuse	7.9
Neglect	50.4
Other	3.4
Placement Type [%]	
In-home Care (with parent)	91.7
Foster Care	3.0
Kin Care	4.2
Group Home	0.2
Other Placement	1.0
Caregiver Age (yr) [%]	
<35 yrs	50.1
35-44 yrs	33.9
45-54 yrs	11.2
>54 yrs	4.9
Caregiver Race/Ethnicity [%]	
Caucasian	56.3
African American	24.3
Hispanic	13.2
Other Race	6.2
Caregiver Education Level [%]	
Below High School	31.5
High School	40.6
Caregiver Mental Health Status [%]	
Not Poor (>45)	66.2
Poor (<=45)	33.8

(Table 4.1 continues)

(Table 4.1 continued)

Characteristics	Weighted Mean (S.D.)
<u>Enabling Factors</u>	
Insurance Coverage [%]	
Medicaid	58.8
Private	30.0
No Insurance	11.2
Family Income [%]	
Less than 15000	39.6
15000-29999	31.4
30000 or more	29.1
<u>Need Factor</u>	
Perceived Need [%]	
No Need	74.0
Yes Need	26.0
<u>Control Variable</u>	
No	
<u>Mental Health Service Use</u>	82.9
Mental Health Service Use at W3 [%]	
No	63.9
Yes	36.2
Continued Treatment [%]	
Not Treated	49.6
Treated at W3 Only	13.4
Treated at W4 Only	14.3
Continuously Treated at W3 & W4	22.8
<u>Child Well-being</u>	
Cognitive Development (KBIT at W1)	94.4 (0.8)
Cognitive Development (KBIT at W4)	95.1 (1.2)
Cognitive Development (KBIT at W4-W1)	0.7 (0.7)
Social Development (SSRS at W1)	91.9 (0.9)
Social Development (SSRS at W4)	94.4 (0.8)
Social Development (SSRS at W4-W1)	2.5 (0.6)
Internalizing Behavior Problems (CBCL Internalizing at W1)	54.7 (0.7)
Internalizing Behavior Problems (CBCL Internalizing at W4)	53.0 (0.7)
Externalizing Behavior Problems (CBCL Externalizing at W1)	57.8 (0.7)
Externalizing Behavior Problems (CBCL Externalizing at W4)	56.4 (0.6)
N	1559

Note: Standard deviation appears in parentheses.

Mean and percentages are weighted using NANALW34.

KBIT = Kaufman Brief Intelligence Test.

SSRS = Social Skills Rating Systems.

CBCL = Child Behavior Checklist.

Bivariate Statistics for Mental Health Service Use at Wave 3 by Predictor Variables

Table 4.2 displays the bivariate statistics for the mental health service use at Wave 3 by each independent variable. The findings indicate that mental health service use among the sample significantly differed by some of the predisposing, enabling, and need factors. Regarding predisposing characteristics, child's age, gender, placement type, and caregiver age were significantly associated with children's access to mental health services. Older children were more likely to receive mental health services than younger children ($p < .001$), and male children were more likely to use services than female children ($p < .05$). Child's race/ethnicity and maltreatment type did not predict service use. Placement type was significantly associated with mental health service use ($p < .01$), indicating that children in out-of-home care were more likely to receive services than children who remained in in-home care. Caregiver age was also predictive of mental health service use of children ($p < .05$). Children whose caregivers were older than 54 were more likely to receive services than children with caregivers of other ages ($p < .05$). No significant differences were found by caregiver's race/ethnicity, education, or mental health status. In terms of enabling factors, insurance coverage significantly predicted children's receipt of mental health services ($p < .001$). Children who did not have insurance were much less likely to receive services than children who had Medicaid or private insurance. Family income did not predict mental health service use. Caseworker's perceived need was highly predictive of the mental health service use of children ($p < .001$). Children whose caseworkers perceived that they needed mental health treatment were more likely to receive services than children whose caseworkers decided that were not in need of such services.

Table 4.2

Mental Health Service Use by Predictor Variables

Variables	Mental Health Service Use at W3		
	Yes %	No%	χ^2
Child Age Group (yr)			***
5-10	29.9	70.1	
11-14	47.2	52.8	
Child Gender			*
Male	41.5	58.5	
Female	30.7	69.3	
Child Race/Ethnicity			
Caucasian	41.3	58.7	
African American	31.6	68.4	
Hispanic	31.8	68.2	
Other Race	25.8	74.2	
Child Maltreatment			
Physical Abuse	42.5	57.6	
Sexual Abuse	27.3	72.7	
Emotional Abuse	21.4	78.6	
Neglect	37.9	62.2	
Other	19.0	81.0	
Placement Type			**
In-home Care	34.0	66.0	
Foster Care	69.5	30.5	
Kin Care	51.5	48.5	
Group Home	67.0	33.0	
Other Placement	61.9	38.1	
Caregiver Age (yr)			*
<35 yrs	31.2	68.8	
35-44 yrs	42.4	57.6	
45-54 yrs	31.8	68.2	
>54 yrs	53.8	46.2	
Caregiver Race/Ethnicity			
Caucasian	41.9	58.1	
African American	28.8	71.2	
Hispanic	29.1	70.9	
Other Race	27.9	72.1	
Caregiver Education Level			
Below High School	36.4	63.6	
High School	34.5	65.5	
Above High School	38.3	61.7	
Caregiver Mental Health Status			
Not Poor (>45)	34.4	65.6	
Poor (<=45)	39.6	60.5	

(Table 4.2 continues)

(Table 4.2 continued)

Variables	Mental Health Service Use at W3		
	Yes %	No%	χ^2
Insurance Coverage			***
Medicaid	41.8	58.2	
Private	34.2	65.8	
No Insurance	11.8	88.2	
Family Income			
Less than 15000	36.0	64.0	
15000-29999	37.7	62.3	
30000 or more	34.7	65.3	
Perceived Need			***
No Need	27.3	72.7	
Yes Need	61.4	38.6	

Note: N=1559. Percentages are weighted using NANALW34.

* $p < .05$, ** $p < .01$, *** $p < .001$

Bivariate Statistics on Continued Mental Health Services by Independent Variables

Table 4.3 presents the results of the bivariate statistics for mental health service use between Waves 3 and 4 by independent variable. The results revealed a similar pattern of findings compared to Table 4.2, indicating that mental health service use between Waves 3 and 4 was significantly associated with child's age, child's gender, placement type, caregiver's age, insurance coverage, and caregiver's perceived need. First, in terms of predisposing factors, continued mental health service use between Waves 3 and 4 was significantly associated with child's age, child's gender, placement type, and caregiver's age. Younger children were more likely than older children to receive no mental health services and less likely to receive services at Wave 3 ($p < .001$). Compared to female children, male children were more likely to receive mental health services at both Wave 3 and Wave 4 ($p < .01$). No significant differences were found by child race/ethnicity or child maltreatment. Child's place of residence was related to continued mental health service use. Children in foster care or group homes were less

likely to receive no treatment and were more likely to receive continued mental health services between Waves 3 and 4 than children in in-home care or kin care ($p < .001$). Children whose caregivers were older were less likely than children whose caregivers were younger to receive no services and more likely to receive continued services between Waves 3 and 4 than children whose caregivers were younger ($p < .05$). Caregiver's race/ethnicity, education, and mental health status were not significantly associated with continued mental health service use.

Second, among enabling factors, insurance coverage was also significantly associated with continued mental health service use. Children who did not have insurance were significantly less likely than children who had Medicaid or private insurance ($p < .001$) to continue to receive mental health services between Waves 3 and 4. No significant difference was found by family income.

In addition, the caseworker's evaluation of the child's clinical need significantly predicted children's continued mental health service use, indicating that children with perceived need were more likely to receive the continued treatment between Waves 3 and 4 than children with no perceived need ($p < .001$).

Table 4.3

Mental Health Service Use between Waves 3 and 4 by Independent Variables

Variables	Mental Health Service Use between W3 & W4				χ^2
	No MHS %	MHS W3 only %	MHS W4 only %	MHS W3&W4 %	
Child Age Group (yr)					***
5-10	55.1	7.5	15.0	22.4	
11-14	39.9	23.7	12.9	23.5	
Child Gender					**
Male	43.2	11.8	15.3	29.7	
Female	56.1	15.0	13.2	15.7	
Child Race/Ethnicity					
Caucasian	45.9	13.2	12.8	28.1	
African American	55.4	13.0	15.1	18.6	
Hispanic	60.3	17.5	7.9	14.4	
Other Race	42.3	8.9	31.9	16.8	
Child Maltreatment					
Physical Abuse	41.1	16.8	16.4	25.7	
Sexual Abuse	48.7	7.9	24.0	19.4	
Emotional Abuse	62.6	5.5	16.0	15.9	
Neglect	51.9	13.8	10.2	24.1	
Other	57.9	14.2	23.1	4.8	
Placement Type					***
In-home Care	51.4	12.5	14.6	21.6	
Foster Care	14.1	11.7	16.4	57.8	
Kin Care	39.2	25.2	9.3	26.3	
Group Home	2.0	0	30.9	67.0	
Other Placement	38.0	54.3	0.1	7.6	
Caregiver Age (yr)					*
<35 yrs	58.4	11.4	10.5	19.8	
35-44 yrs	42.3	17.5	15.3	24.9	
45-54 yrs	42.2	6.1	26.0	25.7	
>54 yrs	27.2	21.9	19.0	31.9	
Caregiver Race/Ethnicity					
Caucasian	45.3	14.9	12.8	26.9	
African American	56.0	10.4	15.2	18.4	
Hispanic	60.3	14.9	10.6	14.2	
Other Race	40.8	7.8	31.3	20.1	
Caregiver Education					
Below High School	51.7	12.6	11.9	23.8	
High School	48.9	12.4	16.6	22.1	
Above High School	48.2	15.6	13.5	22.6	
Caregiver Mental Health Status					
Not Poor (>45)	49.7	12.0	15.9	22.5	
Poor (<=45)	49.4	16.2	11.1	23.4	

(Table 4.3 continues)

(Table 4.3 continued)

Variables	Mental Health Service Use between W3 & W4				χ^2
	No MHS %	MHS W3 only %	MHS W4 only %	MHS W3&W4 %	
Insurance Coverage					***
Medicaid	45.3	14.3	12.9	27.5	
Private	56.2	15.9	9.6	18.3	
No Insurance	54.4	2.1	33.8	9.7	
Family Income					
Less than 15000	51.1	12.1	13.0	23.9	
15000-29999	50.0	12.6	12.3	25.1	
30000 or more	47.1	16.0	18.2	18.7	
Perceived Need					***
No Need	58.6	12.3	14.1	15.0	
Yes Need	23.9	16.6	14.7	44.8	

Note: N=1559. Percentages are weighted using NANALW34.

MHS = Mental health service use

* $p < .05$, ** $p < .01$, *** $p < .001$

Bivariate Statistics on Child Well-Being for Independent Variables

Table 4.4 presents the unweighted bivariate statistics on child cognitive development (KBIT) between Waves 1 and 4 for independent variables. The higher scores represent improvement between Waves 1 and 4. The results show that children's KBIT scores differed significantly by age group from Wave 1 to Wave 4 ($F[1, 1557] = 9.82, p < .01$). Specifically, younger children had improved 1.85 points more than older children by Wave 4. A significant difference was also found by family income for KBIT scores over time ($F[2, 1557] = 3.70, p < .05$). The mean KBIT score between Wave 1 and Wave 4 was 0.13 points for children who had a family income under \$15,000, 0.23 points for children who had a family income of \$15,000–\$29,999, and 1.88 points for children who had a family income of \$30,000 or more. A post hoc Bonferroni test indicated that

the first and third groups differed significantly on their KBIT scores ($p < .05$). No significant differences were found by the other independent variables.

Table 4.4

Unweighted Bivariate Analysis for Child Cognitive Development (KBIT) between Waves 1 and 4 by Independent Variables

Variables	KBIT W4-W1			<i>p</i>
	Mean	SD	F (df)	
Child Age Group (yr)			9.82 (1, 1557)	**
5-10	1.41	11.68		
11-14	-0.44	10.86		
Child Gender			1.86 (1, 1557)	
Male	0.27	11.20		
Female	1.06	11.56		
Child Race/Ethnicity			0.82 (3, 1555)	
Caucasian	0.56	11.35		
African American	0.43	12.42		
Hispanic	1.76	10.12		
Other Race	0.41	9.86		
Child Maltreatment			0.89 (4, 1554)	
Physical Abuse	0.97	10.58		
Sexual Abuse	1.47	10.60		
Emotional Abuse	0.93	10.07		
Neglect	0.14	12.40		
Other	1.45	9.85		
Placement Type			2.34 (4, 1554)	
In-home Care (with parent)	0.29	11.19		
Foster Care	2.94	13.02		
Kin Care	1.49	11.41		
Group Home	-1.45	9.32		
Other Placement	2.41	8.88		
Caregiver Age (yr)			2.21 (3, 1555)	
<35 yrs	1.04	10.50		
35-44 yrs	-0.29	12.73		
45-54 yrs	1.30	11.15		
>54 yrs	1.93	10.30		
Caregiver Race/Ethnicity			0.51 (3, 1555)	
Caucasian	0.73	11.33		
African American	0.38	12.51		
Hispanic	1.48	9.37		
Other Race	0.12	10.76		
Caregiver Education Level			0.44 (2, 1556)	
Below High School	0.29	10.09		
High School	0.95	12.10		
Above High School	0.68	11.48		

(Table 4.4 continues)

(Table 4.4 continued)

Variables	Mean	KBIT W4-W1		<i>p</i>
		SD	F (df)	
Caregiver Mental Health Status			0.11 (1, 1557)	
Not Poor (>45)	0.77	11.72		
Poor (<=45)	0.56	10.79		
Insurance Coverage			0.14 (2, 1556)	
Medicaid	0.59	11.73		
Private	0.96	10.51		
No Insurance	0.74	11.24		
Family Income			3.70 (2, 1556)	*
Less than 15000	0.13	11.21		
15000-29999	0.23	11.91		
30000 or more	1.88	10.95		
Perceived Need			1.08 (1, 1557)	
No Need	0.90	10.89		
Yes Need	0.26	12.42		
MHS at W3			1.00 (1, 1557)	
No	0.95	11.28		
Yes	0.37	11.54		
MHS between W3 & W4			1.10 (3, 1555)	
Not Treated	0.92	11.35		
Treated at W3 Only	-0.71	12.24		
Treated at W4 Only	1.04	11.09		
Treated at W3 & W4	0.77	11.26		
Psychotropic Medication Use			0.03 (1, 1557)	
No	0.67	11.42		
Yes	0.80	11.34		

Note: N=1559

MHS=Mental health service use

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 4.5 presents the unweighted bivariate statistics on children's social development (SSRS) between Waves 1 and 4 by the independent variables. Positive scores represent an improvement in social development from Wave 1 to Wave 4. The mean SSRS scores were significantly different by child age group ($F[1, 1557] = 4.42, p < .05$). On average, younger children improved 1.70 points more than older children (4.16 points and 2.46 points, respectively). The mean SSRS scores between Waves 1 and 4 also differed significantly by placement type ($F[4, 1554] = 3.81, p < .01$). The mean SSRS score between Wave 1 and Wave 4 was 2.76 points for children in home care, 7.16 points for children in foster care, 5.71 points for children in kin care, 3.00 points for children in a group home, and 1.65 points for children with other placement types, respectively. A post hoc Bonferroni test indicated that children in home care and foster care differed significantly in their SSRS scores between Waves 1 and 4 ($p < .01$). No significant differences were found by the other independent variables.

Table 4.5

Unweighted Bivariate Analysis for Child Social Development (SSRS) between Waves 1 and 4 by Independent Variables

Variables	Mean	SSRS W4-W1		<i>p</i>
		SD	F (df)	
Child Age Group (yr)			4.42 (1, 1557)	*
5-10	4.16	15.23		
11-14	2.46	15.90		
Child Gender			0.04 (1, 1557)	
Male	3.58	15.61		
Female	3.43	15.43		
Child Race/Ethnicity			0.58 (3, 1555)	
Caucasian	4.01	14.96		
African American	2.83	15.63		
Hispanic	3.31	16.87		
Other Race	3.16	15.79		
Child Maltreatment			1.36 (4, 1554)	
Physical Abuse	2.41	15.69		
Sexual Abuse	3.88	15.04		
Emotional Abuse	5.90	14.84		
Neglect	3.67	15.92		
Other	2.02	11.92		
Placement Type			3.81 (4, 1554)	**
In-home Care (with parent)	2.76	14.73		
Foster Care	7.16	19.25		
Kin Care	5.71	16.07		
Group Home	3.00	22.83		
Other Placement	1.65	14.82		
Caregiver Age (yr)			1.09 (3, 1555)	
<35 yrs	3.69	15.08		
35-44 yrs	2.68	15.22		
45-54 yrs	3.87	15.67		
>54 yrs	5.30	18.58		
Caregiver Race/Ethnicity			0.97 (3, 1555)	
Caucasian	3.98	14.90		
African American	2.41	15.84		
Hispanic	3.64	17.84		
Other Race	3.72	13.98		
Caregiver Education Level			0.65 (2, 1556)	
Below High School	3.16	15.55		
High School	4.00	15.88		

(Table 4.5 continues)

(Table 4.5 continued)

Variables	Mean	SSRS W4-W1		<i>p</i>
		SD	F (df)	
Above High School	3.04	14.89		
Caregiver Mental Health Status			0.32 (1, 1557)	
Not Poor (>45)	3.66	15.98		
Poor (<=45)	3.20	14.62		
Insurance Coverage			0.93 (2, 1556)	
Medicaid	3.51	16.08		
Private	2.87	13.96		
No Insurance	4.89	15.06		
Family Income			2.53 (2, 1556)	
Less than 15000	2.31	15.83		
15000-29999	4.12	14.85		
30000 or more	4.19	15.80		
Perceived Need			0.25 (1, 1557)	
No Need	3.36	15.00		
Yes Need	3.79	16.54		
MHS at W3			0.37 (1, 1557)	
No	3.71	14.37		
Yes	3.23	16.85		
MHS between W3 & W4			0.29 (3, 1555)	
Not Treated	3.92	14.08		
Treated at W3 Only	3.22	16.67		
Treated at W4 Only	3.04	15.28		
Treated at W3 & W4	3.23	16.94		
Psychotropic Medication Use			0.14 (1, 1557)	
No	3.57	15.34		
Yes	3.20	16.19		

Note: N=1559.

MHS = Mental health service use

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 4.6 displays the results of the unweighted bivariate analysis for child internalizing behavioral problems (CBCL) by the independent variables. Higher scores represent more severe problems (a negative result). The difference of CBCL internalizing problems between Waves 1 and 4 significantly differed by caregivers' mental health status ($F[1, 1557] = 36.15, p < .001$). Specifically, the scores of children whose caregiver's mental health status was poor decreased 3.75 points more than the scores of children whose caregiver's mental health status was not poor (-4.71 points and -0.96 points, respectively). Children's internalizing problems between Waves 1 and 4 differed significantly by mental health service use between Waves 3 and 4 ($F[3, 1555] = 6.09, p < .001$). The mean CBCL internalizing score between Waves 1 and 4 was -3.32 points for untreated children, -3.88 points for children who were treated at Wave 3 only, -0.62 points for children who were treated at Wave 4 only, and -1.01 points for children who were treated at Waves 3 and 4, respectively. A post hoc Bonferroni test indicated that there were significant differences between untreated children and children who were treated at Wave 4 only ($p < .05$), between untreated children and children who were treated at both Waves 3 and 4 ($p < .01$), between children who were treated at Wave 3 only and children who were treated at Wave 4 only ($p < .05$), and between children who were treated at Wave 3 only and children who were treated at both Waves 3 and 4 ($p < .05$). The change in internalizing behaviors from Wave 1 to Wave 4 differed significantly 4 by psychotropic medication use ($F[1, 1557] = 7.96, p < .01$). Children who used psychotropic medication were significantly less likely to improve than children who did not take psychotropic medication (-0.58 points and -0.271 points, respectively). No significant differences were found for the other independent variables.

Table 4.6

*Unweighted Bivariate Analysis for Child Internalizing Behavior Problems (CBCL)
between Waves 1 and 4 by Independent Variables*

Variables	CBCL Internalizing Problems			<i>p</i>
	Mean	SD	F (df)	
Child Age Group (yr)			3.79 (1, 1557)	
5-10	-1.82	11.82		
11-14	-3.02	12.05		
Child Gender			1.22 (1, 1557)	
Male	-1.93	11.95		
Female	-2.59	11.89		
Child Race/Ethnicity			0.24 (3, 1555)	
Caucasian	-2.06	11.43		
African American	-2.52	12.10		
Hispanic	-2.30	12.82		
Other Race	-2.85	12.55		
Child Maltreatment			1.51 (4, 1554)	
Physical Abuse	-2.16	11.99		
Sexual Abuse	-3.66	11.96		
Emotional Abuse	-3.09	11.51		
Neglect	-1.76	12.00		
Other	-1.39	10.74		
Placement Type			2.35 (4, 1554)	
In-home Care (with parent)	-2.29	11.29		
Foster Care	-0.52	13.16		
Kin Care	-3.88	14.64		
Group Home	-8.09	15.39		
Other Placement	-0.24	11.70		
Caregiver Age (yr)			1.36 (3, 1555)	
<35 yrs	-2.42	11.57		
35-44 yrs	-2.64	11.19		
45-54 yrs	-2.15	12.88		
>54 yrs	-0.23	14.76		
Caregiver Race/Ethnicity			0.69 (3, 1555)	
Caucasian	-1.95	11.18		
African American	-2.41	12.23		
Hispanic	-3.08	12.81		
Other Race	-3.13	14.78		
Caregiver Education Level			0.58 (2, 1556)	
Below High School	-2.21	68.00		
High School	-2.01	11.87		
Above High School	-2.79	11.98		

(Table 4.6 continues)

(Table 4.6 continued)

Variables	CBCL Internalizing Problems			
	Mean	SD	F (df)	<i>p</i>
Caregiver Mental Health Status			36.15 (1,1557)	***
Not Poor (>45)	-0.96	12.08		
Poor (<=45)	-4.71	11.24		
Insurance Coverage			1.46 (2, 1556)	
Medicaid	-1.98	11.86		
Private	-3.21	11.47		
No Insurance	-2.11	13.21		
Family Income			0.16 (2, 1556)	
Less than 15000	-2.08	11.30		
15000-29999	-2.48	12.08		
30000 or more	-2.31	12.46		
Perceived Need			0.01 (1, 1557)	
No Need	-2.27	11.86		
Yes Need	-2.32	12.07		
MHS at W3			2.14 (1, 1557)	
No	-2.68	11.60		
Yes	-1.79	12.31		
MHS between W3 & W4			6.09 (3, 1555)	***
Not Treated	-3.32	11.369		
Treated at W3 Only	-3.88	12.23		
Treated at W4 Only	-0.62	12.10		
Treated at W3 & W4	-1.01	12.26		
Psychotropic Medication Use			7.96 (1, 1557)	**
No	-2.71	11.94		
Yes	-0.58	11.72		

Note: N=1559.

MHS = Mental health service use

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 4.7 presents the unweighted bivariate statistics on children's externalizing behavior problems (CBCL) between Waves 1 and 4 for the independent variables. The results show that caregiver's mental health status was significantly associated with the change in externalizing behavior problems between Waves 1 and 4 ($F[1, 1557] = 27.17, p < .001$). Specifically, the scores of children whose caregiver's mental health status was poor decreased 3.11 points more than the scores of children whose caregiver's mental health status was not poor (-3.79 points and -0.68 points, respectively). The change in CBCL externalizing problems between Waves 1 and 4 differed significantly by children's mental health service use between Waves 3 and 4 ($F[3, 1555] = 3.24, p < .05$). The mean CBCL externalizing score between Wave 1 and Wave 4 was -2.68 points for untreated children, -2.01 points for children who were treated at Wave 3 only, -0.23 points for children who were treated at Wave 4 only, and -1.15 points for children who were treated at Waves 3 and 4, respectively. A post hoc Bonferroni test revealed that there were significant differences between untreated children and children who were treated at Wave 4 only children ($p < .05$). No significant differences were found by the other independent variables.

Table 4.7

*Unweighted Bivariate Analysis for Child Externalizing Behavior Problems (CBCL)**between Waves 1 and 4 by Independent Variables*

Variables	CBCL Externalizing Problems			<i>p</i>
	Mean	SD	F (df)	
Child Age Group (yr)			1.19 (1, 1557)	
5-10	-1.53	10.92		
11-14	-2.18	11.99		
Child Gender			0.19 (1, 1557)	
Male	-1.92	10.91		
Female	-1.67	11.72		
Child Race/Ethnicity			0.44 (3, 1555)	
Caucasian	-1.87	10.62		
African American	-2.09	11.47		
Hispanic	-1.14	13.29		
Other Race	-1.31	11.30		
Child Maltreatment			0.54 (4, 1554)	
Physical Abuse	-2.17	11.48		
Sexual Abuse	-2.07	12.08		
Emotional Abuse	-1.90	11.18		
Neglect	-1.58	11.24		
Other	-0.07	8.00		
Placement Type			0.86 (4, 1554)	
In-home Care (with parent)	-1.95	10.83		
Foster Care	-0.63	12.63		
Kin Care	-1.80	13.35		
Group Home	-4.45	14.78		
Other Placement	0.88	13.25		
Caregiver Age (yr)			1.21 (3, 1555)	
<35 yrs	-2.01	11.12		
35-44 yrs	-2.05	11.11		
45-54 yrs	-1.38	11.63		
>54 yrs	-0.05	13.02		
Caregiver Race/Ethnicity			0.07 (3, 1555)	
Caucasian	-1.76	10.56		
African American	-1.69	11.43		
Hispanic	-1.85	13.73		
Other Race	-2.27	12.40		
Caregiver Education Level			0.31 (2, 1556)	
Below High School	-2.13	11.33		
High School	-1.57	11.37		
Above High School	-1.78	11.34		

(Table 4.7 continues)

(Table 4.7 continued)

Variables	CBCL Externalizing Problems			
	Mean	SD	F (df)	<i>p</i>
Caregiver Mental Health Status			27.17 (1, 1557)	***
Not Poor (>45)	-0.68	11.38		
Poor (<=45)	-3.79	11.02		
Insurance Coverage			2.06 (2, 1556)	
Medicaid	-1.37	11.59		
Private	-2.68	10.61		
No Insurance	-2.42	11.29		
Family Income			0.30 (2, 1556)	
Less than 15000	-1.57	11.55		
15000-29999	-1.73	11.40		
30000 or more	-2.11	11.07		
Perceived Need			3.81 (1, 1557)	
No Need	-1.40	11.10		
Yes Need	-2.60	11.83		
MHS at W3			1.55 (1, 1557)	
No	-2.10	10.90		
Yes	-1.38	11.89		
MHS between W3 & W4			3.24 (3, 1555)	*
Not Treated	-2.68	10.24		
Treated at W3 Only	-2.01	12.04		
Treated at W4 Only	-0.23	12.62		
Treated at W3 & W4	-1.15	11.84		
Psychotropic Medication Use			0.07 (1, 1557)	
No	-1.82	11.23		
Yes	-1.63	11.82		

Note: N=1559.

MHS = Mental health service use

* $p < .05$, ** $p < .01$, *** $p < .001$

Multivariate Analysis:

Factors Influencing Mental Health Service Use

A logistic regression analysis was conducted to test how these various predictors were related to the mental health service use (Wave 3) of maltreated children. Table 4.8 presents the results of the regression analysis. The primary purpose of this study was to

examine if predisposing, enabling, and need factors influenced maltreated children's access to mental health services. The results showed that several predisposing factors were associated with mental health service use.

In terms of children's predisposing factors, the results demonstrated that children's demographic characteristics (age and gender), maltreatment type, placement type, and caregiver's race/ethnicity significantly predicted mental health service use. Older children (aged 11-14) were 2.03 times more likely to receive mental health services than younger children ($p < .01$). Female children were less likely to receive mental health treatment than male children (OR = 0.55, $p < .01$). Maltreatment type was found to be related to mental health service use, with emotionally abused children being less likely to receive treatment than physically abused children (OR = 0.40, $p < .05$). Placement type was also found to be associated with mental health service use. Children in foster care were 4.89 times more likely to receive mental health services than children who received home care from their biological parents ($p < .01$). The results showed that caregiver race/ethnicity predicted use of mental health services. Children with African American caregivers were less likely to receive mental health services than children with Caucasian caregivers (OR = 0.24, $p < .01$).

With regard to enabling factors, children without any medical insurance had lower odds of receiving services than children with Medicaid or publicly funded medical insurance (OR = 0.17, $p < .001$).

As a need factor, perceived need was significantly related to the mental health service use of children. Specifically, children who were viewed as needing mental health services were more likely to obtain mental health services (OR = 4.20, $p < .001$).

Table 4.8

Logistic Regression of Mental Health Service Use at wave 3 among Maltreated Children

Independent Variables	OR	S. E.	95% CI	P
Child Age Group (ref.=5-10)				
11-14	2.03	0.44	1.32, 3.14	**
Child Gender (ref.=Male)				
Female	0.55	0.12	0.36, 0.85	**
Child Race/ Ethnicity (ref.=Caucasian)				
African American	2.03	0.97	0.78, 5.27	
Hispanic	0.90	0.42	0.36, 2.26	
Other Race	0.66	0.28	0.29, 1.55	
Maltreatment Type (ref.=Physical Abuse)				
Sexual Abuse	0.70	0.31	0.29, 1.70	
Emotional Abuse	0.40	0.18	0.16, 0.99	*
Neglect	1.11	0.27	0.69, 1.78	
Other	0.48	0.34	0.12, 1.99	
Placement Type (ref.=In-home Care)				
Foster Care	4.89	2.37	1.87, 12.83	**
Kin Care	1.81	0.90	0.67, 4.86	
Group Home	0.84	0.72	0.15, 4.60	
Other Placement	2.95	2.97	0.40, 21.87	
Caregiver Age (ref.=<35 yrs)				
35-44 yrs	1.48	0.33	0.95, 2.30	
45-54 yrs	0.65	0.23	0.33, 1.30	
>54 yrs	1.60	0.78	0.61, 4.24	
Caregiver Race/ Ethnicity (ref.=Caucasian)				
African American	0.24	0.13	0.09, 0.69	**
Hispanic	0.75	0.46	0.22, 2.52	
Other	0.74	0.33	0.30, 1.80	
Caregiver Education (ref.=Below HS)				
High School	0.81	0.19	0.50, 1.31	
Above High School	1.08	0.34	0.58, 2.01	
Caregiver Mental Health status (ref.=Not Poor)				
Poor (<=45)	1.23	0.26	0.81, 1.87	
Income (ref.=Less than 15000)				
15000-29999	0.88	0.22	0.53, 1.46	
30000 or more	0.83	0.20	0.52, 1.33	

(Table 4.8 continues)

(Table 4.8 continued)

Independent Variables	OR	S. E.	95% CI	P
Insurance Coverage (ref.=Medicaid)				
Private	0.80	0.21	0.48, 1.35	
No Insurance	0.17	0.06	0.08, 0.36	***
Perceived Need (ref.=No Need)				
Yes	4.20	0.92	2.71, 6.50	***

Note: OR = odds ratio; CI = confidence interval.

N=1559. * p < .05, ** p < .01, *** p < .001

Note: Dependent Variable = Mental health service use (yes/no).

Effects of Mental Health Service Use on Child Well-Being

The second objective of this study was to identify whether the use of mental health services improved children's well-being. The findings are presented in Tables 4.9-4.12.

Child Cognitive Development (KBIT)

Table 4.9 presents the results from the four linear regression models of child cognitive development by mental health service use. As discussed in the theoretical framework, child well-being is influenced by both individual and environmental factors. Each regression model included a number of children's individual and environmental variables as independent variables, as detailed below.

Model 1 examined whether children's cognitive development at Wave 4 differed between treated children and untreated children using an equation that included the KBIT score at Wave 4 as the outcome variable, without controlling for the baseline KBIT score. Models 2 and 3 examined whether mental health treatment at Wave 3 improved children's cognitive development between Waves 1 and 4. Whereas Model 2 presents the

coefficients from an equation with the difference between Wave 4 and the baseline as the outcome variable without controlling for the baseline KBIT scores, Model 3 adds the baseline KBIT scores to Model 2. Model 4 tested whether children with continued access to mental health treatment between Waves 3 and 4 improved in terms of cognitive development compared to children with no services, including mental health service use *between* Waves 3 and 4 instead of mental health services *at* Wave 3. This analysis included the difference in KBIT scores between Wave 4 and baseline as the outcome variable. Children's cognitive development was measured by using the KBIT, with higher scores representing better outcomes (positive results).

Models 1, 2, and 3 show that when children's individual and environmental variables were controlled, children who received mental health services at Wave 3 were not significantly different from children who did not receive mental health treatment. Mental health service was measured as a dichotomous variable, asking if a child had received any type of mental health services during the past 6 months. Mental health services included any of the following services: specialty mental health, community mental health services, private professionals, day treatment, schools, in-home counseling services, and general medical doctor.

In Model 1, the KBIT score of children who received mental health services at Wave 3 was 1.03 points lower than those of children who received no services. Both treated and untreated children's KBIT scores had increased over time from baseline to Wave 4. Contrary to the hypothesis, however, untreated children improved more than treated children although the difference in improvement between the two groups was statistically indistinguishable. Relative to case of untreated children, the KBIT scores of

treated children increased less by 1.33 points according to the estimate in Model 2 and by 1.24 points according to the estimate obtained controlling for the baseline KBIT scores in Model 3. Albeit insignificantly, controlling for the baseline scores reduced the impacts of mental health services on the KBIT.

Some of the child characteristics were significantly associated with the KBIT score, such as child's age, maltreatment type, placement type, and child's perceived need. According to Model 3, children who had higher KBIT scores at Wave 1 showed smaller improvement between Wave 1 and Wave 4 ($\beta = -0.29$; $p < .001$) than children with lower KBIT scores at Wave 1. The KBIT was associated with child's age. In Model 1, the older children scored 4.52 points lower than the younger children at Wave 4 ($p < .001$). Model 2 also shows that the older children were about 2.44 points worse than the younger children ($p < .05$). The amount of negative effect on the KBIT increased by 3.05 points when the baseline KBIT was controlled for ($p < 0.01$) (Model 3). Child maltreatment type was associated with the KBIT only in Model 1. Emotionally abused children scored 4.87 points higher than physically abused children ($p < .05$). Placement type was a significant predictor, but only in Model 2, indicating that children in other placement types were improving their KBIT scores more than children in home care ($\beta = 4.95$, $p < 0.05$).

On the other hand, caregiver education was significantly related to the KBIT at Wave 4. Model 1 shows that the KBIT increased with caregiver's education ($\beta = 5.95$ and 9.38 points for high school and above high school, respectively, when each was compared to below high school; $p < .001$). Finally, the KBIT at Wave 4 was significantly lower for children whose caseworker perceived that they needed services than children who were not viewed as needing services ($\beta = -6.45$; $p < .001$). After controlling for

baseline KBIT scores, the amount of change in the KBIT score (Wave 1 to Wave 4) was also statistically distinguishable between children with perceived need and children with no need ($\beta = -3.50$; $p < .05$).

On the other hand, Model 4 tested whether the continued treatment was more effective than no treatment. The estimates of Model 4 were consistent with the results of Model 3. The amount of change in KBIT scores was statistically indistinguishable between children who received continued treatment and children who received no treatment. The amount of change in the KBIT was significantly associated with the baseline KBIT score, child's age, and child's perceived need. The children who scored higher on the KBIT at baseline were less improved by 0.29 points between Waves 1 and 4 than children with lower KBIT scores at baseline. The older children showed improvement that was about 2.91 points lower than the improvement of the younger children ($p < .01$). The improvement of children with perceived need was 3.59 points less than the improvement of children with no perceived need ($p < .05$).

Table 4.9

Effects of Mental Health Services on Child Cognitive Development (KBIT)

Variables	Model 1 (W4)			Model 2 (W4-W1)			Model 3 (W4-W1)			Model 4 (W4-W1)		
	B	S.E.	P	B	S.E.	P	B	S.E.	P	B	S.E.	P
KBIT at W1							-0.29	0.06***		-0.29	0.06***	
MHS at W3 (ref.=No)												
Yes	-1.03	1.24		-1.33	1.22		-1.24	1.02				
MHS between W3 & W4 (ref.=No)												
Treated at W3 only										-1.84	1.50	
Treated at W4 only										0.64	1.01	
Continuously treated at W3 & W4										-0.46	1.11	
Psychotropic Medication Use (ref.=No)												
Yes	1.31	2.02		3.44	1.79		2.82	1.56		2.49	1.41	
Child Age Group (ref.=5-10)												
11-14	-4.52	1.11***		-2.44	0.97*		-3.05	0.92**		-2.91	0.89**	
Child Gender (ref.=Male)												
Female	-2.08	1.42		-1.07	0.81		-1.37	0.87		-1.31	0.86	
Child Race/ Ethnicity (ref.=Caucasian)												
African American	-1.97	3.28		0.09	1.96		-0.51	1.97		-0.36	1.98	
Hispanic	-3.78	3.14		-0.86	1.68		-1.71	1.75		-1.52	1.76	
Other Race	-5.26	3.34		-0.12	1.71		-1.62	1.91		-1.61	1.90	
Maltreatment Type (ref.=Physical Abuse)												
Sexual Abuse	1.69	2.58		0.59	1.54		0.91	1.56		0.83	1.54	
Emotional Abuse	4.87	2.10*		1.37	1.68		2.39	1.63		2.33	1.62	
Neglect	-0.56	1.51		-0.75	1.36		-0.69	1.23		-0.69	1.22	
Other	0.51	3.12		-0.17	2.74		0.03	2.54		0.14	2.54	
Placement Type (ref.=In-home Care)												
Foster Care	0.17	2.70		2.15	2.39		1.57	2.12		1.46	2.11	
Kin Care	1.99	2.11		2.22	1.62		2.16	1.45		2.29	1.51	
Group Home	0.85	3.25		1.78	5.67		1.51	4.43		1.19	4.43	
Other Placement	1.89	5.26		4.95	2.19*		4.06	2.44		4.37	2.53	
Caregiver Age (ref.=<35 yrs)												
35-44 yrs	0.85	1.55		0.65	1.23		0.70	1.12		0.69	1.11	
45-54 yrs	-2.66	2.04		-0.23	1.39		-0.94	1.37		-1.08	1.33	
>54 yrs	-2.11	1.99		-2.60	1.88		-2.46	1.60		-2.56	1.62	

(Table 4.9 continues)

(Table 4.9 continued)

Variables	Model 1 (W4)			Model2 (W4-W1)			Model 3 (W4-W1)			Model 4 (W4-W1)		
	B	S.E.	P	B	S.E.	P	B	S.E.	P	B	S.E.	P
Caregiver Race (ref.=Caucasian)												
African American	-4.76	3.37		0.35	2.09		-1.14	2.21		-1.27	2.28	
Hispanic	-0.41	2.33		1.75	1.81		1.12	1.63		1.06	1.64	
Other	2.05	3.71		1.28	2.22		1.51	2.48		1.39	2.49	
Caregiver Education (ref.=Below HS)												
High School	5.95	1.34	***	-0.33	0.88		1.50	0.92		1.44	0.90	
Above High School	9.38	1.76	***	-1.49	1.16		1.68	0.93		1.66	0.92	
Caregiver Mental Health status (ref.=No)												
Poor (<=45)	1.70	1.30		0.56	1.05		0.89	0.95		0.90	0.95	
Income (ref.=Less than 15000)												
15000-29999	-1.64	1.30		-0.27	1.13		-0.67	1.02		-0.67	1.03	
30000 or more	1.83	1.77		0.11	1.46		0.62	1.31		0.60	1.31	
Insurance Coverage (ref.=Medicaid)												
Private	2.16	1.29		1.50	1.32		1.69	1.15		1.76	1.14	
No Insurance	0.30	2.55		-1.39	1.64		-0.90	1.73		-1.00	1.73	
Perceived Need (ref.=No)												
Yes	-6.45	1.64	***	-2.28	1.56		-3.50	1.45	*	-3.59	1.49	*
Constant	95.57	2.93	***	2.35	1.73		29.54	6.40	***	29.13	6.31	***
R-square	0.22			0.05			0.17			0.18		

Note: N=1559. * p < .05, ** p < .01, *** p < .001

MHS = Mental health service use

Child Social Development (SSRS)

Table 4.10 presents the results from the four linear regression models of the child's social development by mental health service use. The four regression models were run for this variable in the same manner as the analyses described above.

The first model shows that the SSRS at Wave 4 was significantly different between children who received mental health services at Wave 3 and those who received no service. Model 1 indicates that the average SSRS score at Wave 4 was 5.5 points worse for treated children than untreated children ($p < .01$). This result was consistent with the finding of Model 3. Children who received mental health services at Wave 3 were significantly less improved than children who received no service, in terms of the change of the SSRS ($\beta = -3.23$; $p < .05$). In contrast to the hypothesis of this study, while the children who received mental health services showed some improvement in SSRS the magnitude of the improvement was not as much as the amount of improvement of the untreated children.

Besides mental health services, children's individual and environmental factors were also associated with the SSRS. For instance, children who used psychotropic medication had 6.23 lower points on the SSRS than those who used no psychotropic medication ($p < .05$) in Model 1. In Model 3, children's social functioning between baseline and Wave 4 was less improved for children who used psychotropic medication than those who used no medication ($\beta = -4.56$; $p < .05$). Child gender was significantly predictive of the SSRS. Not only female children were more likely to have lower scores than male children ($\beta = -5.14$; $p < .01$ in Model 1), but also they were experiencing slower improvement between Waves 1 and 4 ($\beta = -3.69$; $p < .01$ in Model 3).

With respect to caregiver characteristics, the only significant associations with SSRS scores were found in Model 1. Children whose caregiver listed their race as “other” had SSRS scores that were 8.3 points lower than the scores of children with Caucasian caregivers ($p < .01$). The SSRS increased with caregiver’s education ($\beta = 4.33$ and 6.17 points for high school and above high school, respectively, when each was compared to below high school; $p < .05$ and $p < .01$). Children with perceived need scored 6.05 points worse than children with no perceived need ($p < .01$), in terms of the SSRS at Wave 4. On the other hand, the child’s age and race and the caregiver’s mental health status were all significantly related to the change of the child’s social functioning between Waves 1 and 4 in Model 2. Older children were significantly worse off than younger children in terms of the change in SSRS scores ($\beta = -3.54$; $p < .05$). However, when the baseline SSRS was controlled, the amount of change decreased and the effect became non-significant. Regarding the change in SSRS scores, Caucasian children showed larger improvement than other-race children by 4.59 points on average ($p < .05$). Like child age, the amount of change and the significance of the effect were changed after controlling for the baseline SSRS. In Model 2, the change in SSRS scores was significantly different by caregiver’s mental health status; specifically, children whose caregivers had mental health problems were better off than their counterparts between baseline and Wave 4 ($\beta = 3.17$; $p < .05$). The amount of change decreased and the effect was not significant after controlling for baseline SSRS.

On the other hand, Model 4 tested whether the children with continued treatment had better outcomes than the children with no treatment. The results show that the children who only received mental health treatment at Wave 4 ($\beta = -3.82$; $p < .01$) and

the children who received mental health treatment at both Wave 3 and Wave 4 ($\beta = -5.13$; $p < .01$) were significantly less improved than the children who received no treatment, even when baseline SSRS was controlled. The amount of change in the SSRS scores was significantly associated with the baseline SSRS score, children's psychotropic medication use, and child gender. The children who had higher baseline SSRS scores lowered their scores 0.46 points (a negative result) more by Wave 4 than children who had lower baseline scores ($p < .001$). Children with psychotropic medication use had score reductions of 3.99 points (a negative result) more than children who did not use medication ($p < .05$). Female children had scores that were about 3.85 points lower than male children ($p < .01$).

Table 4.10

Effects of Mental Health Services on Child Social Development (SSRS)

Variables	Model 1 (W4)			Model 2 (W4-W1)			Model 3 (W4-W1)			Model 4 (W4-W1)		
	B	S.E.	P	B	S.E.	P	B	S.E.	P	B	S.E.	P
SSRS at W1							-0.45	0.04	***	-0.46	0.04	***
MHS at W3 (ref.=No)												
Yes	-5.50	1.74	**	-1.38	1.46		-3.23	1.35	*			
MHS between W3 & W4 (ref.=No)												
Treated at W3 only										-3.09	1.66	
Treated at W4 only										-3.82	1.35	**
Continuously treated at W3 & W4										-5.13	1.56	**
Psychotropic Medication Use (ref.=No)												
Yes	-6.23	2.60	*	-3.19	1.82		-4.56	1.86	*	-3.99	1.83	*
Child Age Group (ref.=5-10)												
11-14	-0.23	1.72		-3.54	1.57	*	-2.05	1.38		-2.16	1.39	
Child Gender (ref.=Male)												
Female	-5.14	1.60	**	-2.50	1.36		-3.69	1.41	**	-3.85	1.15	**
Child Race/ Ethnicity (ref.=Caucasian)												
African American	3.13	3.70		-1.71	2.00		0.47	2.34		0.49	2.42	
Hispanic	1.68	3.93		-3.02	2.23		-0.91	2.55		-1.28	2.47	
Other Race	2.69	2.63		-4.59	2.25	*	-1.32	2.02		-0.82	1.94	
Maltreatment Type (ref.=Physical Abuse)												
Sexual Abuse	-2.82	2.62		2.26	2.27		-0.02	2.17		0.10	2.09	
Emotional Abuse	-0.04	2.88		5.36	3.25		2.93	2.82		2.86	2.79	
Neglect	0.33	1.63		1.43	1.62		0.94	1.43		0.77	1.41	
Other	-2.01	3.78		0.53	2.12		-0.61	2.27		-0.87	2.43	
Placement Type (ref.=In-home Care)												
Foster Care	-4.31	2.93		4.74	2.85		0.67	2.30		0.71	2.24	
Kin Care	2.07	2.78		2.20	2.82		2.14	2.54		1.65	2.53	
Group Home	-5.42	6.55		-10.27	6.50		-8.09	6.14		-7.17	5.89	
Other Placement	-2.49	3.33		2.28	3.12		0.14	2.65		-0.69	2.53	
Caregiver Age (ref.=<35 yrs)												
35-44 yrs	0.04	1.53		0.91	1.54		0.52	1.29		0.65	1.29	
45-54 yrs	0.25	2.39		0.24	1.96		0.24	1.87		0.80	1.80	
>54 yrs	3.58	2.47		-4.02	3.85		-0.60	2.94		0.06	2.88	

(Table 4.10 continues)

(Table 4.10 continued)

Variables	Model 1 (W4)			Model2 (W4-W1)			Model3 (W4-W1)			Model 4 (W4-W1)		
	B	S.E.	P	B	S.E.	P	B	S.E.	P	B	S.E.	P
Caregiver Race (ref.=Caucasian)												
African American	-3.45	3.63		0.22	2.25		-1.43	2.47		-1.47	2.52	
Hispanic	-2.19	3.45		0.05	2.35		-0.96	2.42		-0.93	2.33	
Other	-8.30	2.93 **		-0.80	2.77		-4.17	2.26		-4.05	2.15	
Caregiver Education (ref.=Below HS)												
High School	4.33	1.80 *		-0.56	1.78		1.64	1.52		1.87	1.48	
Above High School	6.17	1.90 **		-0.22	1.99		2.65	1.72		2.74	1.71	
Caregiver Mental Health status (ref.=No)												
Poor (<=45)	-0.77	1.50		3.17	1.44 *		1.40	1.19		1.31	1.19	
Income (ref.=Less than 15000)												
15000-29999	3.25	1.80		1.87	1.55		2.49	1.49		2.50	1.54	
30000 or more	-0.89	2.15		-0.47	2.15		-0.66	1.85		-0.43	1.84	
Insurance Coverage (ref.=Medicaid)												
Private	0.03	1.77		0.35	1.96		0.21	1.65		-0.15	1.63	
No Insurance	0.01	2.01		-2.60	2.76		-1.43	2.14		-0.93	2.26	
Perceived Need (ref.=No)												
Yes	-6.05	1.69 **		1.81	1.50		-1.72	1.42		-1.51	1.41	
Constant	98.09	2.45 ***		3.99	1.91 *		46.30	4.00 ***		48.01	4.18 ***	
R-square	0.18			0.06			0.27			0.28		

Note: N=1559. * p < .05, ** p < .01, *** p < .001

MHS = Mental health service use

Child Internalizing Behavior Problems (CBCL)

Table 4.11 displays the results of the four linear regression models of the children's internalizing behavior problems. As with the previous table, the models controlled for children's individual and environmental variables and were run in the same manner as described above. Children's internalizing behavior problems were assessed with the Child Behavior Checklist (CBCL), with higher scores representing more severe problems.

Model 1 shows that internalizing behavior problems were significantly different between children who received mental health services and those who did not. The children who received mental health services scored 4.64 points higher than the children who received no services ($p < .001$). However, the direction of the effect reversed in Model 2. Although the finding was not statistically significant, Model 2 shows that children's internalizing behavior problems decreased 0.72 points more for children who received mental health services between Wave 1 and Wave 4 than for children who received no treatment. When baseline internalizing behavior symptoms were controlled for, the direction and significance of the mental-health-service coefficient changed again. In contrast to the hypothesis of this study, yet being consistent with two previous cases, children who received mental health services were less improved than untreated children ($\beta = 2.34; p < .05$).

In addition to mental health service use, psychotropic medication use, placement type, caregiver's mental health status, and child's perceived need were significantly associated with children's internalizing behavior problems in Model 1. For instance, Model 1 shows that children who used psychotropic medication scored 3 points higher

than those who did not use medication ($p < .05$). Children who received their care from a group home scored 7.19 points higher than children in home care ($p < .05$), whereas children in other placement types scored 5.88 points lower than children in home care ($p < .05$). Children whose caregiver had poor mental health scored 2.8 points higher than those whose caregiver had no mental health problems ($p < .01$). However, the direction of this finding reversed in Model 2. Internalizing behavior problems decreased significantly more among children whose caregiver had poor mental health than children whose caregiver had no mental health problems ($\beta = -3.82$; $p < .001$). Children's perceived need for mental health services was predictive of internalizing behavior problems at Wave 4. Children with perceived need not only had more internalizing behavior symptoms at Wave 4 ($\beta = 3.86$; $p < .001$ in Model 1) but also showed slower improvement over time from Wave 1 to Wave 4 ($\beta = 2.93$; $p < .05$ in Model 3) relative to children with no perceived need. A similar result was also found in Model 4 ($\beta = 2.44$; $p < .05$).

Contrary to the hypothesis, children who were receiving mental health services at Wave 4 were less improved than children who were not receiving mental health services, even when baseline internalizing problems were controlled ($\beta = 4.79$; $p < .01$). Interestingly, continued access to mental health services had slowed down improvement in CBCL even more. Children, who continuously received mental health services between Wave 3 and Wave 4, were less improved by 7.05 points than children who did not receive services ($p < .001$). Model 4 also shows that the more severe the baseline internalizing symptoms were, the more internalizing behavior symptoms decreased between Waves 1 and 4 ($p < .001$).

Table 4.11

Effects of Mental Health Services on Child Internalizing Behavior Problems (CBCL)

Variables	Model 1 (W4)			Model 2 (W4-W1)			Model 3 (W4-W1)			Model 4 (W4-W1)		
	B	S.E.	P	B	S.E.	P	B	S.E.	P	B	S.E.	P
CBCL Internalizing at W1							-0.57	0.05 ***		-0.62	0.04 ***	
MHS at W3 (ref.=No)												
Yes	4.64	1.19 ***		-0.72	1.17		2.34	0.95 *				
MHS between W3 & W4 (ref.=No)												
Treated at W3 only										-0.17	1.44	
Treated at W4 only										4.79	1.63 **	
Continuously treated at W3 & W4										7.05	0.98 ***	
Psychotropic Medication Use (ref.=No)												
Yes	3.00	1.24 *		0.55	1.20		1.95	1.07		0.28	0.97	
Child Age Group (ref.=5-10)												
11-14	0.24	1.15		-0.67	1.01		-0.15	0.91		0.52	0.90	
Child Gender (ref.=Male)												
Female	0.05	1.16		0.58	1.20		0.28	1.06		0.54	1.02	
Child Race/ Ethnicity (ref.=Caucasian)												
African American	-0.09	3.32		4.32	2.21		1.80	2.64		2.25	2.29	
Hispanic	-0.43	2.26		0.89	3.20		0.14	2.46		1.12	2.39	
Other Race	0.24	2.21		-0.36	2.58		-0.02	2.05		-0.21	1.90	
Maltreatment Type (ref.=Physical Abuse)												
Sexual Abuse	-0.95	1.67		-2.51	2.45		-1.62	1.88		-1.97	2.03	
Emotional Abuse	0.74	1.43		0.08	1.45		0.46	1.15		0.25	1.10	
Neglect	0.59	1.08		0.69	1.28		0.63	0.99		0.71	0.96	
Other	-1.36	2.69		0.00	2.42		-0.78	2.03		-0.25	2.37	
Placement Type (ref.=In-home Care)												
Foster Care	3.16	1.62		0.02	1.71		1.81	1.28		1.39	1.08	
Kin Care	-2.62	2.31		-4.60	2.41		-3.47	2.25		-2.52	1.98	
Group Home	7.19	3.49 *		1.49	3.24		4.75	3.07		3.14	2.78	
Other Placement	-5.88	2.53 *		-1.90	3.45		-4.17	2.76		-2.60	2.44	
Caregiver Age (ref.=<35 yrs)												
35-44 yrs	-0.87	1.21		0.27	1.10		-0.38	1.02		-0.56	0.93	
45-54 yrs	-0.44	1.53		-0.41	1.31		-0.43	1.27		-1.36	1.18	
>54 yrs	-3.20	2.15		1.71	2.42		-1.10	2.09		-2.06	1.74	
Caregiver Race/ Ethnicity (ref.=Caucasian)												
African American	1.33	3.31		-3.48	1.97		-0.73	2.57		-1.12	2.30	

(Table 4.11 continues)

(Table 4.11 continued)

Variables	Model 1 (W4)			Model 2 (W4-W1)			Model 3 (W4-W1)			Model 4 (W4-W1)		
	B	S.E.	P	B	S.E.	P	B	S.E.	P	B	S.E.	P
Hispanic	-2.98	2.13		-2.87	2.52		-2.93	2.06		-3.28	2.03	
Other	2.45	2.51		-2.04	3.99		0.52	2.90		0.11	2.76	
Caregiver Education (ref.=Below HS)												
High School	-1.32	1.23		-0.45	1.27		-0.95	1.10		-1.26	1.12	
Above High School	-2.63	1.73		-1.38	1.69		-2.09	1.53		-2.14	1.46	
Caregiver Mental Health status (ref.=No)												
Poor (<=45)	2.80	1.02	**	-3.82	0.96	***	-0.04	0.89		0.38	0.87	
Income (ref.=Less than 15000)												
15000-29999	0.31	1.29		1.46	1.19		0.80	1.06		0.74	1.11	
30000 or more	2.37	1.45		1.91	1.36		2.17	1.28		2.03	1.29	
Insurance Coverage (ref.=Medicaid)												
Private	-1.27	1.37		-1.17	1.41		-1.23	1.23		-0.74	1.23	
No Insurance	-1.36	2.00		-1.03	2.48		-1.22	2.05		-1.89	2.06	
Perceived Need (ref.=No)												
Yes	3.86	1.06	***	1.69	1.41		2.93	1.15	*	2.44	1.14	*
Constant	50.04	2.03	***	-0.67	1.75		28.31	2.67	***	29.70	2.49	***
R-square	0.19			0.06			0.34			0.38		

Note: N=1559. * p < .05, ** p < .01, *** p < .001

MHS = Mental health service use

Child Externalizing Behavior Problems (CBCL)

Table 4.12 presents the results of the four linear regression models for the child's externalizing behavior problems. As with the previous table, the models progressively controlled for children's individual and environmental variables and were run in the same manner as described above.

Model 1 shows that externalizing behavior problems were significantly distinguishable between the children who received mental health services and those who received no services. The children who received mental health services had externalizing behavior scores that were 5.44 points higher (a negative result) than children who received no services ($p < .001$). In Model 2, the direction of effect did not change, but the magnitude of coefficient decreased and the result was no longer statistically significant. When the baseline externalizing behavior symptoms were controlled for, externalizing behavior problems decreased 2.76 points less between Wave 1 and Wave 4 for children who received mental health services than those who received no services ($p < .01$).

Besides mental health service use, other variables were also associated with children's externalizing behavior problems. In Model 1, children who used psychotropic medication scored 4.86 points higher than those who did not use medication ($p < .001$). Model 3 shows that externalizing behavior symptoms decreased less for children who used psychotropic medication than for those who used no medication. Caregiver's age was also a significant predictor, with externalizing symptoms decreasing with age ($\beta = -3.10, -4.80, \text{ and } -4.10$ points for 35-44 years, 45-54 years, and over 54 years, respectively, when each was compared to below 35 years). This association remained significant after controlling for the baseline externalizing behavior problems in Model 3

($\beta = -2.01$ and -3.14 points for 35-44 years and 45-54 years, respectively, when each was compared to below 35 years). Child's age and perceived need were only significant in Model 1, with older children scoring 2.73 points higher than younger children on externalizing behavior problems ($p < .05$). The children with perceived need scored 3.65 points higher than those with no perceived need ($p < .001$). After controlling for the baseline score, no significant differences remained. Caregiver's mental health was also important, with children whose caregiver had mental health problems improving significantly more than children whose caregiver had no mental health problems ($\beta = -4.52$; $p < .001$). However, this difference was not significant when the baseline externalizing symptoms were controlled. Placement type was related to the change in externalizing problems after controlling for externalizing problems at baseline. The children who received their care in a group home were worse off than those who received home care. Finally, the children who had more externalizing behavior symptoms improved significantly more than children who had fewer symptoms ($\beta = -0.48$; $p < .001$).

When continued mental health service use was entered in the analysis, the results were consistent with the findings of Model 3. Children who had higher scores on the externalizing-behaviors measure improved significantly more than children who had lower scores ($\beta = -0.52$; $p < .001$). Children whose caregiver was aged 45-54 improved significantly more than children whose caregiver was under 35 ($\beta = -3.97$; $p < .01$). In terms of the effects of continued mental health services, the externalizing behavior problem decreased less among children who received treatment only at Wave 4 compared to children who received no treatment at all ($\beta = 4.53$; $p < .01$). The difference increased

between children who received treatment at both Waves 3 and 4 and children who received no treatment ($\beta = 5.70; p < .001$).

Table 4.12

Effects of Mental Health Services on Child Externalizing Behavioral Problems (CBCL)

Variables	Model 1 (W4)			Model 2 (W4-W1)			Model 3 (W4-W1)			Model 4 (W4-W1)		
	B	S.E.	P	B	S.E.	P	B	S.E.	P	B	SE.	P
CBCL Externalizing at W1							-0.48	0.04	***	-0.52	0.04	***
MHS at W3 (ref.=No)												
Yes	5.44	1.24	***	0.26	0.97		2.76	0.92	**			
MHS between W3 & W4 (ref.=No)												
Treated at W3 only										2.02	1.30	
Treated at W4 only										4.53	1.33	**
Continuously treated at W3 & W4										5.70	1.11	***
Psychotropic Medication Use (ref.=No)												
Yes	4.86	1.11	***	0.96	1.33		2.84	1.05	**	1.98	1.03	
Child Age Group (ref.=5-10)												
11-14	2.73	1.10	*	-0.26	0.91		1.19	0.85		1.57	0.86	
Child Gender (ref.=Male)												
Female	1.20	0.90		0.84	0.91		1.01	0.73		1.22	0.69	
Child Race/ Ethnicity (ref.=Caucasian)												
African American	1.76	2.76		0.99	1.86		1.36	1.89		1.59	1.61	
Hispanic	-2.20	2.34		1.00	2.76		-0.55	2.21		-0.01	2.10	
Other Race	0.38	2.10		2.57	2.62		1.51	2.02		1.02	1.95	
Maltreatment Type (ref.=Physical Abuse)												
Sexual Abuse	2.57	1.33		0.62	1.53		1.56	1.14		1.37	1.21	
Emotional Abuse	1.83	1.73		0.45	2.61		1.12	2.04		1.12	1.89	
Neglect	-0.14	1.15		-0.15	1.10		-0.15	0.96		0.01	0.93	
Other	-0.21	2.37		2.11	2.01		0.99	1.84		1.27	2.15	
Placement Type (ref.=In-home Care)												
Foster Care	2.71	1.83		-0.58	1.30		1.01	1.16		0.85	1.07	
Kin Care	-0.10	2.01		-0.79	1.66		-0.45	1.65		0.22	1.65	
Group Home	7.20	4.11		7.36	4.42		7.28	3.56	*	6.03	3.49	
Other Placement	-0.74	2.07		1.92	2.15		0.63	1.27		1.68	1.27	
Caregiver Age (ref.=<35 yrs)												
35-44 yrs	-3.10	1.11	**	-0.99	1.06		-2.01	0.93	*	-2.23	0.88	
45-54 yrs	-4.80	1.69	**	-1.59	1.39		-3.14	1.27	*	-3.97	1.30	**
>54 yrs	-4.10	1.91	*	0.49	2.05		-1.73	1.55		-2.57	1.48	
Caregiver Race/ Ethnicity (ref.=Caucasian)												
African American	-0.92	2.57		-0.41	1.74		-0.66	1.75		-0.84	1.54	

(Table 4.12 continues)

(Table 4.12 continued)

Variables	Model 1			Model 2			Model 3			Model 4		
	(W4)			(W4-W1)			(W4-W1)			(W4-W1)		
	B	S.E.	P	B	S.E.	P	B	S.E.	P	B	S.E.	P
Hispanic	-1.80	2.22		-0.67	2.53		-1.22	2.02		-1.39	1.91	
Other	2.22	2.19		0.05	3.36		1.10	2.58		0.83	2.22	
Caregiver Education (ref.=Below HS)												
High School	0.12	1.19		1.27	1.13		0.71	1.01		0.45	0.98	
Above High School	-0.99	1.28		0.66	1.41		-0.14	1.16		-0.22	1.17	
Caregiver Mental Health status (ref.=No)												
Poor (<=45)	1.38	1.02		-4.52	1.14	***	-1.67	0.98		-1.41	1.00	
Income (ref.=Less than 15000)												
15000-29999	-0.97	1.02		0.51	1.19		-0.20	0.94		-0.24	0.93	
30000 or more	1.62	1.43		0.81	1.19		1.20	1.11		0.99	1.08	
Insurance Coverage (ref.=Medicaid)												
Private	-0.73	1.38		-0.92	1.61		-0.83	1.39		-0.39	1.37	
No Insurance	-0.89	1.27		-0.24	1.29		-0.55	1.08		-1.16	1.20	
Perceived Need (ref.=No)												
Yes	3.65	0.90	***	-0.56	0.91		1.48	0.81		1.21	0.83	
Constant	52.49	1.82	***	-1.12	1.34		24.80	2.42	***	25.58	2.47	***
R-square	0.23			0.06			0.28			0.30		

Note: N=1559. * p < .05, ** p < .01, *** p < .001

MHS = Mental health service use

Robustness Check with Propensity Score Matching

Propensity score matching enables researchers to compare treated and non-treated with the same or similar propensity scores and hence makes it possible to estimate the average treatment effect on the treated (ATT): difference between the expected outcomes with and without participation in mental health service use for the treatment participants. Table 4.14 presents the estimated ATT for each measure of child well-being.

Overall, the results in Table 4.14 reinforces the main finding from the regression analyses: while children who received mental health service showed some improvement

in various measures of well-being, those children were in fact less improved than children who received no services. There are several more specific observations worth mentioning. First, the difference in improvements in cognitive development (KBIT) between treated and untreated children was not significant, which is consistent with the result from the regression analysis. Second, both treated and untreated children showed improvement in social development (SSRS) over time. However untreated children improved 3.49 points more on average than treated children (6.69 points vs. 3.20 points). Third, internalizing and externalizing behavior symptoms (CBCL) decreased over time for both treated and untreated children. However, the latter showed a larger decrease in symptoms. Internalizing symptoms decreased on average by 1.87 points among children in treatment group and by 5.40 points among untreated children (an adjusted mean difference of 3.52). Similarly, externalizing behavior problems decreased on average by 1.39 points among children in treatment group and by 4.76 points among untreated children (an adjusted mean difference of 3.36).

Table 4.13

Description of Matching Schemes and Resample Sizes

Scheme	N of the new sample	
	Treated	Non-treated
Kernel-based matching	666	847

Table 4.14

Propensity Score Matching Results for Child Well-being by Mental Health Service Use

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
KBIT W4-1	Unmatched	.556	.917	-.362	.589	-0.61
	ATT	.556	1.126	-.571	.676	-0.84
SSRS W4-1	Unmatched	3.201	3.621	-.420	.802	-0.52
	ATT	3.201	6.688	-3.487	.944	-3.69
Internalizing W4-1	Unmatched	-1.872	-2.706	.834	.618	1.35
	ATT	-1.872	-5.395	3.523	.732	4.81
Externalizing W4-1	Unmatched	-1.393	-2.126	.733	.589	1.25
	ATT	-1.393	-4.758	3.364	.720	4.68

Note: Difference reported is the mean of the “treated” sub-sample minus the mean of the “non-treated” sub-sample.

ATT: The average treatment effect on the treated.

CHAPTER V

DISCUSSION

This chapter presents an overview of the analytic results and discusses the findings in relation to the research questions and hypotheses. The findings of this study are discussed within the context of the literature reviewed above. The chapter also discusses this study's contribution to the field, implications for clinical practice and policy, and limitations and directions for future research.

Overview of Findings

The present study examined factors related to mental health service use and then tested the effects of these services on child well-being for nationally representative sample of children referred to the child welfare system. For several years, access to mental health services for foster children has become the object of public attention. Although several studies have been conducted in the area of access to mental health services, there is lack of studies testing the effects of mental health services on child well-being. The present study extends the existing research by exploring whether mental health services improve various areas of child development.

The primary finding of the present study was that maltreated children's use of mental health services was influenced by several predisposing, enabling, and need factors. Specifically, the results indicated that older age, male gender, history of physical abuse, experience with foster care, having a Caucasian caregiver, being on public medical insurance, and the perceived need predicted the use of mental health services. The

perceived need was an especially powerful predictor. While past research has shown that mental health treatment can decrease child behavior problems (Deblinger et al., 1996; Deblinger et al., 1999), the present study provides a somewhat different perspective, showing that children who received mental health services were less improved in their well-being than untreated children. This result suggests that the mental health services considered in this study may not have been as effective as we hoped.

Analysis of Research Questions and Associated Hypotheses

Research Question #1A: Do children's demographic characteristics contribute to the mental health service use of maltreated children?

The mental health service use of maltreated children differed significantly by children's age and gender. It was hypothesized in this study that mental health service use would increase with age. This hypothesis was supported in the analysis. One possible explanation is that older children might have more severe externalizing behavior problems; indeed, externalizing problems were also closely related to a receipt of mental health treatment.

It was hypothesized that male children would receive more mental health services than female children. Consistent with one previous study (Leslie et al., 2000), this hypothesis was supported. This finding may be due to the fact that male children might have more externalizing behavior problems and were more likely to participate in delinquency.

It was hypothesized that Caucasian children would be more likely to receive mental health services than other racial groups. This hypothesis was not supported. There

was no significant association between children's race and mental health service use. This is in contrast to Kataoaka and colleagues (2002), who found that African American and Hispanic children were less likely than Caucasian children to receive mental health services. However, it should be noted that, although the present finding was not significant, the direction of the effect was the same as in the study by Kataoaka and colleagues.

Research Question #1B: Does maltreatment type contribute to the mental health service use of maltreated children?

It was hypothesized that children with a history of physical or sexual abuse would be more likely than children with a history of neglect, emotional abuse, or abandonment to use mental health services. This hypothesis was partially supported in that children who experienced emotional abuse received less mental health treatment than children who experienced physical abuse. Prior research has shown conflicting evidence for this relationship. On the one hand, Garland and colleagues (1996) found that physically and/or sexually abused children received more mental health services than did neglected children. On the other hand, Leslie and colleagues' (2000) work suggested that, with the exception of caregiver absence, maltreatment type was not significantly related to mental health service use. These differences may be due to the fact that each study used different measures of mental health services and different categorizations of maltreatment type. Specifically, the current study and Garland and colleagues' (1996) study measured mental health service use by caregiver reports, whereas Leslie and colleagues' (2000) study used Medicaid and County Mental Health datasets. In addition, whereas the current study and Garland and colleagues' study defined mental health service use as whether

children had ever received any type of mental health services at all, Leslie and colleagues defined it by the frequency of receiving outpatient mental health care. With respect to categorizing maltreatment type, the current study coded by the most severe maltreatment type in order to explore which type of maltreatment was most associated with service use. Thus, children received only one code for the maltreatment type. However, Leslie et al. coded all types of maltreatment for each subject, and therefore children received codes for more than one type of maltreatment. Garland and colleagues (1996) included sexual abuse; physical abuse; neglect and caretaker absence; protective issues; and cases of multiple abuse (in cases with two types of abuse: sexual, physical, or emotional abuse). The findings of current study seem to provide support for the assumptions that physically abused children will have more behavioral problems than emotionally abused children and that these problems have led to more mental health service use.

Research Question #1C: Does placement type contribute to the mental health service use of maltreated children?

The hypothesis that children in non-relative foster care will be more likely than children in in-home care to receive mental health services was supported. In particular, the results indicated that foster care children were more likely to receive services than children in in-home care. The association between placement type and mental health service use is similar to the results reported by Burns and colleagues (2004). However, there was no significant difference between in-home care and kinship care. One possible explanation is that foster care children might have more mental health problems than in-home care children. In addition, it is possible that children in foster care, compared to children in in-home care or kinship care, received more support and supervision from

caseworkers. Some studies have supported this finding by indicating that kinship caregivers receive less support and training (Berrick, Barth, & Needell, 1994; Brooks & Barth, 1998; Dubowitz, 1994; Scannapieco, Hegar, & McAlpine, 1997) and are supervised less by caseworkers (Berrick, Barth, & Needell, 1994). Also, previous studies have indicated that kinship caregivers are more likely to be unemployed and less educated (Cuddeback & Orme, 2001). It is evident that children in foster care are more likely than children in in-home care to receive mental health services. Based on the current findings, future studies should examine whether foster care placement leads to better child outcomes than in-home care or kinship care.

Research Question #1D: Do caregiver's characteristics contribute to the mental health service use of maltreated children?

The current study expected that children whose caregivers were older, more educated, Caucasian, or who had severe mental health problems would receive significantly more mental health care than would their respective counterparts. The expected relationship for age was not found in multivariate tests, despite an association at the bivariate level of analysis, which revealed that children whose caregivers were older than 54 were more likely than children with caregivers of other ages to receive services. However, when other factors were controlled for in the multivariate analysis, specifically placement type, the significant relationship between caregivers' age and mental health service use disappeared.

With regard to caregivers' race/ethnicity, this study hypothesized that children with Caucasian caregivers would be more likely than children with other caregivers to receive mental health services. This hypothesis was partially supported. Children with

Caucasian caregivers received more mental health care than did children whose caregiver was African American. Although this difference was only significant between Caucasian caregivers and African American caregivers, children with Hispanic or other caregiver also received less mental health services than children with Caucasian caregiver. This may be due to variations in cultural perceptions regarding mental health services and recognition of caregiver strain among caregivers of different racial backgrounds. For instance, on one recent study African American caregivers had lower levels of caregiver strain than did Caucasian caregivers, and this led African American caregivers to obtain less mental health services for their children (Shin & Brown, 2009).

This study also examined the relationship between caregivers' education and children's mental health service use. The results show that the caregiver's education did not significantly predict children's access to mental health services. This finding is consistent with Wu et al.'s (2001) study, indicating that mother education was not a significant predictor of receiving mental health services. However, they found that the mother's education was a significant predictor of receiving medication. The current study expected that caregiver's education would be related to obtaining services for children, based on ecological theory. The discrepancy between the hypothesis and the result in both studies may be explained by the inclusion older children. Caregivers may have a more marked role and need to be more involved in caring for their children when they are younger. Further research is needed to examine the association between caregivers' education and young children's mental health service use. Also, it will be important to explore whether medication use mediates the effect of caregiver's education on children's mental health service use.

With regard to caregiver's mental health status, the current study found that there was no significant relationship between caregiver's mental health status and the mental health service use of children. Although Burns and her colleagues (2004) found that children whose caregivers had a mental health problem were more likely to receive services than children whose caregiver did not have a problem, this result was only significant for youths aged 11-14 years. Further studies are needed to examine why caregivers' mental health status is only related to older children's mental health service use.

Research Question #1E: Does family income contribute to the mental health service use of maltreated children?

It was hypothesized that children in higher income families would receive significantly more mental health care than children in lower income families. The hypothesis was not supported in either the bivariate or multivariate tests. This finding differs from the results of an earlier study (Kataoaka et al., 2002), which found that children in poor families were less likely to receive mental health services than children in nonpoor families. The difference between the two results may be due to the different categorization of family income and sample differences. Kataoaka et al. defined income as *poor* or *not poor* based on U.S. Census poverty level, but the current study was unable to do this because the data had classified income as a categorical variable. In addition, the current study focused on children who were in the child welfare system, whereas Kataoaka et al. (2002) used The Community Tracking Survey of a random sample of youth. Because the sample for the present study consisted of children who were at risk, other factors, such as placement type, maltreatment type, and caseworkers' perceptions

may play more important roles than family income in children's mental health service use. Also, children in lower income families are eligible for subsidized services, such as Medicaid, which may increase the likelihood of a child receiving mental health care and cancel out any higher usage by higher income children.

Research Question #1F: Does children's insurance coverage contribute to the mental health service use of maltreated children?

As enabling factors, the current study hypothesized that children with Medicaid will be more likely to receive mental health services than children with other types of insurance, such as private insurance or self-pay. This hypothesis was supported in both the bivariate and multivariate analyses. Consistent with the behavioral model of the role of enabling factors in mental health service use, the analyses revealed that child insurance coverage, as an enabling factor, significantly predicted the mental health service use of children. Specifically, children who had publicly funded insurance were more likely to receive mental health services than children who had no insurance. The finding presented above is consistent with the existing literature. Cunningham and Freiman (1996) and Zimmerman (2005) also found that publicly funded health care coverage increased children's mental health service use. The finding of the current study offers evidence that the opportunity to obtain mental health services can be increased by providing publicly funded insurance to children in poor families.

Research Question #1G: Does perceived need contribute to the mental health service use of maltreated children?

As a need factor, the current study expected that perceived need would be significantly related to his or her utilization of mental health services. Specifically, it was

hypothesized that children who were viewed as needing mental health services by their caseworkers would be more likely to receive those services than children without perceived need. The hypothesized relationship between perceived need and mental health service use was supported. This finding also supports the theoretical framework (i.e., the behavioral model), which views an individual's health service use as a function of predisposing, enabling, and need factors. This study expanded prior work by examining the relationship between perceived need and mental health service use. Prior literature on mental health service use has only focused on children's clinical needs, for instance by using CBCL scores. However, the behavioral model suggests that an individual's perception on mental health problem influences his/her mental health service use. Thus, this study examined the effect of caseworkers' perceptions on children's mental health service use. The present study's focus on caseworker's perception allowed for new insights into caseworker's involvement and responsibilities.

Research Question #2A: Do mental health treatments for maltreated children at Wave 3 improve child well-being at Wave 4, controlling for psychotropic medication uses?

Prior research has focused on the barriers to mental health service use of child welfare (Burns et al., 2004; Garland et al., 1996; Hulburt et al., 2004). However, little is known about whether the available mental health services would even be appropriate and effective for maltreated children. Thus, the present study investigated the effects of mental health services on three areas of child development. First, I discuss the effect of mental health service use on cognitive development, and then I address the effect on social development. Finally, I discuss the effects on child's internalizing and

externalizing behavior problems. Ecological theory suggests that the child's individual and environmental factors influence the child development. Thus, this study also included children's individual and environmental factors as well as mental health service use in the multivariate analyses.

With regard to child's cognitive development, this study hypothesized that children who had received mental health services at Wave 3 would improve more between Waves 1 and 4 than children who had not received mental health services. This was not the case; no significant differences were found between these two groups when children's individual and environmental variables were controlled. The cognitive development of children was influenced by child characteristics and caregiver's education level rather than mental health service use.

These findings differ from the results of an earlier study (Culp et al., 1987). According to Culp and colleagues, mental health treatment for neglected children improved children's cognitive development. The discrepancy between the current study and Culp and colleagues' study may be explained by the different research design and the quality of mental health services. Whereas Culp and colleagues' study used an experimental design, the present study explored the effects of mental health service use by analyzing survey data. Thus, the current study investigated the effects of services for maltreated children in a real-world clinical setting as opposed to a controlled research setting. However, because of the lack of available information, this study was not able to evaluate the quality and appropriateness of the studied mental health services. Culp and colleagues' study developed a treatment program based on a cognitive developmental model and tested whether the treatments were effective for improving maltreated

children's cognitive development in a controlled setting.

In addition to the abovementioned factors, children's age may be partially responsible for the different results. Whereas the current study included children aged 5-14 years old, the mean age of the children in Culp et al.'s (1987) study was 36 months. The current study found that the cognitive outcomes of younger children were better than older children. Thus, the different children's age between the two studies and perhaps differences in definition of cognition may contribute to the different findings.

Consistent with a bioecological perspective on the role of child's individual and environmental factors in child development (Bronfenbrenner, 1979), the analyses revealed that children's cognitive development was affected by children's individual and environmental factors rather than by their mental health service use. In the bivariate analysis, younger children and children in higher income families showed better cognitive outcomes than older children and children in lower income families. The significant association between age and cognitive development was also supported in the multivariate analysis when other factors were controlled, but the effect of family income was no longer significant in the multivariate model. The multivariate findings indicated that children in other placement types were improving their KBIT scores more than children in home care. Furthermore, children in perceived need for mental health treatments had lower scores of cognitive development at Wave 4 and were less improved from Wave 1 to Wave 4 than their counterparts. In addition, the current study examined the associations between various factors and children's cognitive development outcomes at Wave 4, and the results showed that maltreatment type and caregiver's education level influenced children's cognitive development. For example, children who experienced

emotional abuse had higher cognitive development scores than children who experienced physical abuse and children's cognitive development scores increased with caregiver's education level. Thus, these findings bring our attention to the importance of children's environmental surroundings.

Next, in terms of children's social development, the regression analyses failed to support the hypothesis about the influence of mental health service use on social development. In sum, the results indicated that children who received mental health services had lower social functioning than children who received no treatment at Wave 4. Children who received mental health treatment were improved less than children with no treatment, even when baseline SSRS was controlled. This trend was also found for psychotropic medication use. Generally speaking, children who had mental health problems and received treatment were likely to use psychotropic medication, except for those who received treatment without medication. Thus, the effects of medication on social development may be similar to the effects of mental health service use on social development outcomes.

These findings were inconsistent with the study by Fantuzzo and colleagues (1996). They found that community-based resilient peer treatments improved the social functioning of maltreated children compared to children in a control group. Why was the finding of the current study inconsistent with the hypothesis and Fantuzzo and colleagues' finding? First, the current study explored the effects of mental health treatments in a real-world setting, whereas Fantuzzo and colleagues tested the effects of specific designed treatments in a controlled research setting. Weisz and colleagues (1995) have argued that a controlled research setting may result in better outcomes than is

common in real clinical practice because research offers a highly structured and monitored environment. Second, age may help explain the inconsistent findings in the present study. For instance, Fantuzzo and colleagues tested the effects of treatments with young children aged 3.8 to 5.1 years, whereas this study consisted of children aged 5 to 14 years. The fact that I did not find a significant effect for older children is consistent with prior research that has documented that early intervention for maltreated children will bring better developmental outcomes (Cooper, 1981). Third, the mental health treatment in Fantuzzo and colleagues' study was developed based on ecological theory. For example, the treatment was conducted in the context of classroom play and involved resilient peers and trained parents. However, the quality of the mental health services in the current study was not monitored, and it would not be surprising if this was partially responsible for why mental health service use failed to improve child well-being in the present study.

The other interesting finding was that children's social development was affected by children's individual and environmental factors. For example, among maltreated children, female children had lower social functioning than male children at baseline and improved less over time. Children whose caregivers defined their race as "other" had lower social development scores than children with Caucasian caregivers, and children with perceived need showed lower social functioning than children with no perceived need. Additionally, children's cognitive development increased with caregivers' education level. These findings support the assertion that maltreatment's effects on children's development are influenced by child's individual and contextual factors, such as family, neighborhood, and broader community characteristics (Zielinski & Bradshaw,

2006).

With regard to children's internalizing behavior problems, the hypothesized relationship between mental health service use and internalizing behavior problems was not supported. Children who had received mental health service use at Wave 3 had more severe internalizing behavior problems than children who had not received any mental health treatment. Although the mental health service use does decrease children's internalizing behavior problems, children who had received mental health services improved significantly less than children who received no such services. Like the findings of cognitive and social development, the current study's findings conflict with those in Bagley and LaChance's study (2000), which found that a family-based program was effective for sexually abused children in decreasing internalizing behavior problems. As mentioned above, this difference may be due to the experimental setting. Indeed, whereas many previous studies conducted in an experimental setting have found positive effects of mental health treatment (Deblinger et al., 1996; Fantuzzo et al., 1996; Weisz et al., 1987), most clinical setting studies have shown no significant effects (Weisz & Weiss, 1993; weisz et al., 1995). Questions, therefore, remain open as to what exactly leads to this discrepancy.

The perceived need factor demonstrated a similar pattern with regard to the internalizing behavior outcomes. Children whose caregivers viewed them as needing treatment had more internalizing behavior problems than children with no perceived need. These findings were supported in both bivariate and multivariate analyses. It may be that the quality and frequency of mental health services did not meet the needs of these children. In addition, caregivers' mental health status affected their children's

internalizing behavior problems. Specifically, children whose caregivers had poor mental health exhibited more severe internalizing behavior problems than children whose caregivers had no mental health problems. However, the internalizing behavior problems were lower among children whose caregivers had a mental health condition. One possible explanation for this finding is that a caregiver having a mental health condition may have led to an increase of mental health treatment for both the caregivers and their children (Burns et al., 1996), and this treatment may have contributed to an improvement in children's internalizing behavior outcomes.

The results for externalizing behavior problems were similar to the findings discussed above. The regression analyses indicated that children with mental health services had more severe externalizing behavior problems and improved significantly less over time than children who had received no mental health services. The result regarding the association between mental health service use and children's externalizing behavior problems is similar to those reported by Weisz and colleagues (1992). However, contrary to the results of the present study, Deblinger and colleagues (1999) found that the cognitive behavioral therapy for sexually abused children significantly decreased participants' externalizing behavior problems. One explanation for this discrepancy may be the difference in research design, with a survey design in the current study and an experimental design in the Deblinger and colleagues' study (1999). Whereas the treatment's quality and intensity were well supervised in the Deblinger and colleagues' study, the mental health services varied in quality and frequency in the current study.

Besides mental health service use, other factors such as psychotropic medication use, placement type, caregiver age, and caregiver's mental health status were associated

with children's externalizing behavior problems. The effect of psychotropic medication use was similar to the results for mental health service effects. For example, children who used psychotropic medication had more severe externalizing behavior problems and improved significantly less over time than their counterparts. Children in group homes were less improved than children in in-home care. The finding for group home children helps identify another target group for increased service attention. On the other hand, externalizing behavior problems decreased with caregiver's age. The relationship between caregiver's mental health status and externalizing behavior outcomes was similar to the association between caregiver's mental health status and internalizing behavior outcomes. Children whose caregiver's mental health status was poor improved significantly more than children whose caregiver had no mental health problems. In short, consistent with an ecological perspective of the role of child environmental factors in development (Bronfenbrenner, 1979), the analyses revealed that several environmental factors were associated with children's externalizing behavior problems.

In summary, these findings support bioecological theory. Bioecological theory views children's development as a product of interactions between children and their environments. Thus, children's development is influenced by both children's biological characteristics and their environmental factors. Mental health services considered in this study do not seem to be as effective as one might expect. The services did improve the well-being of treated children, but not as much as the well-being of the untreated children. These findings were also supported by the propensity score matching analysis. One possible explanation for this finding is that the children who were referred for and subsequently received mental health services started with a greater disadvantage, which

can contribute to slower improvement of those children than children who did not need the services as much. Although the current study tried to resolve the issue associated with non-random selection, it is possible that the bias issue was not fully resolved. Another source for the ineffective services could be the separation of child welfare and mental health service systems and the lack of ability to coordinate care between the two systems. This may lead to muted effects of mental health services on children (Raghavan et al., 2007).

Research Question #2B: Did the continued mental health treatment between Wave 3 and 4 for maltreated children improve child well-being at Wave 4?

It was hypothesized that maltreated children with continued access to mental health services between Wave 3 and Wave 4 would exhibit better outcomes at Wave 4 compared with maltreated children with less or no treatment. The regression analyses failed to support this hypothesis in terms of continued treatment's effects on child well-being. Similarly, continued mental health treatment between Waves 3 and 4 was not significantly related to child cognitive outcomes. With regard to three child well-being measures, such as social development, internalizing behavior problems, and externalizing behavior problems, the analyses showed the same pattern of findings. Generally speaking, the results revealed that children who had received mental health treatments improved significantly less than children who received no treatment.

Future research is needed to examine why children who consistently received mental health treatment showed smaller improvement than children who had not received any treatment, even when baseline problems were controlled.

Clinical Practice Implications

The findings of the current study have clinical practice implications for improving child well-being. The most salient implication of the findings is that the mental health services did not improve child well-being, contrary to several experimental studies that have indicated the effectiveness of treatments. Although it is critical to offer mental health services to maltreated children, it is more important to ensure that such interventions are efficacious. If clinicians utilize services that are supported in the experimental literature and receive relevant training to implement those therapeutic practices, maltreated children may experience better outcomes. In the present study, almost nothing was known about what therapeutic treatments were conducted, whether the quality of treatments was appropriate, and how the clinicians were trained and supervised. Given the variation in treatment quality that probably existed, it is not surprising that some mental health services had muted effects. Ensuring that clinicians are competent and that the services used are consistent and of high quality are important to improving children's outcomes. Thus, as we increase continuing education and supervision of clinicians and require advanced degrees and licensing, these efforts will lead to better mental health service outcomes. On the other hand, if a sufficient incentive for better mental health service outcomes were given to clinicians, they would have more motivation to deliver their treatments as effectively as possible.

The findings of the current study also help to shed light on the relationships between children's familial factors and their developmental well-being. For example, the education level and mental health status of caregivers influenced their child's well-being. Furthermore, there is evidence that mental health treatments that address the family's

needs as well as the child's needs are more effective (Yoshikawa, 1994). Because child development is influenced by the interaction between the child and her or his family members, clinicians should consider the family's needs and involve the family members in the treatment sessions. As one example, prior research has documented that parent training can be a very effective intervention for decreasing child's externalizing behavior problems (Barlow & Stewart-Brown, 2000; Kazdin, 1985; Kazdin & Wassell, 2000; Mahoney et al., 1999).

On the other hand, the current study shows that caseworkers play an important role in providing mental health treatment to maltreated children. Mental health service use was significantly associated with caseworker's perceptions of children's need for mental health services. Thus, the caseworker's ability directly influences whether children receive appropriate treatment for enough time. If a caseworker is knowledgeable about child psychopathology and the characteristics of local mental health service providers, she or he can refer the child to a suitable clinician. Through caseworker training and supervision, caseworkers can help improve the well-being of the children on their caseload.

In summary, practicing clinicians and researchers should assist one another. Clinicians should be knowledgeable about the updated research on effective interventions, and researchers should provide enough information about how to implement the developed intervention in a real clinical setting by providing a manual and training.

Policy Implications

It is well documented that maltreated children have high rates of mental health

problems and only a small proportion of these children receive any mental health care (Burns et al., 2004; Landsverk & Garland, 1999). Public concern has been raised about reducing the gap between the need for and receipt of services. However, little is known about whether these mental health services are effective for decreasing children's problems. The current study aims to contribute to the development of better policies that improve the well-being of maltreated children by examining barriers to children's use of mental health services.

The current study showed mental health services are not much effective, which may partly be due to some administrative barriers. However, little is known about administrative barriers to the delivery of high-quality mental health services for children involved in child welfare system (McMillen et al., 2007). Investigating how the administrative inefficiencies affect the effectiveness of mental health services will be an important area for future research. Although the current study showed that mental health service use was not much effective in improving child well-being, that does not mean that it is unnecessary to decrease the gap between the need for and receipt of services. Instead, this study highlights that improved public policies are needed to enhance the quality of mental health services. In addition, some experimental studies have shown that certain mental health treatments were effective in reducing children's problems. Therefore, policymakers should develop policies that ensure maltreated children will receive appropriate and effective treatment for their needs. As mentioned above, one potential source for less effective services is lack of coordination between the child welfare and mental health service systems. Perhaps policymakers can increase effectiveness of mental health services by designing a mechanism for better coordination.

The findings of this study inform policymakers of the extent to which certain factors are important to the patterns of mental health service use of maltreated children. For example, children's demographic characteristics (e.g., age and gender) and maltreatment type were found to be associated with their use of mental health services. This information is useful because it highlights specific target populations that policymakers can focus on when they provide funds for services.

The instability of relationships in the immediate microsystem has been theorized to have deleterious consequences on child development (Bronfenbrenner, 1979). Placement type, therefore, can offer children someone who provides a sense of caring that is meant to last a lifetime. The current study focused on the relationships between placement type and mental health service use. Children in foster care were significantly more likely than children in home care to receive mental health services. This finding is consistent with the results of prior research (Burns et al. 2004; Garland et al. 1996). Still, we need to know which placement type provides a better environment for vulnerable children. Future research is needed to explore which placement type provides more security and appropriate care and supports for these vulnerable children. Caregiver characteristics will likely vary across placement types, and the interaction between child and caregiver probably plays an important role in child development. Thus, policymaker should focus on placement type concerning caregiver's characteristics.

This study found that caregiver's race/ethnicity was related to children's mental health service use. Furthermore, caregiver's mental health status influenced children's well-being. In short, the findings of this study showed that caregivers played an important role in their children's development and well-being. Thus, the results suggest the need to

provide appropriate programs to caregivers in order to ensure proper parenting. When policies related to child well-being are developed, policymakers should focus on caregivers as well as maltreated children. Along these lines, social work administrators may develop new programs for parents, such as substance abuse treatment programs, mental health services, and parenting programs. Besides caregiver's characteristics, insurance coverage was associated with access to mental health services. Consistent with this study's hypothesis, children who had publicly funded insurance received more mental health services than children who did not have insurance. This result provides evidence that public funds are needed for supporting Medicaid programs to decrease the barriers to children's mental health services.

Finally, it is important for mental health providers to provide effective treatment to children in order to improve their well-being. If policymakers provide resources to clinicians based on evidence of positive effects, this will increase opportunities for children to obtain suitable interventions.

In conclusion, this study sheds new light on the muted effect of current mental health services on maltreated children's well-being. Policymakers' should shift their attention to policies related to the development of more effective interventions and the implementation of qualified mental health treatments for maltreated children. In practice, social work administrators may devise new strategies to decrease barriers to receiving mental health services and increase effective interventions tailored to each child's needs. In turn, as new strategies increase appropriate mental health treatments, the well-being of maltreated children will ultimately be improved.

Limitations

Several limitations of the study should be mentioned. First, this study was a secondary analysis of data and thus was restricted to the variables available in the dataset. For example, the NSCAW data do not contain social support information for the study sample. Therefore, the current study could not examine social support as a predictor for mental health service use even though social support was identified as an enabling factor in the behavioral model that guided this study's analytical framework. Future research should investigate whether social support plays an important role in increasing access to mental health services.

Second, with the exception of cognitive development, the child well-being measures were assessed through caregiver's reports. The results should be interpreted with caution because caregiver reports might have been affected by their characteristics; additionally, children may have had a different perspective of their developmental functioning, especially among older children or foster children. Unfortunately, the NSCAW data do not contain children's reports of the social development measure and the CBCL (for younger children). A future research that uses the information obtained from multiple informants such as child, caregiver, and teacher may provide more reliable findings (e.g., Simmel, Lee, & Kim, under review).

Third, with respect to the measure of maltreatment type, the most severe type of maltreatment was used. Some children might have experienced more than one type of maltreatment, but they would have only been coded as having one maltreatment type. This method of identification of maltreatment type could have contributed to an underestimation of the relationship between maltreatment type and use of mental health

service.

Fourth, this study used a broad definition of mental health service use. Mental health service use was assessed as a dummy variable, based on caregiver's reports. If a caregiver responded that the child had received any type of mental health services, then the mental health service measure was coded as *yes*. However, the mental health service effects might have differed by the type, frequency, intensity, and quality of service. Except for service type, the measure of mental health service use in the current study could not capture these characteristics. Although the data did not contain information about the quality and intensity of services, this study analyzed the effects of each type of mental health service on the well-being of maltreated children. The results were similar with findings of the present study. Specifically, each type of mental health service did not improve child well-being as much as expected. However, caution should be taken in generalizing the result because the data were unable to provide enough information about the quality and intensity of mental health services. In addition, there is no information in the NSCAW data about how mental health services were delivered, which treatments were provided, and the extent to which the services improved children's mental health problems. It is possible that future studies that specifically assess characteristics of mental health service use may report a different pattern of results. For example, further research using Medicaid claims/encounter data may bring more reliable findings. Future research should focus on collecting data that contain more specific information about mental health service use to provide more reliable estimate of mental health service effects. In addition, the children under the care of child protective services may be placed in out-of-home care and children in out-of-home placement tend to experience multiple

placement changes (Chisholm et al., 2009). These multiple placement changes increase discontinuity of mental health service use (Digiuseppe & Christakis, 2003) and it, in turn, decreases the effects of services on child well-being. Thus, future research is needed in order to examine whether the placement changes influence receiving appropriate services and ultimately affect improvement of children's well-being.

Fifth, missing data might be another limitation of this study. Since this study only contained subjects without missing information, missing cases might have important information. To examine the possible bias, the final sample and the missing cases were compared on socioeconomic variables. The two groups were not significantly different on the most of variables, except for race/ethnicity and placement type.

Finally, selection bias might exist because random selection for services was not achieved. Even after most relevant characteristics reported in the survey data were controlled, the treated group could still have some unobserved characteristics that may or may not affect the outcomes. Multiple regressions and propensity score matching are supposed to take care of selection bias in two different ways. And, the results were same between two methods. Thus, the results of the current study are robust across two different methods of treating selection bias. However, it would be too extreme to say there is absolutely no selection bias in this study.

Strengths

Despite these limitations, the present research provides new insights into the use of mental health services and the effects of those services on child well-being. The present study investigated the effects of mental health service use on child well-being

using national dataset; the study also examined the determinants of mental health service use longitudinally with a nationally representative sample. Thus, the findings of this study can be generalized to the larger population with more confidence.

In addition, with respect to mental health service use, the present study focused on both children who were in home as well as out-of-home care, whereas prior research has mostly focused on out-of-home care. A great number of children remain in their homes with their biological parents after maltreatment occurs. This population of children should also be of interest to researchers and policymakers.

Finally, the present study examined the effects of mental health services on maltreated children in a real-world setting. Most prior research on treatment effects has been conducted in a controlled research setting (Weisz, Donenberg, Han, & Weiss, 1995), and thus there is a lack of information about the effects of mental health services in the environment in which they are delivered. The present study found that mental health services did not improve child well-being, contrary to the results of experimental design studies. This emphasizes the need for more research on the gap between laboratory and actual mental health treatment for children.

Conclusion

In conclusion, the present study contributes to our current understanding of the use of mental health services as well as the effects of these services on child well-being. The results show that mental health service use was associated with predisposing (e.g., child age, gender, maltreatment type, placement type, and caregiver's race/ethnicity), enabling (e.g., insurance coverage), and need factors (e.g., perceived need). The findings

shed light on potential target populations for policymakers.

With regard to the effects of mental health services on child well-being, the results indicate that mental health service did improve the well-being of maltreated children, but the amount of improvement was not as large as the amount of well-being improvement of the untreated children. Children who had received mental health treatment at Wave 3 were less improved than children who had not received any mental health treatment. Furthermore, children who had received mental health services at both Wave 3 and 4 had less improvement in terms of well-being outcomes compared to children who had received no treatment. Unfortunately, we do not know whether these mental health services were of appropriate design, quality, or duration to address the needs of the maltreated children in the data. The findings contribute to the development of policies intended to increase mental health access and encourage mental health providers to deliver effective, evidence-based interventions with sufficient knowledge and training. In addition, the results of this study showed that child well-being was associated with children's individual and environmental factors. This finding provides evidence in support of bioecological theory.

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Curriculum Vitae

SOYOUN KIM

- 1999 BA, Home Management, Hanyang University, Korea
- 2001 MA, Family and Child Studies, Hanyang University, Korea
- 2010 Ph.D., School of Social Work, Rutgers, The State University of New Jersey
-
- 1999 Research Assistant for Professor Jung Sook Lee, Hanyang University, Korea
- 2000-2001 Play Therapist, Kwanak Youth Center, Korea
- 2001 Completed Psychodrama Director Training, Korea Group Psychotherapy and Psychodrama Institute, Korea
- 2002-2003 Teaching Assistant at University of Wisconsin, *Development of the Young Child*
- 2004-2005 Teaching Assistant at School of Social Work, Rutgers University
- 2006-2010 Research Assistant for Professor Cassandra Simmel, Rutgers University

Publication

- Kim, S. (2001), The effect of sociodrama on child loneliness and peer relations. *South Korean Journal of Child Studies*, 22 (3), 75-90.